2026 First Quarter Competitive Lease Sale

March 2026

Environmental Assessment **DOI-BLM-WY-0000-2025-0003-EA**

I have considered the factors mandated by the National Environmental Policy Act (NEPA). This environmental assessment represents the Bureau of Land Management's (BLM's) good-faith effort to fulfill NEPA's requirements by prioritizing documentation of the most important relevant considerations within the statutorily mandated page limits and timeline. This prioritization reflects the BLM's expert judgment; and any considerations addressed briefly or left unaddressed are, in the BLM's judgment, comparatively non-substantive and would not meaningfully inform the BLM's consideration of environmental effects and the decision to be made. The EA is substantially complete, considers the factors mandated by NEPA, and, in my judgment, contains analysis adequate to inform the BLM's decision regarding the proposed action.

Responsible Official: _____ Date: _____

Name & Title

U.S. Department of the Interior
Bureau of Land Management
Wyoming State Office
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CHAPTER 1. INTRODUCTION

1.1. Background

The BLM is responsible for oil and gas leasing on about 700 million acres of BLM, national forest, and other Federal lands, and seeks to ensure that mineral resources are developed in an environmentally responsible manner.

In accordance with the Mineral Leasing Act (MLA) and 43 CFR § 3120.12, the BLM Wyoming State Office (WSO) conducts quarterly competitive oil and gas lease sales for lands that are eligible and available. Private individuals or entities may file Expressions of Interest (EOIs) to suggest parcels for consideration for leasing by the BLM. The authorized officer also may identify lands for leasing consideration. Additional information on the competitive lease sale (CLS) process is available on-line at: https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/leasing.

The offering and subsequent issuance of oil and gas leases, in and of itself, does not cause or directly result in any surface disturbance. The BLM cannot determine, prior to conducting a lease sale, whether a proposed parcel actually will be leased, or if it is subsequently leased, whether the lease will be explored or developed.

Once a parcel is sold and the lease is issued, the lessee has the right to use the leased lands to explore and drill for all of the oil and gas within the lease boundaries, subject to the stipulations attached to the lease, restrictions derived from specific nondiscretionary statutes, and other reasonable measures to minimize adverse impacts (see 43 CFR § 3101.12). Further, relevant regulations at 43 CFR § 3162.5-1(a) provide: "The operator shall conduct operations in a manner which protects the mineral resources, other natural resources, and environmental quality. In that respect, the operator shall comply with the pertinent orders of the authorized officer and other standards and procedures as set forth in the applicable laws, regulations, lease terms and conditions, and the approved drilling plan or subsequent operations plan. Before approving any Application for Permit to Drill (APD) submitted pursuant to § 3162.3-1 of this title, or other plan requiring environmental review, the authorized officer shall prepare an environmental record of review or an environmental assessment, as appropriate. These environmental documents will be used in determining whether or not an environmental impact statement is required and in determining any appropriate terms and conditions of approval of the submitted plan." Accordingly, the BLM can subject development of existing leases to reasonable conditions to minimize impacts to other resources, through the application of Conditions of Approval (COAs) at the time of permitting. Any constraints must conform with the applicable land use plan and be consistent with rights granted to the holder under the lease. In addition, upon cessation of lease operations, the lessee must plug the well(s) and abandon any facilities on the lease. The surface must also be reclaimed to the satisfaction of the BLM authorized officer, in accordance with the MLA, Section 17(g) [30 U.S.C. § 226(g)].

Oil and gas leases are issued for a 10-year period and continue for so long thereafter as oil or gas is produced in paying quantities. If a lessee fails to produce oil or gas, does not make annual rental payments, does not comply with the terms and conditions of the lease, or relinquishes the

lease, the lease may terminate or be cancelled, and BLM may consider offering the lands for lease at another lease sale after a new review process.

1.2. Purpose and Need and Decision to be Made

The purpose for this action is driven by the policy and responsibility of the BLM, as derived from various laws and policies, including the MLA and the Federal Land Policy and Management Act (FLPMA), as well as Executive Order 14154, Unleashing American Energy, to make mineral resources available for extraction and to encourage development of mineral resources to meet national, regional, and local needs. Continued sale and issuance of lease parcels in conformance with the approved Resource Management Plans (RMPs) would allow for continued production of oil and gas from public lands and reserves.

The need is to respond to Expressions of Interest, as established by the Federal Onshore Oil & Gas Leasing Reform Act of 1987 (FOOGLRA), MLA, and FLPMA.

BLM will decide, based on this analysis, whether to make parcels available for lease and what stipulations will be placed on those parcels, in conformance with the approved RMPs.

1.3. Relationship to Statutes and Regulations

The proposed action and alternatives are consistent with other plans, programs, and policies of other federal agencies, the State of Wyoming, local governments, and affected Tribes, to the extent practical, including but not limited to the following:

- Federal Land Policy and Management Act of 1976, as amended [43 U.S.C § 1701 et seq.]
- Mineral Leasing Act of 1920, as amended [30 U.S.C. § 181 et seq.]
- The National Environmental Policy Act [42 U.S.C. 4321 et seq.]
- Clean Air Act [42 U.S.C. § 1857 et seq.], as amended and recodified [42 U.S.C. § 7401 et seq.]
- Clean Water Act [33 U.S.C. § 1251 et seq.]
- Endangered Species Act [16 U.S.C. § 1531 et seq.]
- Migratory Bird Treaty Act [16 U.S.C. § 703 et seq.]
- National Trails Systems Act [16 U.S.C. § 1241 et seq.]
- National Landscape Conservation System Act [16 U.S.C. § 7202]
- National Historic Preservation Act of 1966, as amended [54 U.S.C. § 300101 et seq.] and Protection of Historic Properties (36 CFR § 800)
- Native American Graves Protection and Repatriation Act of 1990 [25 U.S.C. § 3001 et seq.] and 43 CFR § 10 American Indian Religious Freedom Act of 1978 [42 U.S.C. 1996]
- Native American Trust Resource Policy standards are presented in the Department of the Interior Comprehensive Trust Management Plan dated March 28, 2003
- Wild and Scenic Rivers Act of 1968, as amended [16 U.S.C. § 1271 et seq.]
- Bald and Golden Eagle Protection Act of 1940, as amended [16 U.S.C. § 668 et seq.]
- Paleontological Resources Preservation Act of 2009 [16 U.S.C. §470aaa et seq.]
- Greater Sage-grouse Record of Decision and Land Use Plan Amendments and Revisions for the Rocky Mountain Region, 2015 (United States Department of Agriculture, Forest Service)
- USFS Supplemental Information Report to the Biological Assessment and Evaluation for Revised Land and Resource Management Plans and Associated Oil and Gas Leasing Decisions, 2018
- Executive Order 14154, Unleashing American Energy

1.4. Conformance with Land Use Plans

This EA tiers to the Final Environmental Impact Statements (FEISs) prepared for each Field Office (FO) RMP, and any subsequent amendments or updates, and incorporates by reference the relevant portions of the FEISs. The impacts analysis in the FEISs for the effects from oil and gas leasing and development incorporates the Reasonably Foreseeable Development (RFD) scenarios (i.e., the level of oil and gas development projected for the life of the plan based on historical and projected trends).

The sale and issuance of the leases conforms to the approved RMPs (43 CFR § 1610.5-3) and Records of Decision (RODs) for the applicable planning areas, as amended or updated.

1.4.1. Tiered Documents

High Plains District (HPD)

The Buffalo Field Office (BFO) Buffalo/Rocky Mountain Region RMP ROD approved on September 21, 2015 (supported by May 2015 FEIS), maintained December 28, 2022, as amended by the Buffalo Field Office Record of Decision and Approved Resource Management Plan Amendment (November 22, 2019).

The Casper Field Office (CFO) RMP ROD approved on December 7, 2007 (supported by June 2007 FEIS), updated March 19, 2021, as amended by the Record of Decision and Bureau of Land Management Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs Field Offices Approved Resource Management Plan Amendment (ARMPA) for Greater Sage-Grouse approved on September 21, 2015 (supported by May 2015 FEIS).

The Newcastle Field Office (NFO) RMP ROD approved on August 25, 2000 (supported by June 1999 FEIS), as amended by the Record of Decision and Bureau of Land Management Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs Field Offices Approved Resource Management Plan Amendment (ARMPA) for Greater Sage-Grouse approved on September 21, 2015 (supported by May 2015 FEIS).

High Desert District (HDD)

The Rawlins Field Office (RFO) RMP ROD approved on December 24, 2008 (supported by January 2008 FEIS), maintained October 29, 2019, as amended by the ARMPA (supported by May 2015 FEIS).

The Rock Springs Field Office (RSFO) RMP ROD approved on December 20, 2024 (supported by August 2024 FEIS).

The FO RMPs include allocation decisions which identify lands as either open or closed to fluid mineral leasing, and (if open) provide stipulations that are attached to new leases to mitigate effects of potential development operations.

This EA discloses the affected environment (including the reasonably foreseeable environmental trends and planned actions in the area), analysis of potential impacts not already considered in the EISs to which this EA tiers, and potential mitigation of those impacts. The EA provides

information for BLM to determine whether this project would have significant impacts not already disclosed and analyzed in other NEPA documents, warranting an EIS. The RMP EISs have already evaluated potentially significant impacts arising from the BLM's land use planning decisions. Based on this EA, the BLM may issue a "finding of no significant impacts" (FONSI), if no significant impacts are identified. If a FONSI is reached, a Decision Record (DR) may be signed approving the selected alternative, which could be the proposed action, the no-action alternative, or a combination thereof.

1.5. Scoping and Issues

To identify preliminary issues for analysis (refer to the BLM's NEPA Handbook H-1790-1 at page 41), the BLM conducted internal scoping. The BLM personnel listed in Appendix 5.4.2 provided information and input for this EA and the scoping process. This EA incorporates by reference the analysis of issues previously addressed in the RMP FEISs, to which it tiers.

The BLM Wyoming personnel also conferred with the Wyoming Game and Fish Department (WGFD) in accordance with an interagency Memorandum of Understanding, the Wyoming Oil and Gas Conservation Commission (WOGCC) and the Wyoming Governor's Office.

In addition, the BLM conducted a 30-day public scoping period which began on July 7, 2025. The main issues identified through public scoping included, but were not limited to, leasing in Greater Sage-Grouse habitat, big game habitat and migrations corridors, potential emissions impacts, water resources, expressions of interest, disapproval of ongoing leasing and support for continued leasing. Comments received through the public scoping process were incorporated into this document.

Analysis issues include resource issues that could potentially be affected by oil and gas leasing. The BLM focuses its analysis on effects to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives (42 USC 4332(2)(C)). Consistent with 43 CFR § 3120.32 and § 3120.41, the BLM identified site-specific resource concerns and lease stipulations for proposed parcels through a preliminary review process conducted prior to a public scoping period. The following resources/issues are analyzed in detail in this EA:

Greenhouse Gases
How would future potential development of leases contribute to greenhouse gas (GHG) emissions at multiple scales?

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?

Greater Sage-Grouse
What are the effects to sage-grouse habitats and populations if the parcels nominated for this lease sale are leased and subsequently developed for oil or gas production?

Big Game Species
What are the effects from potential oil and gas development on parcels that may be offered for lease to big game habitats and populations within state identified crucial winter range and designated migration corridors?

Lands with Wilderness Characteristics
What are the effects of potential oil and gas development, including hydraulic fracturing, on parcels that may be offered for lease to lands with wilderness characteristics?

Socioeconomics
What are the socioeconomic effects of potential oil and gas development, including hydraulic fracturing, on parcels that may be offered for lease?

1.6. Issues Eliminated from Further Analysis

Based on a review of the context and scale of the Proposed Action, the BLM has considered and eliminated the following issues from further analysis, with justifications provided. The following resources/issues are either not present or did not warrant detailed analysis and are not considered in this EA: lands and realty conflicts, locatable and saleable minerals, forest and woodland, cave and karst resources, wilderness study areas, Master Leasing Plans, 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:

Cultural and Heritage Resources
Cultural and Heritage resources include traditional cultural properties and historic trails. All parcels addressed in this EA have the potential to contain surface and buried archaeological materials or may be in an area which could affect the setting of known or unknown historic sites, and/or Traditional Cultural Properties (TCPs). Once the decision is made by the lessee to develop a lease, an area-specific cultural records review would be completed to determine if there is a need for a cultural inventory of the areas of proposed surface disturbance. Generally, a cultural inventory will be required before new surface disturbance and all historic and archaeological sites that are eligible for listing in the National Register of Historic Places would be either avoided by the undertaking, have adverse effects to sites minimized or mitigated, or have the information in the sites extracted through archaeological data recovery.

The application of lease terms, cultural resource lease stipulations and the cultural resource lease notices (See Appendix 4.1 for parcels with specific cultural resource stipulations and/or paleontological stipulations. In addition, Lease Notice No. 2, and Lease Stipulation HQ-CR-1) at leasing provides protection to cultural and heritage resources, paleontology, traditional cultural properties, and historic trails. 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.

Paleontology

The application of lease terms and the paleontological lease notices (Appendix 4.1) at leasing provides protection to paleontological resources. 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 may include avoidance, professional monitoring or spot checking, development of an Unanticipated Resource Discovery Plan, and salvage. These mitigation measures would be initiated by BLM and the operator.

Soils

The act of offering, selling, and issuing federal oil and gas leases does not produce impacts to soils. Prior to authorization of surface disturbance on a lease, the BLM will require the lessee or their designated operator to submit a Surface Use Plan of Operations to the BLM. The requirements in the BLM-Wyoming Reclamation Policy would be implemented for all surface-disturbing activities. Stabilization and reclamation of disturbed areas (both interim and final) will be required, in accordance with 43 CFR Subpart 3171. Site-specific, ground-truthed soils data will be provided if and when any associated ground-disturbing activity (drill pad construction or pipeline installation) is proposed. As required in the applicable RMPs, surface disturbance may be restricted or prohibited on steep slopes and within floodplains. Lease Notice No. 1 addresses surface disturbance on slopes greater than 25 percent and is applied to all parcels. Additional stipulations to protect soils can be found in Appendix 4.1.

Vegetation

Vegetation resources will not be impacted to the degree that will require detailed analysis in this EA. This proposed sale and issuance of oil and gas leases would not authorize any ground disturbances which could affect vegetation resources. Leasing is an administrative action that does not result in any surface disturbance. Site-specific effects cannot be analyzed until an exploration or development application is received, after leasing has occurred. There would be no impacts to vegetation resources through sale of leases. There is some expectation that exploration or development could occur, at which time additional NEPA would be conducted should an APD be filed. The applied lease stipulations and notices will notify buyers during sale of leases which resources may be present, and allow the opportunity to adjust the location of potential development at the site-specific level when an APD is received to minimize impacts and ensure impacts are addressed.

Future development proposals on the leases would be subject to the standard lease terms, and all applicable laws, regulations in existence at the time of lease issuance.

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 (BMPs) 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. Where applicable, VRM lease stipulations are applied to the proposed parcels in conformance with the approved RMPs (Appendix 4.1). The application of a stipulation 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, as classified by FLPMA regarding BLM-authorized activities.

Recreation

No direct impacts to recreational opportunities would occur as a result of offering leases for sale. 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.

Lands with Wilderness Characteristics

Wilderness characteristics are resource values that include naturalness, outstanding opportunities for solitude, or outstanding opportunities for primitive and unconfined recreation. Areas evaluated for wilderness characteristics generally occur in undeveloped locations of sufficient size (typically greater than 5,000 contiguous acres) to be practical to manage for these characteristics.

The BLM considers the management of lands with wilderness characteristics during the land use planning process. The criteria used to identify these lands are essentially the same criteria used for determining wilderness characteristics for Wilderness Study Areas (WSAs). However, the authority set forth in Section 603(a) of FLPMA to complete the three-part wilderness review process (inventory, study, and report to Congress) expired on October 21, 1993; therefore, FLPMA does not apply to new WSA proposals. The BLM is still required under Section 201 of FLPMA to "...maintain on a continuing basis an inventory of all public lands and their resource and other values...." This includes reviewing lands to determine if they possess wilderness characteristics (see Appendix 4.6).

None of the lease parcels fall within inventory areas for LWC that have been allocated for the preservation of such characteristics through the land use planning process, see BLM manual 6320. If a parcel is not within a 5,000 acre LWC area, they are not reviewed further in accordance with BLM policy contained in Manual 6310. Those parcels which have been determined to have lands with wilderness characteristics are available for oil and gas development under their respective RMPs. A complete list of all parcels and the LWC review is located in Appendix 4.6**Error! Reference source not found.**.

Fish and Special Status Species (Plants and Vertebrate and Invertebrate Wildlife)
The BLM screened parcels for plants and wildlife species which may be impacted if a lease parcel is sold and subsequently developed. Stipulations were applied to parcels that contain habitat for these species according to the field office RMP (see Appendix 4.1). BLM also reviewed each proposed lease parcel for special status species and threatened and endangered species (see next three paragraphs for further detail).

Threatened and Endangered Species
In addition to the appropriate RMP stipulations, the BLM applies HQ-TES-1 to all parcels (see Appendix 4.1), 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. 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. At this time, none of the proposed parcels contain designated critical habitat for any of the threatened or endangered species in Wyoming. However, all parcels are located in an 'area of influence' as designated by the U.S, Fish and Wildlife Service. Any surface disturbing activities that may be proposed on any of these parcels (if sold) will be further evaluated for impacts to T&E species at the time of proposal.

Special Status Species
The Federal Land Policy and Management Act of 1976, Section 102(a)(8), requires environmental resources to be managed to provide food and habitat for fish and wildlife. The Sikes Act instructs agencies to develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish and game (16 U.S.C. § 670 et seq., section 670h). The DOI Manual 632 and BLM Manual 6840 requires conservation of special status species and the ecosystems upon which they depend on BLM-administered lands. BLM special status species are those listed or proposed for listing under the ESA, and species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. Instructional Memorandum No. WY IM-2010-027 provides the plant and wildlife species lists for BLM-administered public lands in Wyoming and these species have been evaluated for potential impacts from the proposed lease sale, as documented by stipulations found in Appendix 4.1 of this EA.

Parcels proposed for lease may contain habitat for sensitive species. Leasing of the proposed parcels would not, by itself, authorize any ground disturbance; however, the proposed lease sale has the potential to impact habitat through future oil and gas development. Although site-specific effects cannot be analyzed until an exploration or development application is received, attachments of stipulations and notices to leases will ensure the opportunity to make adjustments, such as design modifications, at the site-specific level when an Application for Permit to Drill is received, to address specific wildlife and plant resources.

Solid and Hazardous Wastes
None of the parcels are known to contain open sources of solid waste. Historical management of split estate lands is unknown but unlikely to contain reportable levels of hazardous waste; these

lands may have been impacted through normal everyday living including but not limited to spills of oils, paints, etc.

Several parcels have been previously leased and contain well bores that have been plugged and abandoned or are active injection wells. Any of these parcels may also contain previously approved for abandonment, oilfield materials in the subsurface; they may also contain materials that were disposed of without authorization.

Should a parcel be leased and developed, generation and temporary storage of waste materials would likely occur. Waste materials would be managed in accordance with 43 CFR Subparts 3171 and 3177, the Resource Conservation and Recovery Act (RCRA), applicable Wyoming Department of Environmental Quality (WDEQ) regulations, and Wyoming Oil and Gas Conservation Commission (WOGCC) rules. Fluid handling would be evaluated at the development stage and fluids associated with any subsequent drilling, completions and/or production would either be treated, evaporated, or transferred to a WDEQ-authorized commercial treatment, storage, or disposal facility; solids would be treated on site or transferred to a WDEQ-authorized facility. BMPs, Standard Operating Procedures (SOPs) and site-specific mitigation may be applied at the APD stage as COAs.

Grazing

Some of the parcels are located within livestock grazing allotments or private pastures. Leasing or production activities would not cause changes to grazing permit terms and conditions. Any activity that involves surface disturbance or direct resource impacts would have to be authorized as a lease operation through future NEPA analysis, on a case-by-case basis, at the APD stage. Impacts to livestock grazing may occur as a result of subsequent actions including exploration development, production, etc. Therefore, reclamation provisions/procedures including re-vegetation (utilizing appropriate seed mix based on the ecological site, elevation, and topography), road reclamation, range improvement project replacement/restoration (e.g., fences, troughs and cattle guards), and noxious weed control, would be identified in future NEPA/decision documents on a case-by-case basis (at the APD stage). In addition, if any range improvement projects could be impacted by wells or associated infrastructure, well pads could be moved up to 800 meters to avoid rangeland improvements or vegetation monitoring plots as per 43 CFR § 3101.12. BMPs, SOPs and site-specific mitigation may be applied at the APD stage as COAs.

Geology and Mineral Resources

Oil and gas exploration could lead to an increased understanding of the geologic setting, as subsurface data obtained through lease operations may become public record. This information promotes an understanding of mineral resources as well as geologic interpretation. While conflicts could arise between oil and gas operations and other mineral operations, these could generally be mitigated under 43 CFR § 3101.12 and under standard lease terms (see Appendix 4.1) where siting and design of facilities may be modified to protect other resources.

Depending on the success of oil and gas drilling, non-renewable natural gas and/or oil would be extracted and delivered to market. Production would result in the irretrievable loss of these resources. Oil and gas development can usually be managed to avoid or work within other mineral resources. Mining claims and Mineral Materials were reviewed and no parcels have

active gravel pits or commercial rock quarries within their boundaries and none are located within a Known Sodium Lease Area.

At the time of a site-specific proposal for development of the lease, Standard Lease Stipulation No. 3 protects the prior rights:

> *Operations will not be approved which, in the opinion of the authorized officer, would unreasonably interfere with the orderly development and/or production from a valid existing mineral lease issued prior to this one for the same lands.*

The oil and gas lessee would conduct its operations, so far as reasonably practicable, to avoid damage to any known deposit of any mineral for which any mining claim is located. The lessee would be required to not endanger or unreasonably or materially interfere with any mining claimant's operations, including any existing surface or underground improvements, workings, or facilities that may have been made for the purpose of mining operations. The provisions of the Multiple Mineral Development Act (30 U.S.C. § 521 et seq.) will apply to the leased lands as well as any applicable oil and gas EIS.

Designated Development Areas (DDAs)/Oil and Gas Management Areas
Designated Development Areas and Oil and Gas Management Areas are managed primarily for oil and gas exploration and development. None of the parcels are located within a Designated Development Area (DDA). The respective field office's Approved RMPs designate these areas for development incorporating almost all lands with moderate to high oil and gas potential.

Areas of Critical Environmental Concern (ACECs)
Areas of Critical Environmental Concern are identified during the RMP process. Parcels offered for sale are subject to the stipulations shown in Appendix 4.10, which includes protecting the relevant and important ACEC values. One parcel, parcel WY-2026-03-2186, is located in the Sand Hills/JO Ranch ACEC and is subject to stipulations to protect the unique vegetation complex within the Sand Hills ACEC. Should a parcel be sold, and subsequently developed, any further mitigation measures to reduce impacts would be applied at the site-specific project level.

Effects on the Quality of Life of the American people.
Oil and gas leasing is not expected to affect Quality of Life. As development is unknown at the time of leasing, it is not possible to predict changes to visitor experience, passive use of ecosystems, or public services. Leasing enables access to products by allowing potential development, however it is not possible to predict effects in a quantifiable way during the lease sale process.

CHAPTER 2. DESCRIPTION OF ALTERNATIVES

Leasing is generally a three-step process. First, the BLM issues a RMP, as required by FLPMA, assessing the resources in a given area and determines what lands to open for development (43 CFR § 1601.0-5(n)). Step two, after the RMP has been signed, is to identify parcels eligible and available for lease, subject to public protest, and hold a competitive lease sale at which parcels are auctioned off and sold to the highest bidder (see 43 CFR § 3120.13, 43 CFR § 3120.51, 43 CFR § 3120.53). For the third and final step, after leases are issued, the lessees submit proposals to develop the leases. Prior to any surface disturbance occurring, an Application for Permit to

Drill (APD) must be submitted and approved (43 CFR § 3162.3-1) by the field office. For each APD, the Bureau determines whether to approve the proposals and what conditions to impose (30 U.S.C. § 226(g) and 43 CFR § 3162.3-1).

BLM developed a parcel list of nominated lands from EOIs and the WSO created a shapefile of all parcels. The shapefile is used in the ArcGIS® mapping program (ArcMap®). Once the shapefile of parcels is created, the shapefile and parcels list are forwarded to BLM WSO specialists and field offices for further review and posted to ePlanning for scoping.

Using GIS, WSO screens all parcels to determine which parcels move forward for further review by the field offices. Each field office (FO) with potential parcels within its boundaries receives a list to review containing only those parcels.

The WSO specialists and the FOs use the same ArcMap® system to screen the proposed parcels. This screen is based on the RMP decisions in each FO. The FO reviews the potential parcels and recommends: which lands need to be removed from further consideration (e.g. lands unavailable for lease due to RMP decisions); which lands need to be deferred (potential conflicts that may have arisen); and leasing stipulations (based on RMP decisions). These recommendations are forwarded to the district offices.

The district office (DO) staff compiles all parcels within the district and verifies the recommendations from each FO within the district. Any discrepancies are discussed between the FO and DO staff to resolve those issues. The DO then sends the compiled list back to the WSO, specifically the fluid minerals staff.

The fluid minerals staff then compiles all three DO recommendations and potential parcels back into one list. The State Director (SD) and the District Managers (DMs) then coordinate and discuss the recommendations and concur on which potential parcels, or portions of parcels move forward for analysis and inclusion into the quarterly CLS EA.

The WSO fluid minerals staff prepares the EA and posts it on the ePlanning website for a 30-day public comment period. After the 30-day public comment period, the fluid minerals staff reviews and responds to the comments and makes changes to the EA, if necessary. Any major conflicts identified are discussed with the SD and Deputy State Director (DSD) for Lands and Minerals (and other staff if determined necessary by the SD) for a decision on whether to delete, defer or move the parcel forward.

The public comments and responses are then posted on the ePlanning website. The WSO publishes a Notice of Competitive Oil & Gas Lease Sale (Sale Notice), beginning a 30-day protest period. After the 30-day protest period, the fluid minerals staff reviews the protests and prepares responses. Once the protest responses are completed, the fluid minerals staff sends the EA, FONSI, Response to Public Comments, Response to Protests and Decision Record (DR) to other WSO staff for review and comment. These reviews are typically obtained from the Planning and Environmental Coordinator(s), Branch Chiefs, DSDs and finally the SD. The SD typically signs the FONSI and DR the day prior to the CLS. At any point in the review process (up until the day the sale is held), parcels or portions of parcels may be deleted or deferred.

2.1. Alternative 1 - No Action

Under Alternative 1, BLM Wyoming would not offer the 68 parcels nominated, containing approximately 93,670.02 acres. This would mean that the Expressions of Interest would be rejected, and the lease parcels would not be offered. Choosing the No Action alternative would not prevent future leasing in these areas consistent with land use planning decisions and subject to appropriate stipulations, identified in the respective land use plans.

2.2. Alternative 2 - Proposed Action

Under Alternative 2, portions of three (3) parcels (WY-2026-03-2181, 2187, and 7452) would be deleted because part of the parcels (1,273.57 acres) are within the Cow Butte/Wild Cow and Upper Muddy Creek Watershed/Grizzly Wildlife Habitat Management Areas and are unavailable to lease based on the Rawlins RMP. After this deletion, Alternative 2 would offer 68 parcels containing approximately 92,396.45 acres nominated through the Expression of Interest as indicated in Table 2.3- below.

2.3. Alternative 3 - Modified Proposed Action

Under Alternative 3, 53 parcels containing approximately 69,455.55 acres would be offered for lease during the First Quarter 2026 (2026-03) Competitive Lease Sale. Parcels were evaluated for RMP conformance, including but not limited to sage-grouse prioritization, and screened using the five leasing preference criteria listed in 43 CFR § 3120.32.

Thirteen (13) whole parcels (WY-2026-03-2185, 2189, 2191, 2193, 2194, 2243, 2246, 6885, 7447, 7450, 7451, 7453, and 7460) would be deferred based on Greater-sage grouse prioritization as discussed in the 2015 Sage Grouse ARMPA. Two (2) parcels (WY-2026-03-2181 and 7452) would be partially deleted because the parcels are within the Cow Butte/Wild Cow Wildlife Habitat Management Area (WHMA) which is closed to new oil and gas leasing in the Rawlins RMP, while the remainder of those parcels would be deferred for sage-grouse prioritization. Additionally, portions of one parcels (WY-2026-03-2187) would be deleted due to its location within the Upper Muddy Creek Watershed/Grizzly WHMA; those portions of the parcel are unavailable to lease based on the Rawlins RMP (Refer to Table 2.3- for a full list of parcel recommendations).

The BLM also reviewed all parcels in accordance with the expression of interest leasing preference (43 CFR § 3120.32) and found all parcels to have a high preference for leasing. The preference criteria are comprised of:

a) Proximity to existing oil and gas development, giving preference to lands upon which a prudent operator would seek to expand existing operations;
b) The presence of important fish and wildlife habitats or connectivity areas, giving preference to lands that would not impair the proper functioning of such habitats or corridors;
c) The presence of historic properties, sacred sites, or other high value cultural resources, giving preference to lands that do not contribute to the cultural significance of such resources;
d) The presence of recreation and other important uses or resources, giving preference to lands that do not contribute to the value of such uses or resources; and
e) Potential for development, giving preference to lands with high potential for development.

The parcels proposed for deferral are detailed in the tables below, Section 3.4, and in Appendix 4.3.

Table 2.3-1 Summary of parcels deferred, deleted, and those proposed to be made available for sale under Alternative 3

FIELD OFFICE	NOMINATED ACRES	PARCEL COUNT	WHOLE DEFERRAL (ACRES)	PARTIAL DEFERRAL (ACRES)	DELETE WHOLE (ACRES)	DELETE PART (ACRES)	OFFERED PARCELS (ACRES)
BFO	4	1,397.40	0 (0)	0 (0)	0 (0)	0 (0)	4 (1,397.4)
CFO	1	200.00	0 (0)	0 (0)	0 (0)	0 (0)	1 (200)
NFO	5	3,636.65	0 (0)	0 (0)	0 (0)	0 (0)	5 (3,636.65)
CYFO	0	0.00	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
LFO	0	0.00	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
WFO	0	0.00	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
KFO	0	0.00	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
PFO	0	0.00	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
RFO	45	64,454.75	13 (19,910.06)	0 (0)	3 (4,344.41)	0 (0)	29 (40,200.28)
RSFO	13	23,981.22	0 (0)	0 (0)	0 (0)	0 (0)	13 (23,981.22)
Total	68	93,670.02	13 (19,910.06)	0 (0)	3 (4,344.41)	0 (0)	52 (69,415.55)

In accordance with the expression of interest leasing preference (43 CFR § 3120.32), the BLM WY State and Field offices evaluated sale parcels as shown in Table 2.3-. No parcels have a low preference for leasing based on 43 CFR § 3120.32(b). Parcels in criteria (e) (RFD) were evaluated utilizing the best available information from the RMP RFDs, as well as a development potential map created by BLM specialists utilizing publicly available data through the Wyoming State Geological Survey and the Wyoming Oil and Gas Conservation Commission, existing federal oil and gas leases, federal units, participations areas, and well data from the Wyoming Oil and Gas Conservation Commission to screen for development potential.

Throughout the review period for the lease sale, BLM may also consider additional measures and deferrals to address the potential impacts of leasing, as well as new information that is presented during the NEPA process for the lease sale.

Table 2.3-2. Leasing Preference (43 CFR § 3120.32(a-e))

Office	**Parcel WY-2026-03-**	**a Proximity Criteria**	**b Habitat Criteria**	**c Cultural Resources Criteria**	**d Other Resources Criteria**	**e RFD Criteria**	**High Preference for Leasing**	**Low Preference for Leasing**
RSFO	1404	H	H	H	H	H	X	
RSFO	1407	H	H	H	H	H	X	
RSFO	1515	H	H	H	H	H	X	

Office	Parcel WY-2026-03-	a Proximity Criteria	b Habitat Criteria	c Cultural Resources Criteria	d Other Resources Criteria	e RFD Criteria	High Preference for Leasing	Low Preference for Leasing
RFO	1897	H	H	H	H	H	X	
BFO	2072	H	H	H	H	H	X	
RFO	2180	H	H	H	H	H	X	
RFO	2181	H	H	H	H	H	X	
RFO	2183	H	H	H	H	H	X	
RFO	2184	H	H	H	H	H	X	
RFO	2185	H	H	H	H	H	X	
RFO	2186	H	H	H	H	H	X	
RFO	2187	H	H	H	H	H	X	
RFO	2189	H	H	H	H	H	X	
NFO	2190	H	H	H	H	H	X	
RFO	2191	H	H	H	H	H	X	
BFO	2192	H	H	H	H	H	X	
RFO	2193	H	H	H	H	H	X	
RFO	2194	H	H	H	H	H	X	
BFO	2195	H	H	H	H	H	X	
CFO	2196	H	H	H	H	H	X	
BFO	2197	H	H	H	H	H	X	
NFO	2198	H	H	H	H	H	X	
NFO	2199	H	H	H	H	H	X	
NFO	2200	H	H	H	H	H	X	
NFO	2201	H	H	H	H	H	X	
RFO	2203	H	H	H	H	H	X	
RFO	2204	H	H	H	H	H	X	
RFO	2205	H	H	H	H	H	X	
RFO	2206	H	H	H	H	H	X	
RSFO	2207	H	H	H	H	H	X	
RFO	2210	H	H	H	H	H	X	
RSFO	2212	H	H	H	H	H	X	
RSFO	2213	H	H	H	H	H	X	
RFO	2214	H	H	H	H	H	X	
RFO	2218	H	H	H	H	H	X	
RSFO	2220	H	H	H	H	H	X	

Office	Parcel WY-2026-03-	a Proximity Criteria	b Habitat Criteria	c Cultural Resources Criteria	d Other Resources Criteria	e RFD Criteria	High Preference for Leasing	Low Preference for Leasing
RFO	2221	H	H	H	H	H	X	
RFO	2222	H	H	H	H	H	X	
RSFO	2223	H	H	H	H	H	X	
RFO	2226	H	H	H	H	H	X	
RFO	2227	H	H	H	H	H	X	
RSFO	2228	H	H	H	H	H	X	
RSFO	2230	H	H	H	H	H	X	
RSFO	2231	H	H	H	H	H	X	
RFO	2236	H	H	H	H	H	X	
RSFO	2238	H	H	H	H	H	X	
RSFO	2239	H	H	H	H	H	X	
RFO	2241	H	H	H	H	H	X	
RFO	2242	H	H	H	H	H	X	
RFO	2243	H	H	H	H	H	X	
RFO	2246	H	H	H	H	H	X	
RFO	6885	H	H	H	H	H	X	
RFO	7446	H	H	H	H	H	X	
RFO	7447	H	H	H	H	H	X	
RFO	7448	H	H	H	H	H	X	
RFO	7449	H	H	H	H	H	X	
RFO	7450	H	H	H	H	H	X	
RFO	7451	H	H	H	H	H	X	
RFO	7452	H	H	H	H	H	X	
RFO	7453	H	H	H	H	H	X	
RFO	7454	H	H	H	H	H	X	
RFO	7455	H	H	H	H	H	X	
RFO	7456	H	H	H	H	H	X	
RFO	7458	H	H	H	H	H	X	
RFO	7459	H	H	H	H	H	X	
RFO	7460	H	H	H	H	H	X	
RFO	7461	H	H	H	H	H	X	
RFO	7462	H	H	H	H	H	X	

2.4. Alternatives Considered but Eliminated from Detailed Analysis

Offer All Nominated Parcels as Originally Submitted Through the Expression-Of-Interest (EOI)
Offering all 68 nominated parcels as originally submitted through the EOI process was considered as an alternative to analyze all nominated lands. This alternative was not analyzed in detail because offering all parcels as originally submitted would not be in conformance with the RMP(s).

Offer All Nominated Parcels Subject to Standard Lease Terms and Conditions
Offering all nominated parcels with only the standard lease terms and conditions on the BLM's lease form was considered to reduce constraints to oil and gas development on public lands. Such an alternative is not in conformance with the approved RMPs where the applicable RMP prescribes stipulations in accordance with FLPMA's Section 102(a)(8) mandate to manage the public lands to protect resource values. Therefore, this alternative was not analyzed in detail.

Offer All Available Parcels Subject to No Surface Occupancy (NSO) Stipulations
An alternative was considered that would offer all parcels located in areas open to leasing with a NSO stipulation. This alternative was not carried forward to detailed analysis because it is not in conformance with the approved RMPs and would only prohibit surface occupancy for oil and gas development; other non-oil and gas occupancy may not be similarly constrained. This alternative would unnecessarily limit oil and gas occupancy in areas where the approved RMPs have determined that less restrictive stipulations would adequately mitigate the anticipated impacts under our mandate of multiple-use and sustained yield.

Defer All Sage-Grouse Habitat Parcels
An alternative was considered that would defer all Greater Sage-Grouse GHMA and PHMA parcels. Under this alternative one parcel (WY-2026-03-1897) would be offered during the competitive oil and gas lease sale. This alternative was not analyzed in detail because the 2015 Greater Sage-Grouse ARMPA allows for leasing in both GHMA and PHMA.

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

The sale of parcels and issuance of oil and gas leases is an administrative action. Nominated parcels are reviewed under the approved RMP, and stipulations are attached to mitigate any known environmental or resource conflicts that may occur on a proposed lease parcel. On-the-ground impacts would not occur until a lessee or their designated operator applies for and receives approval to undertake surface-disturbing lease actions.

The BLM cannot reasonably determine at the lease offering stage whether a nominated parcel will actually be leased, or if leased, whether the lease would be explored or developed or at what intensity development may occur.

The uncertainty that exists at the time the BLM offers a lease for sale includes factors that will affect potential impacts, such as: well density; geological conditions; development type (vertical, directional, horizontal); hydrocarbon characteristics; equipment to be used during construction, drilling, production, and abandonment operations; and potential regulatory changes over the life of the 10-year primary lease term.

If lands are offered, leased, and a proposal for site-specific lease operations is received by the BLM, additional NEPA compliance documentation and technical analysis would be prepared by the BLM. Aside from the applicable protection measures required under the lease stipulations (see Appendix 4.1), additional mitigation may be applied as COAs at that time to mitigate identified impacts.

As described in Section 1.3 above, this EA tiers to the applicable RMP FEISs. In the impacts analysis for the alternatives, below, this EA will only address those resources and impacts where the BLM has determined there are new circumstances or information, or where BLM believes it will be helpful to inform the public about actions that may occur on public lands. This approach comports with the BLM's NEPA Handbook H- 1790-1 (at page 28).

For additional descriptions of the potential effects for the alternatives considered below, please refer to the RMP FEISs referenced in Section 1.3.

3.1. Reasonably Foreseeable Future Actions (RFFA) Common to all Issues

Based on existing development in Wyoming, BLM has estimated that up to 354 wells could be installed on these parcels (lease sale RFD for Alternative 2 - Proposed Action). This lease sale RFD is used to provide context for potential impacts.

To determine the RFD for the proposed parcels listed in Alternative 2 utilizing the Emissions Calculation Tool, the BLM input the proposed number of acres (92,396.45) and the number of parcels in the proposed action (68). The tool multiplies the 5-year average of producing leases (54.18%) by the 5-year average of Federally producing wells per lease (0.0071). The BLM calculated the percentage of leases held by production (54.18%) by dividing the 5-year average of the acreage of producing leases by the 5-year average of total leased acreage. Surface Hole Location (SHL) well spacing (SHL/acre) is used to determine the average number of producing wells per lease and is determined by dividing the 5-year average of Federally producing wells by the 5-year average of the acreage of producing leases. The BLM oil and gas data used in this analysis is located at the following website: https://www.blm.gov/programs-energy-and-minerals-oil-and-gas-oil-and-gas-statistics. The Emissions Tool predicts an RFD of up to 354 wells as reasonably foreseeable for the lease acreage proposed for Alternative 2.

BLM used the same calculation methods and the proposed acres (69,455.55) for Alternative 3 (Modified Proposed Action of 53 parcels). Under Alternative 3, the emissions tool predicts an RFD of up to 267 wells as reasonably foreseeable for the acreage proposed for this sale. The RFD calculation is used to identify potential emissions, and BLM used the same RFD throughout the analysis.

Over the past five years (2020-2024), the majority (approximately 95%) of the wells drilled in Wyoming have been directional or horizontal from multi-well locations. Using the most recent surface disturbance analysis from the Reasonably Foreseeable Development Scenario (2020) prepared to support the revision of the Newcastle and Nebraska Resource Management Plan (RMP), in the planning area, surface disturbance from pads, roads, pipelines, and production facilities ranges from 7 to 19 acres for vertical well pads and 12 to 28 acres for horizontal well pads, depending on how many wells are on the pad (pages 146-147). Wyoming BLM is assuming 8 wells per horizontal well pad based on recent development in Wyoming, which would equate to 3.5 acres of total disturbance per horizontal well. Utilizing the high end of potential disturbance, 3.5 acres for horizontal wells and 19 acres for vertical wells, for the 354

wells that could potentially be developed (Alternative 2), approximately 1,239 acres would be disturbed if all wells are developed horizontally and 6,726 acres if all wells are developed vertically. Under Alternative 3, assuming 267 wells could be developed, total potential disturbance is approximately 934.5 acres for horizontal wells and 5,073 acres for vertical wells.

For the purpose of analysis, the BLM is assuming that 95% of wells developed from this lease sale will be drilled horizontally. Approximately 354 wells could be developed under Alternative 2, resulting in approximately 1,513.35 acres of disturbance. Similarly, approximately 267 wells could be developed under Alternative 3, resulting in approximately 1,141.43 acres of disturbance.

Table 3.1-1. Summary of Alternatives

Alternative	Parcels (acres)	Predicted # of wells (RFD)	Acres Disturbed (Assumes All Wells Developed Horizontally)	Acres Disturbed (Assumes All Wells Developed Vertically)	Acres Disturbed (Assumes 95% of Wells Developed Horizontally and 5% of Wells Developed Vertically)
Alternative 1 (No Action)	68 (93,670.02)	0	0	0	0
Alternative 2 (Proposed Action)	68 (92,396.45)	354	1,239	6,726	1,513.35
Alternative 3 (Modified Proposed Action)	53 (69,455.55)	267	934.5	5,073	1,141.43

3.2. Issue 1: Air Resources: How would future potential development of leases contribute to greenhouse gas (GHG) emissions at multiple scales?

3.2.1. Affected Environment

The Wyoming Bureau of Land Management (WSO) has prepared an air monitoring report to present existing air quality conditions for use in BLM-WY NEPA analysis. The BLM authorizes activities that can affect air resources by releasing pollutants into the atmosphere. The report presents current Wyoming air quality conditions and monitoring trends and existing emissions data for inclusion in NEPA analysis and represents the existing Affected Environment for air resources in Wyoming. Additionally, the report is used to promote education, awareness, and transparency of air resources on public lands. The 2023 Air Resource Monitoring Report is incorporated by reference as the foundation for this analysis.

Greenhouse Gas Emissions

The Earth's climate system is very complex as there are many factors that can influence atmospheric conditions at multiple scales. A discussion of past, current, and projected global

U.S. and state GHG emissions is described in Chapters 4 and 5 of the Annual GHG Report. The incremental contribution to cumulative global GHGs from a single proposed land management action cannot be accurately translated into 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.

Table 4.1-1 Global and U.S. Fossil Fuel GHG Emissions 2017 - 2022 (Mt CO2/yr) shows the total estimated GHG emissions from fossil fuels at the 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 CO_2e. State and national energy-related CO_2 emissions include emissions from fossil fuel use across all sectors (residential, commercial, industrial, transportation, and electricity generation) and are released at the location where the fossil fuels are consumed.

Additional information methodology and parameters for estimating emissions from BLM fossil fuel authorizations and cumulative GHG emissions is included in Chapter 5 and 6 of the Annual GHG Report.

The National Emissions Inventory (NEI) is a comprehensive and detailed estimate of air emissions of criteria pollutants, criteria precursors, and hazardous air pollutants. The NEI is released every three years based primarily upon data provided by State, Local, and Tribal air agencies for sources in their jurisdictions and supplemented by data developed by the U.S. EPA. The NEI includes emissions estimates for point, nonpoint, and mobile sources (EPA 2023).

GHG emissions information is available in the most recent NEI (2020) and includes emissions data for mobile sources, prescribed fires, and wildfires, while the FLIGHT tool includes emissions data for major industrial facilities. No reliable information for residential, commercial, agriculture, and fugitive emissions are available at county level scales. County level anthropogenic GHG emissions from the NEI are provided in Table 4.1-.Future development of the lease parcels under consideration could lead to emissions of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), the three most common 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 lease offering 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 projected potential GHG emissions from oil and gas development on the parcels. Projected emissions estimates are based on past actual oil and gas development analyses and any available information from existing development within the State.

Further discussion of BLM's oil and gas leasing actions and methodologies are included in the Annual GHG Report (2023 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends (BLM, 2024)). 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/

3.2.2. Environmental Effects

3.2.2.1. *Effects Alternative 1 - No Action Alternative*

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

Recent short-term energy outlook reports (STEO) published by the EIA (https://www.eia.gov/outlooks/steo/data) (EIA, 2025) predict that the world's oil and gas supply and consumption will increase over the next 18-24 months. The 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. Recent STEOs include the following projections for the next two years:

- U.S. liquid fuels consumption is projected to increase to 20.50 million barrels per day (b/d) in 2025 up from 20.31 million b/d in 2024 and decrease slightly in 2026 to 20.44 million b/d
- U.S. crude oil production is expected to average 13.4 million b/d in 2025 and rise to 13.5 million b/d in 2026.
- Global liquid fuels consumption is expected to grow from 103.7 million barrels per day in 2025 and increase to 104.6 million barrels per day in 2026.
- U.S. LNG exports are expected to increase from 15 billion cubic feet/day (Bcf/d) in 2025 and 16 Bcf/d in 2026.

U.S. Coal production is expected to total 506 million short tons (MMst) in 2025, relatively unchanged from 2024 production levels. The EIA 2025 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. Further discussion of past, present and projected global and state GHG emissions can be found in Chapter 5 of the Annual GHG Report.

At present, no Federal 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 are not useful for BLM decision making, particularly at the leasing stage, as it is unclear what portion of the budget applies to emissions occurring in the United States.

3.2.2.2. *Effects of Alternative 2 - Proposed Action*

Air Resources

Any potential effects to air quality from the sale of lease parcels would occur at such time that any issued leases are developed and not at the leasing stage itself. The Proposed Action does not authorize or guarantee the number of wells analyzed herein. If leased, drilling of wells on a lease would not be permitted until the BLM approves an APD. Any APD received would be subject to site-specific review. However, development assumptions have been made in this EA to better inform the decision maker and the public of potential impacts to air quality if the leases are developed.

There are four general phases of post-lease development that would generate air pollutant emissions: 1) well development (well site construction, well drilling, and well completion), 2) well production operations (extraction, separation, gathering), 3) mid-stream (refining, processing, storage, and transport/distribution), and 4) end-use (combustion or other uses) of the fuels produced. While well development and production operation emissions (phases 1 and 2) occur on-lease and the BLM has authority over these activities, mid-stream and end-use emissions (phases 3 and 4) typically occur off-lease where the BLM has limited authority.

During well development, there could be emissions from earth-moving equipment, vehicle traffic, drilling, and completion activities. NO_2, SO_2, and CO would be emitted from vehicle tailpipes. Fugitive dust concentrations would increase with additional vehicle traffic on unpaved roads and from wind erosion in areas of soil disturbance. Drill rig and fracturing engine operations would result mainly in NO_2 and CO emissions, with lesser amounts of SO_2. These temporary emissions would be short-term during the drilling and completion phases, which is expected to last between 30 to 60 days based on recent development in Wyoming.

During well production and operations there could be continuous emissions from separators, condensate storage tanks, flares or combustors, and tailpipe and fugitive dust emissions from operations traffic. During the operational phase of a well, NO_2, CO, VOC, and HAP emissions would result from the long-term use of storage tanks, pumps, separators, and other equipment. Additionally, dust (PM_{10} and $PM_{2.5}$) would be produced by wind erosion on well pads and roads, and by vehicles servicing the wellsite infrastructure.

Emissions were estimated using the BLM Lease Sale Emissions Tool based on the total acreage of the lease parcels and the 5-year average of the number of lease acres held-by-production[1] divided by the total acres leased.
Table 4.1-3 presents the estimated max year and average year emissions for the Proposed Action (354 wells). Actual development of individual lease parcels may result in higher or lower emissions for various reasons including differences with geologic formations, proximity to existing support infrastructure, differences in pace of development, different development methods and control technology used by a lessee, and other reasons. A lessee has 10 years to

[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. See also 30 USC 226(e)(2) and BLM Lease Terms (Expiration).

establish production on a lease, and if production is not attempted within the 10-year timeframe, the lease will be terminated with no development or emissions occurring.

Emissions of criteria air pollutants would also occur outside the impact analysis area from transport, processing, distribution, and end-use of produced oil and gas. Because there are potentially tens to hundreds of thousands of mid-stream and downstream emissions sources, the BLM is not able to quantify air quality and health impacts from these sources. Downstream combustion, whether in stationary facilities and motor vehicles/airplanes are regulated by the EPA, other Federal agencies, or delegated state agencies. This regulatory process is designed to avoid downstream impacts to regional and local air quality.

At the leasing stage, it is not possible to accurately estimate potential air quality impacts by modeling due to the variation in emission control technologies as well as construction, drilling, and production technologies applicable to oil versus gas production utilized by various operators. Should development on the parcels be proposed, prior to authorizing specific proposed projects on the subject leases, precise emission inventories would need to be developed and analyzed in a site-specific review. Near-field air quality modeling may also be required depending on the level of development proposed in order to address direct and cumulative impacts and demonstrate compliance with the NAAQS as well as impacts to AQRVs (i.e., deposition, visibility) if development is proposed near Class I areas (National Parks and Wilderness areas).

Greenhouse Gas (GHG) Emissions

While the potential sale of lease parcels 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 processes that would generate GHG emissions: 1) well development (well site construction, well drilling, and well completion), 2) well production operations (extraction, separation, gathering), 3) mid-stream (refining, processing, storage, and transport/distribution), and 4) end-use (combustion or other uses) of the fuels produced. While well development and production operation emissions occur on-lease and the BLM has authority over these activities, mid-stream and end-use emissions typically occur off-lease where the BLM has little to no authority.

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. In order to estimate reasonably foreseeable on-lease emissions at the leasing stage, the BLM uses estimated well numbers 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 will be combusted (such as for domestic heating or energy production). The BLM acknowledges that there may be additional sources of GHG emissions along the distribution, storage, and processing chains (commonly referred to as midstream operations) associated with production from the lease parcels. These sources may include emissions of methane (a more potent GHG than CO_2 in the

short term) from pipeline and equipment leaks, storage, and maintenance activities. These sources of emissions are highly speculative at the leasing stage, therefore, the BLM has chosen to assume that mid-stream emissions associated with lease parcels for this analysis will 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 processes previously.

- 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 operation emissions may result from storage tank breathing and flashing, truck loading, pump engines, heaters and dehydrators, pneumatic instruments or controls, flaring, fugitives, and vehicle exhaust.
- 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 Chapter 5 of the Annual GHG report. 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 5).

Table 4.1-4 lists the estimated well development and production operations and mid-stream and end-use GHG emissions in metric tonnes (t) for the subject parcels under Alternative 2 (the Proposed Action) over the average 30-year production life of the leases. In summary, potential GHG emissions from the Proposed Action could result in GHG emissions of 66.84 Megatonnes CO_2e over the life of the leases.

GHG emissions vary annually over the production life of a well due to declining production rates over time. Table 4.1-4 shows the estimated GHG emissions profile over the production life of a typical lease under Alternative 2 including well development, well production operations, mid-stream, end-use, and gross (total of well development, well production, mid-stream, and end-use) emissions.

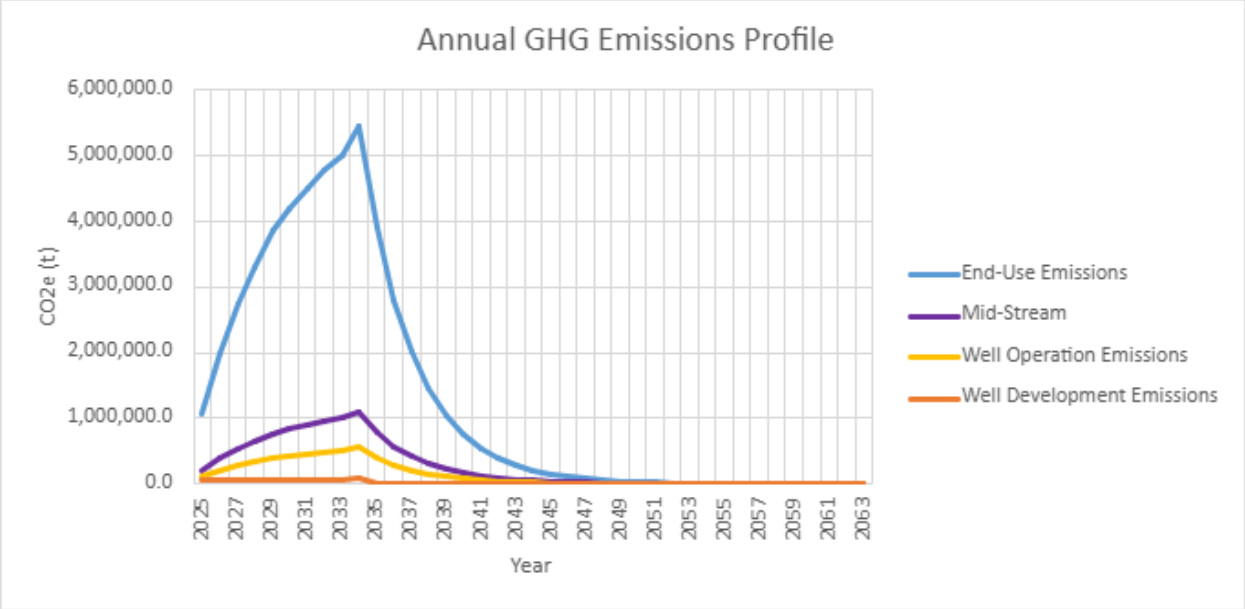


Figure 3.2-1 Alternative 2 Estimated Annual GHG Emissions Profile Over the Life of a Lease
Source: BLM Lease Sale Emissions Tool

To put the estimated GHG emissions for Alternative 2 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 and to emissions at the state and national level. The EPA GHG equivalency calculator can be used (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator) to express the potential average year GHG emissions on a scale relatable to everyday life. For instance, the projected average annual GHG emissions from potential development of the subject leases are equivalent to 399,481 gasoline-fueled passenger vehicles driven for one year, or the emissions from 357,185 homes' electricity use for one year, or offset by the carbon sequestration of 1,713,776 acres of forest land Table 4.1-5.

3.2.2.3. *Effects of Alternative 3 – Modified Proposed Alternative*

Air Resources

Emissions were estimated using the BLM Lease Sale Emissions Tool based on the total acreage of the lease parcels and the 5-year average of the number of lease acres held-by-production divided by the total acres leased. Table 4.1-6 presents the estimated max year and average year emissions for the Modified Proposed Action (267 wells). With fewer wells predicted under this Alternative, emissions would necessarily be less than the Proposed Action.

Greenhouse Gas (GHG) Emissions

Table 4.1-7 lists the estimated well development and production operations and mid-stream and end-use GHG emissions in metric tonnes (t) for the subject parcels under Alternative 3 (Modified Proposed Action) over the average 30-year production life of the leases. In summary, potential GHG emissions from the Modified Proposed Action could result in GHG emissions of 50.41 Megatonnes CO_2e over the life of the leases.

GHG emissions vary annually over the production life of a well due to declining production rates over time. Figure 3.2-2 shows the estimated GHG emissions profile over the production life of a typical lease under Alternative 3 including well development, well production operations, mid-stream, end-use, and gross (total of well development, well production, mid-stream, and end-use) emissions.

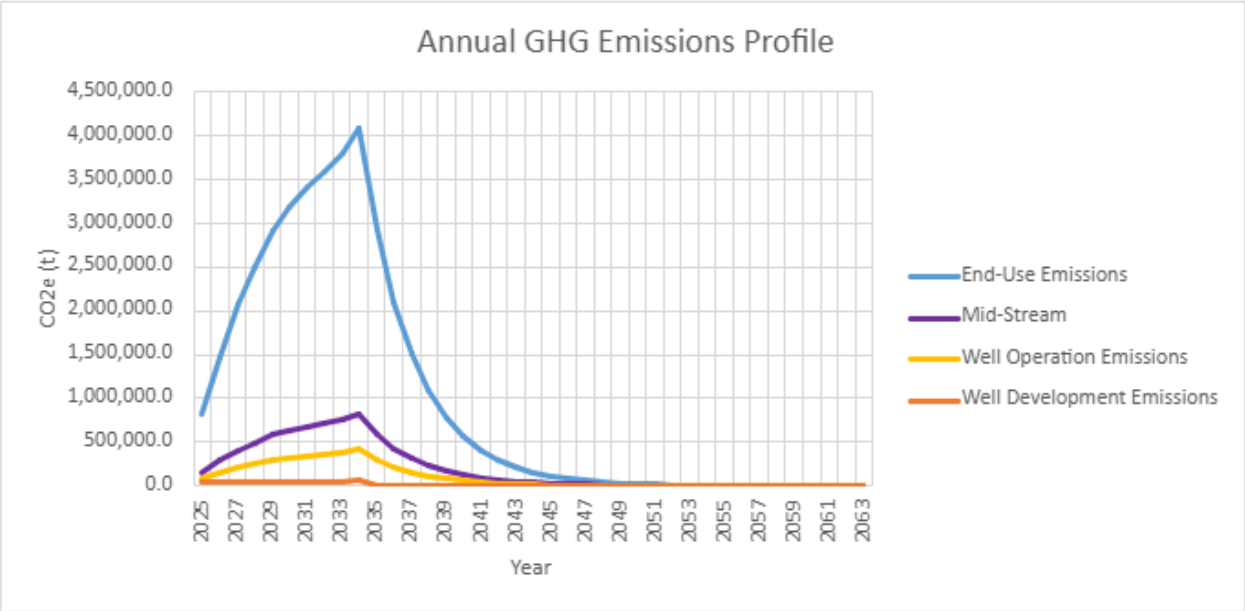


Figure 3.2-2 Alternative 3 Estimated Annual GHG Emissions Profile Over the Life of a Lease
Source: BLM Lease Sale Emissions Tool

Utilizing the EPA GHG equivalency calculator, the projected average annual GHG emissions from potential development of the subject leases are equivalent to 301,304 gasoline-fueled passenger vehicles driven for one year, or the emissions from 269,403 homes' electricity use for one year or offset by the carbon sequestration of 1,292,539 acres of forest land. Table 4.1-8 compares the estimated annual lease sale emissions to existing Federal fossil fuel (oil, gas, and coal) emissions, State, and U.S. total GHG emissions.

3.2.2.4. *Summary of Effects*

Greenhouse Gas Emissions

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

The methodologies used in Annual GHG Report provide estimates of foreseeable short-term and projected long-term GHG emissions from activities across the BLM's oil and gas program. The

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

Table 4.1-9 presents the summation of the 30-year life-of-project emissions estimates for both the short and long-term as previously described for each state where federal mineral actions have been authorized. The differences between the short- and long-term emissions estimates can be thought of as an approximation of additional leasing that could occur on federal lands and does not take into consideration additional policies, technological advancements in production or end-use efficiency standards.

A detailed explanation of the short-term and long-term emissions estimate methodologies are provided in sections 5.6 and 5.7 of the Annual GHG Report.

Air Resources

Past and present actions that have affected and would likely continue to affect air quality in the analysis areas include surface disturbance resulting from ongoing oil and gas development and associated infrastructure, mining, ranching and livestock grazing, range improvements, recreation (including OHV use), authorization of ROWs for utilities and other uses, and road development. Past and present actions that have affected and would likely continue to affect air quality are too numerous to list but would include the development or conversion of power plants; the development of energy sources such as oil, gas, and coal, solar and wind; and the development of various industries that emit pollutants. These types of actions and activities can reduce air quality through emissions of criteria pollutants (including fugitive dust), VOCs, and HAPs, as well as contribute to deposition impacts and to a reduction in visibility.

Emission Control Measures Considered in the Analysis

Emission controls (e.g., vapor recovery devices, no-bleed pneumatics, leak detection and repair, etc.) can substantially limit the amount of GHGs emitted to the atmosphere while carbon capture and sequestration can remove GHGs from the atmosphere.

The EPA is the Federal agency charged with regulation of air pollutants and establishing standards for protection of human health and the environment. The EPA has issued regulations that will reduce GHG emissions from any development related to the proposed leasing action. These regulations include the New Source Performance Standard for Crude Oil and Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced After September

18, 2015 and On or Before December 6, 2022 (40 C.F.R. Part 60, Subpart OOOOa), Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After December 6, 2022 (40 C.F.R. Part 60, Subpart OOOOb) and Waste Emissions Charge for Petroleum and Natural Gas Systems (40 CFR 99). These regulations impose emission limits, equipment design standards, and monitoring requirements on oil and gas facilities and a waste emissions charge on methane emissions that exceed 25,000 metric tonnes of CO2e for applicable petroleum and natural gas facilities currently required to report under the Greenhouse Gas Reporting Rule. In December of 2023, the EPA released a separate rule under the Clean Air Act (CAA) to reduce methane and other harmful air pollutants from new and existing oil and gas operations nationwide, which includes the Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced after December 6, 2022, 40 C.F.R. § 60, Subpart OOOOb; and Emissions Guidelines for Greenhouse Gas Emissions from Existing Crude Oil and Natural Gas Facilities, Subpart OOOOc. These regulations impose emission limits, equipment design standards, and monitoring requirements on oil and gas facilities and a waste emissions charge on CH4 emissions that exceed 25,000 metric tonnes of CO2e for applicable petroleum and natural gas facilities currently required to report under the GHG Reporting Rule. 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 GHG Report.

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

3.3. Issue 2: 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?

3.3.1. Affected Environment

Surface water hydrology within the area is typically influenced by geology, soil characteristics, precipitation, and vegetation. Anthropogenic factors that currently affect surface water include livestock grazing management, private, commercial, and industrial development, recreational use, drought, and vegetation control treatments. Based on best available data, the vast majority of

the nominated parcels are within the following HUC8 watersheds: Lighting, Great Divide Closed Basin, Muddy Creek, Little Snake, Vermillion, Horse, Crazy Woman, Bitter, Lance, Upper Little Missouri, Middle Powder and Antelope.

Groundwater hydrology within the area of the parcels is influenced by geology and recharge rates. Groundwater quality and quantity can be influenced by precipitation, water supply wells and various disposal activities. Groundwater quality across the applicable field offices varies with depth from potable waters with low total dissolved solids (TDS) to highly saline, non-potable sources. Most of the groundwater in Wyoming is used for industrial, domestic and livestock/irrigation purposes. The information contained in Appendix 4.6 Lands with Wilderness Characteristics Tables

Table 4.6-1 Wilderness Review Checklist for Oil and Gas Lease Parcels for Sale Year 2026, Sale Month 03

Parcel No. WY-2026-03-	**More than 5000 ac of roadless land (yes/no)**	**Imprint of man's work substantially unnoticeable (yes/no)**	**Outstanding opportunity for solitude or primitive recreation (yes/no)**	**Contains natural features of scientific, educational, scenic, or historical value (yes/no)**	**In Citizens Proposed Wilderness Area (yes/no). If yes but dropped during RMP process, state why.**	**Field Office Notes or Explanations**
1897	No	No	No	No	No	
2180	Yes	No	No	No	No	
2181	Yes	No	No	No	No	
2183	No	No	No	No	No	
2184	No	No	No	No	No	Checkerboard region
2185	No	No	No	No	No	Checkerboard Parcel
2186	Yes	No	No	No	No	
2187	No	No	No	No	No	Checkerboard Parcel
2189	No	No	No	No	No	Outlier Survey's- UNIT X 49 & 59
2191	No	No	No	No	No	Checkerboard region, adjacent to I-80
2193	No	No	No	No	No	Checkerboard region, adjacent to I-80
2194	No	No	No	No	No	Checkerboard region
2203	No	No	No	No	No	Checkerboard Parcel

Parcel No. WY-2026-03-	More than 5000 ac of roadless land (yes/no)	Imprint of man's work substantially unnoticeable (yes/no)	Outstanding opportunity for solitude or primitive recreation (yes/no)	Contains natural features of scientific, educational, scenic, or historical value (yes/no)	In Citizens Proposed Wilderness Area (yes/no). If yes but dropped during RMP process, state why.	Field Office Notes or Explanations
2204	No	No	No	No	No	Roadless area is only 100 acres short of sufficient size
2205	No	No	No	No	No	Checkerboard Parcel
2206	No	No	No	No	No	Checkerboard Parcel
2207	No	No	No	No	No	Checkerboard region
2210	No	No	No	No	No	Roadless area is only 100 acres short of sufficient size
2213	No	No	No	No	No	Checkerboard region
2214	No	No	No	No	No	
2218	No	No	No	No	No	
2220	No	No	No	No	No	Checkerboard region
2221	No	No	No	No	No	
2222	No	No	No	No	No	
2223	No	No	No	No	No	Checkerboard region
2226	No	No	No	No	No	Checkerboard Parcel
2227	No	No	No	No	No	
2230	No	No	No	No	No	Checkerboard region
2236	No	No	No	No	No	Checkerboard Parcel
2238	No	No	No	No	No	Checkerboard region
2241	Yes	No	No	No	No	
2242	No	No	No	No	No	
2243	No	No	No	No	No	Checkerboard Parcel
2246	No	No	No	No	No	Checkerboard Parcel

Parcel No. WY-2026-03-	More than 5000 ac of roadless land (yes/no)	Imprint of man's work substantially unnoticeable (yes/no)	Outstanding opportunity for solitude or primitive recreation (yes/no)	Contains natural features of scientific, educational, scenic, or historical value (yes/no)	In Citizens Proposed Wilderness Area (yes/no). If yes but dropped during RMP process, state why.	Field Office Notes or Explanations
6885	No	No	No	No	No	Checkerboard region
7446	Yes	No	No	No	No	
7447	Yes	No	No	No	No	
7448	Yes	No	No	No	No	
7449	Yes	No	No	No	No	
7450	Yes	No	No	No	No	
7451	Yes	No	No	No	No	
7452	Yes	No	No	No	No	
7453	No	No	No	No	No	Checkerboard region
7454	No	No	No	No	No	Checkerboard Section
7455	No	No	No	No	No	
7456	No	No	No	No	No	
7458	No	No	No	No	No	
7459	No	No	No	No	No	Checkerboard Parcel
7460	No	No	No	No	No	Checkerboard Parcel
7461	No	No	No	No	No	Checkerboard Section
7462	Yes	No	No	No	No	19 flowing wells in the area of inventory in 2012
1404	No	No	No	No	No	Checkerboard
1407	No	No	No	No	No	Checkerboard
1515	No	No	No	No	No	
2207	No	No	No	No	No	Checkerboard
2212	No	No	No	No	No	Checkerboard
2213	No	No	No	No	No	Checkerboard
2220	No	No	No	No	No	Checkerboard
2223	No	No	No	No	No	Checkerboard
2228	No	No	No	No	No	Checkerboard
2230	No	No	No	No	No	Checkerboard

Parcel No. WY-2026-03-	More than 5000 ac of roadless land (yes/no)	Imprint of man's work substantially unnoticeable (yes/no)	Outstanding opportunity for solitude or primitive recreation (yes/no)	Contains natural features of scientific, educational, scenic, or historical value (yes/no)	In Citizens Proposed Wilderness Area (yes/no). If yes but dropped during RMP process, state why.	Field Office Notes or Explanations
2231	No	No	No	No	No	Checkerboard
2238	No	No	No	No	No	Checkerboard
2239	No	No	No	No	No	Checkerboard
2072	No	No	No	No	No	No BLM surface
2192	No	No	No	No	No	No BLM surface
2195	No	No	No	No	No	No BLM surface
2197	No	No	No	No	No	No BLM surface
2196	No	No	No	No	No	
2190	No	No	No	No	No	No BLM surface
2198	No	No	No	No	No	No BLM surface
2199	No	No	No	No	No	
2200	No	No	No	No	No	No BLM surface
2201	No	No	No	No	No	

Hydraulic Fracturing White Paper (see section entitled Operational Issues/Water Availability and Consumption Estimates) is incorporated by reference.

The Wyoming State Geological Survey identifies groundwater aquifers and publishes public data on Wyoming aquifer characteristics. Based on this data the parcels nominated are within the Powder River, Green River and Wind River Groundwater Basins in the following aquifers: Fort Union, Green River, Wind River and the Wasatch. The rock type identified in these aquifers include alluvium, claystone, colluvium, dune sand, fine-grained mixed clastic, loess, mixed clastic/carbonate, mudstone, sandstone, shale, and siltstone. Usable water and geological formations vary throughout Wyoming making it difficult to provide specific data for each individual parcel analyzed within this EA. Usable water zones are those waters containing up to 10,000 mg/L of total dissolved solids (TDS) (43 CFR 3172.5). The EPA definition of underground sources of drinking water (40 CFR 144.3) is an aquifer or its portion which supplies any public water system or contains a sufficient quantity of ground water to supply a public water system, and currently supplies drinking water for human consumption, or contains fewer

than 10,000 mg/l TDS and is not an exempted aquifer. Appendix 4.2 discusses general characteristics of the usable water zones and aquifer characteristics for the oil and gas basins where parcels have been nominated.

In addition to the above surface hydrology and aquifer information, BLM also reviewed each parcel for Active Water Wells identified by the Wyoming State Geological Survey (https://main.wsgs.wyo.gov/gis/gis-groundwater) as well as BLM GIS layers for Named Creeks and Major Lakes and Rivers. Active water well permits were reviewed within the parcel boundary and within 2 miles of the parcel boundary which is the average reach of a horizontal wellbore. Specific water resource information for each of the parcels is shown in Appendix 4.8.

Private surface overlying federal minerals (i.e., split-estate lands) have the potential to contain private residences and associated facilities such as domestic or stock water supply wells. Lands used as rangeland can also have stock water supply wells.

3.3.2. Environmental Effects

3.3.2.1. *Effects of Alternative 1 - No Action Alternative*

Under the No Action Alternative, the Proposed Action or alternatives would not be authorized and BLM Wyoming would not offer any of the 68 parcels nominated. Therefore, the 68 parcels would not be developed as a result of this action and would not impact water resources. Ongoing oil and gas development, ranching, recreation, and other activities on BLM-administered lands would continue.

3.3.2.2. *Effects of Alternative 2 - Proposed Alternative*

Surface Water Quality and Quantity

The act of offering, selling, and issuing federal oil and gas leases does not produce impacts to watersheds. Indirect impacts from future development of a lease may result in long- and short-term alterations to the hydrologic regime depending upon the intensity and context of a specific proposal. Flows of perennial streams, ephemeral, intermittent rivers and streams could be directly affected in the short term by an increase in impervious surfaces resulting from the construction of the well pad and road. An increase in impervious surfaces provides for reduced infiltration which can then cause overland flow to move more quickly causing peak flow to potentially occur earlier, have a higher flow velocity and/or a larger volume then the channels are equipped for. Increased velocity and volume of peak flow can cause bank erosion, channel widening, downward incision, and disconnection from the floodplain. The potential hydrologic effect to low flow is reduced surface storage and groundwater recharge, which can then result in reduced base flow to perennial rivers and/or streams and potentially causing intermittent channels to become ephemeral. The direct impact would be that hydrologic processes may be altered where the perennial, ephemeral, and intermittent river and stream system responds by changing physical parameters, such as channel configuration. These changes may in turn impact water quality and ultimately the aquatic ecosystem through eutrophication, changes in water temperature, and/or a change in the food structure.

Minor long-term impacts to the watershed and hydrology could continue for the life of surface disturbance from water discharge from roads, road ditches, and well pads, but would decrease once all well pads and road surfacing material has been removed and reclamation of well pads, access roads, pipelines, and powerlines have taken place. Interim reclamation of the portion of the well pad not needed for production operation, re-vegetating the portion of the pad that is not needed for production operations, as well as re-vegetating road ditches and utility corridors would reduce this long-term impact. Short-term impacts to the watershed and hydrology from access roads that are not surfaced with impervious materials would occur and would likely decrease in time due to reclamation efforts.

None of the proposed parcels, based on best available data, contain riparian or wetlands habitat, or perennial water sources. The parcels do contain intermittent and ephemeral stream channels. Several of the parcels do contain water wells that are known to provide source water for stock operations or are classified as miscellaneous; miscellaneous wells typically supply groundwater for resource extraction purposes. These water wells, if they are improperly cased and cemented could be at risk from contamination from point or non-point releases should future operations result in fluid releases which migrate into the ground water table. These waters could potentially be impacted if there was a large and uncontrolled release of fluids during the drilling, completion or production process. Operators are required to address all waste management operations in their APD. These APDs would be reviewed to ensure that there is also adequate emergency response procedures in place.

Groundwater Quality and Quantity

Groundwater, in general, could be affected by multiple factors, including industrial, domestic, or agricultural activities through withdrawal, injection (including chemical injection), or mixing of materials from different geologic layers or the surface. Withdrawal of groundwater could affect local groundwater flow patterns and create changes in the quality or quantity of the remaining groundwater. Based on an evaluation of statewide groundwater availability, and the total projected number of wells to be drilled/completed on BLM administered lands, adequate water supplies are available to support development of the parcels under consideration in this EA. Exploration, development, and production of traditional oil and gas resources typically do not significantly deplete ground water on a regional basis but may have a limited, short-duration, near-well bore drawdown around the water supply well depending upon length and intensity of pumping activity. Oil and gas resources are often developed from geological reservoirs that do not contain significant amounts of freshwater with the exception of some CBM developed formations; however, the development and production of oil and gas can affect adjacent or nearby aquifers in the short term.

Loss of a permitted source of groundwater supply due to drawdown would be considered a significant impact if it were to occur. The potential for long-term dewatering would be assessed at the development stage should a parcel be offered and a lease issued and subsequent development proposed. The drilling of horizontal wells, versus directional and vertical wells may initially appear to require a greater volume of water for drilling/completion purposes. However, a horizontal well develops a much larger area of the reservoir than a directional and/or vertical well and results in a lesser volume of fluids being required. Water depletions connected hydrologically potentially affecting the Colorado or Platte River drainages may affect T&E

aquatic species or their designated critical habitats and would therefore require consultation with USFWS. Applicable point-source discharges would require permits under the National Pollution Discharge Elimination System (NPDES) and approval by the BLM prior to disposal of water produced from federal oil and gas leases; potential impacts would be mitigated at that time.

Several techniques may be used in exploration and development operations to increase or enhance the flow of oil and gas. They include hydraulic fracturing and acid introduction to dissolve the formation matrix and improve permeability, enhancing the flow of hydrocarbons

Information contained in Appendix 4.6, Hydraulic Fracturing White Paper, Section III, Potential Impacts to Usable Water zones, is incorporated by reference. The information being incorporated by reference is generally summarized below. Impacts to the quality of groundwater, should they occur, would likely be limited to a near well bore location due to inferred groundwater flow conditions in the area of the parcels and based on studies completed in the Pinedale Anticline. Impacts to near well groundwater could occur from poor casing and/or cementing practices and the use of potentially hazardous materials within those formations containing freshwater and/or usable water zones.

Potential impacts result from the creation of artificial pathways between oil and gas reservoirs and adjacent aquifers. Modification of ground water flow paths may cause fresh groundwater to contact oil or gas. In addition, improper disposal of waste waters (brine, storm runoff), drilling/completion fluids, and other wastes can impact the quality of underlying ground water (U.S EPA 1987).

A high risk of fluid migration exists along the vertical pathways created by inadequately constructed wells and unplugged inactive wells. Brine or hydrocarbons can migrate to overlying or underlying aquifers in such wells. Since the 1930s, most States have required that multiple barriers be included in well construction and abandonment to prevent migration of injected water, formation fluids, and produced fluids. These well construction barriers include (1) setting surface casing below all known aquifers and cementing the casing to the surface, and (2) extending the casing from the surface to the production or injection interval and cementing the interval. Barriers that can be used to prevent fluid migration in abandoned wells include cement or mechanical plugs. They should be installed (1) at points where the casing has been cut or perforated, (2) at the base of the lowermost aquifer, (3) across the surface casing shoe, and (4) at the surface. Individual states, including Wyoming, and the BLM have casing programs for oil and gas wells to limit cross contamination of aquifers. Any proposed drilling/completion activities would have to comply with 43 CFR Part 3172, 43 CFR Part 3160 regulations, and not result in a violation of a Federal and/or State law. If these conditions were not met, the proposal would be denied.

Information was previously submitted by the public raising concerns with wells in the Powder River Basin that have sections of the well bore that are cased but not cemented ("Tisherman Study"). As background, the Tisherman study states: "The sale of these parcels for further oil and gas development could impact groundwater resources in Wyoming. The BLM Onshore Oil and Gas Order No. 2 states, 'The proposed casing and cementing programs shall be conducted as approved to protect and/or isolate all usable water zones…Determination of casing setting depth shall be based on all relevant factors, including: presence/absence of hydrocarbons; fracture gradients; usable water zones…All indications of usable water shall be reported' (U.S. Bureau of Land Management, 1988). Usable water, according to the BLM Onshore Order No. 2 is

'generally those waters containing up to 10,000 ppm (mg/L) of total dissolved solids (TDS).' It is assumed then that for wells constructed on these proposed parcels: 1) the depth of usable water needs to be known and 2) the constructed wells need to have cemented casing at all depths of usable water."

The stated goal of this study is: 1) identify zones of usable water (TDS < 10,000 mg/L) around the proposed parcels and 2) determine if current federal wells are actively protecting usable water in the same areas.

The study utilized information from the USGS to identify principal aquifers within 3000' of ground surface to identify "usable water" aquifers. This information was then compared with information from well completion reports to the top of cement and bottom of surface casing for active federal well construction logs to assess and determine if the federal wells in their study area are protecting usable water zones near proposed parcel areas in the WY June 2022 lease sale environmental assessment. For each well, the bottom of the surface casing and top of cement was extracted from the well completion report, and the uncemented interval was calculated by taking the difference of these two depths.

The study alleges that "[F]or any well, if a gap exists between the surface casing and top of cement in a usable water zone, the well is endangering groundwater resources. Moreover, if existing wells have been approved by BLM without protecting all usable water zones as required by Onshore Order No. 2, it appears likely that oil and gas wells also will be approved in the future on the proposed lease parcels without requiring them to be constructed to protect groundwater resources."

The study looked specifically at 62 wells in the Powder River Basin. The report concludes that:

- Among these 62 identified wells, 36 have a gap between the bottom of surface casing and the top of cement (Figure 7). The length of these gaps' ranges from 275 to 7,714 ft with an average gap length of 2,653 ft. The average depth of surface casing in well with gaps is 2,196 ft bls (minimum 444 ft and maximum 3,550 ft). The average depth of top of cement in well with gaps is 4,850 ft bls (minimum 2,060 ft and maximum 9,970 ft).

- These gaps cross usable water zones. Seventeen of the wells have an uncemented gap occurring at less than 3,000 feet below surface (Table 5). This gap is located within the Lower Tertiary principal aquifer, which primarily contains usable water (TDS <10,000 mg/L) (Figures 5 and 7). Therefore, these seventeen wells have a gap in cement and surface casing that is threatening usable water and thus may not be in compliance with Onshore Oil and Gas Order No. 2.

- Nineteen of the wells have an uncemented gap occurring more than 3,000 ft bls (Figure 7). These gaps cross the lower Tertiary and upper Cretaceous aquifers. The lower Tertiary aquifer system may be as thick as 7,180 feet in the Powder River Basin so all but 4 of the wells with gaps could be threatening the usable water in that aquifer.

- Below the lower Tertiary aquifer system is the upper Cretaceous aquifer, which contains the Lance and Fox Hills formations. While this aquifer system is more than 3,000 ft bls, it also contains usable water. Previous studies found that mean TDS levels estimated from oil and gas wells and produced water records found that water from 3,000-7,000 ft bls in

the Powder River basin are all below <10,000 mg/L (Table 5) (Taboga et al., 2018). In wells installed between 1,000-6,000 ft bls, 95% had TDS levels <10,000 mg/L, while 83% of wells installed 6,000-7,000 ft bls had TDS levels <10,000 mg/L (Taboga et al., 2018). Thus, the nineteen wells with uncemented gaps occurring more than 3,000 ft bls are likely also in usable water aquifers.

Relevant Federal regulations pertaining to protection of freshwater and usable water zones include:

- 43 CFR 3162.5-2(d) requires: The operator shall isolate freshwater-bearing and other usable water containing 5,000 ppm or less of dissolved solids and other mineral-bearing formations and protect them from contamination.

- Onshore Order #2 was codified at 43 CFR 3170 and all subparts. 43 CFR 3172.5 defines usable water as: generally those waters containing up to 10,000 parts per million (ppm) of total dissolved solids.

- 43 CFR 3172.7(a) requires that: The proposed casing and cementing programs shall be conducted as approved to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use.

- 43 CFR 3172.7(b)(1) requires that all casing, except the conductor casing, shall be new or reconditioned and tested casing and (b)(8) requires that all casing strings are tested to a sufficient pressure after they are set and cemented.

- 43 CFR 3172.7(b)(3) requires all surface casing be cemented back to surface either during the primary cement job or by remedial cementing.

- 43 CFR 3172.7(b)(6) requires all surface casing to have centralizers on the bottom 3 joints of the casing (a minimum of 1 centralizer per joint, starting with the shoe joint).

- 43 CFR 3172.7(b)(7) requires top cement plugs to be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a suitable preflush fluid, inner string cement method, etc., shall be utilized to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.

While the regulations at 43 CFR 3172.7(a) require usable water zones to be protected and/or isolated, this provision works in concert with the requirement to isolate other identified resources or formation conditions. Together, casing and cementing are fundamental to ensuring the safe, efficient, and environmentally responsible extraction of subsurface resources, and they ensure the well's integrity throughout its lifespan. Casing and cement serve several important purposes:

1. Structural Support: Casing provides structural integrity to the well, preventing the wellbore from collapsing under pressure or from surrounding rock formations. Cement

bonds the casing to the surrounding formations, enhancing the structural stability of the well and provides additional structural support.
2. Anchoring: It anchors and supports the casing strings and provides a secure attachment point for blowout prevention equipment (BOPE), which is crucial for managing and maintaining well control.
3. Isolation: Creates a seal that prevent fluid migration between different geological zones and prevents the mixing of fluids between these zones. This is crucial for protecting aquifers from contamination and for helping to manage pressure and control the flow of fluids within the well.
4. Protection: Protects the wellbore from external pressures and temperatures and provides for casing corrosion protection.
5. Well Integrity: It ensures the overall integrity of the well throughout its lifespan, contributing to safe and efficient extraction operations.

Although the Tisherman study claims that uncemented sections of a wellbore are not protective of usable water zones in violation of Onshore Order #2 (43 CFR 3172), uncemented sections are approved at the APD stage only when cementing is deemed unnecessary for preventing fluid flow and mixing between zones. This determination is made during the geological and engineering review, which would have to conclude that cement is not required to inhibit fluid movement between these zones and the deeper production zone containing hydrocarbons, saline water, or helium. Even if a certain interval contains usable water, there may be no active fluid flow in that section, or the usable water interval might not be widespread throughout the formation. In such cases, cementing for isolation purposes is generally unnecessary. See Flow-Zone-Isolation, API Standard 65- Part 2 (2010) at page 21. The surface casing depth is chosen to find a competent formation with a fracture gradient in excess of known pore pressures in deeper horizons. This allows the operator to increase mud weight to safely continue drilling to the next casing point. Once the secondary casing point is reached, another casing string will be run into the hole. Where casing and cementing plans include a proposal to leave a section cased but not cemented, the BLM considers the following during geologic review: formation fluids (including water), confining layers, minerals, pressures, and temperatures. In many cases, it is not necessary to cement the secondary casing back to the surface in order to provide the required level of isolation. See API recommended Practice 100-1: 5.4.2. As part of the geologic evaluation, formation properties such as porosity, permeability, water salinity, fracture gradient, and pore pressure are considered as part of the review process. The goal is to ensure that the drilling plan has appropriately placed the casing points in competent formations, and determine which zones are acceptable to allow to remain open behind the casing string. The uncemented casing string allows the operator to reenter the wellbore and reclaim large portions of pipe when the well is eventually plugged.

BLM further protects usable water zones by ensuring that compatible drilling fluids are used (i.e. not allowing the use of oil-based mud in zones that are identified as having freshwater or usable water zones).

Once a lease is issued and the lessee submits an APD, the proposed well-bore and site-specific casing, cementing and mud program will be reviewed, and the proposal's adequacy in protecting and/or isolating usable will be determined at that time, as part of the APD review process. The operator is given the opportunity to correct any deficiencies that are found prior to review of the

APD; if the operator cannot correct the deficiency(s) in accordance with Onshore Order No 2 (codified at 43 CFR 3172), the APD will be denied.

In accordance with 43 CFR 3162 and Onshore Order #1 (codified at 43 CFR 3171), the APD drilling plan must include site specific information including geologic formations, casing weights and grades, casing depths, casing conditions, cement properties, cement volumes, expected pore pressures, planned mud weights and types, blowout prevention, and all testing that will be performed. The engineering and geologic review compares this data against existing well information to ensure usable water zones are isolated from potential hydrocarbons and saline waters. Isolated in this instance, does not necessarily mean the zone will be cemented behind pipe for the aforementioned reasons. Uncemented but cased zones are still isolated as long as there is sufficient cement above and below the zone in the annular space of the wellbore. Casing is also a valid means of isolating formations when the bottom of the casing is cemented. Adequate isolation of zones containing usable water from the production zone(s), is confirmed through the use of completion reports and well logs. Where adequate isolation is not confirmed, remedial measures will be required.

While some target formations for production may contain "usable waters" (less than 10,000 TDS), production from that target formation is going to be authorized consistent with lease rights granted, assuming the APD is compliant with regulation. If an application is submitted that would produce from a formation that contains usable water and is an underground source of drinking water, additional development restrictions may be necessary including the use of non-toxic drilling and completion fluids (such as in the case of coal bed methane where the wells are drilled and completed with freshwater). Before BLM could grant an APD, review of the drilling plan would have to confirm that those specific resources would be protected.

As to the specific wells identified in the Tisherman Study, BLM is unaware that any impacts to usable water zones have been reported. The State of Wyoming Oil and Gas Conservation Commission requires pre and post water quality testing. Specifically, Chapter. 3: Operational Rules, Drilling Rules: Section 46. Groundwater Baseline Sampling, Analysis and Monitoring, Part (a) states, "All operators are required to submit a groundwater baseline sampling, analysis and monitoring plan with an Application for Permit to Drill or Deepen a Well (Form 1). The groundwater monitoring program will consist of initial baseline water sampling and testing followed by a series of subsequent sampling and testing after setting the production casing or liner. This Rule will not apply to an existing oil or gas well that is converted to an injection well for enhanced recovery or disposal purposes." In general, the potential for negative impacts to groundwater caused from completion activities such as hydraulic fracturing have not been confirmed but based on its history of use are not likely. A recent study completed on the Pinedale Anticline did not find a direct link to known detections of petroleum hydrocarbons to the hydraulic fracturing process. Groundwater contamination investigations have also been conducted at the Pavillion gas field and according to a November 7, 2016, fact sheet from the Wyoming Department of Environmental Quality, it is unlikely that the hydraulic fracturing activities have caused impacts to water supply wells (https://deq.wyoming.gov/water-quality/groundwater/investigations/pavillion-area-investigation/#1814069153). A 2019 report by EPA entitled "Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States" warned "the lack of vertical separation between hydraulically fractured oil- or gas-bearing rock formations and usable water sources can cause contamination and that the issue of shallow fracking is largely concentrated in

certain areas, such as Wyoming (and, particularly, Pavillion)." The EPA reported considered findings in a 2016 publication by DiGiulio and Jackson which posited that hydraulic fracturing may have been the source of "unexpectedly high" organic compounds found in two monitoring wells within the Pavilion field. However, DeGuilio stated that the "data suggests impacts, which is a different statement than a definitive impact" and "monitoring wells need to be installed." While the EPA report acknowledged challenges with identifying the precise source(s) of the water quality issues, this study did not conclusively show contamination resulting from hydraulic fracturing.

After a review of the Tisherman study, BLM reviewed the records and identified 29 wells that have uncemented gaps at depths less than 3,000 feet below the surface. Of these, 6 wells have both the Fox Hills and Lance formations exposed, and 2 wells have the Lance formation exposed. BLM records also revealed that 10 wells have uncemented gaps at depths greater than 3,000 feet below surface. Of these 10 wells, 2 have both the Fox Hills and Lance formation exposed. During the geological and engineering review of the submitted Application for Permit to Drill (APD) package, it was determined that additional cementing was unnecessary to prevent fluid flow above the producing reservoirs to protect usable water zones. Using the information above (e.g. pore pressures, fracture gradients, and potential drilling hazards, API standards, regulations, geologic and engineering review, etc.), BLM determined that usable water (<10000mg/L) was protected to avoid any contamination from the hydrocarbon producing zone and these reservoirs are adequately sealed with casing and cement.

For the parcels included in this lease sale, based on existing well production in the area, future wells are not expected to produce from zones that contain usable water zones and are being used as a source of drinking water or supporting agriculture. Without a discrete development proposal, a finer level of analysis cannot be completed.

Assuming 354 wells under Alternative 2 and 267 wells under Alternative 3 would be developed under the lease sale RFD, based on a maximum of 5 million gallons per well completion job (as derived from the Hydraulic Fracturing White Paper), total water needs is estimated to be approximately 1,335-1,770 million gallons. According to the water availability information contained in the Hydraulic Fracturing White Paper, adequate water supplies are available to support future development based on the most recent Wyoming Water Development Commission's water plans. The exact source of water and groundwater availability will be further reviewed at the time an APD is submitted. The BLM encourages the use of recycled water for completion operations when possible, rather than relying on freshwater sources for oil and gas extraction which is the assumption used in the White Paper.

Monitoring and Mitigation

Underground waste disposal is regulated under the Underground Injection Control (UIC) program, which was authorized under the Safe Drinking Water Act. If a drilling/completion proposal is found to not be protective of usable water zones, as required by 43 CFR § 3162.5-2(d) and 3172, the proposal could be denied by the BLM. Requirements for groundwater monitoring have been instituted throughout Wyoming by the WOGCC. This monitoring will add a level of certainty regarding the impacts of oil and gas drilling/completion activities on groundwater in Wyoming.

The use of practices such as, but not limited to, closed-loop mud systems or lined reserve pits would reduce or eliminate seepage of waste fluids into the soil from eventually reaching

groundwater. The casing and cementing requirements imposed on proposed wells would reduce or eliminate the potential for groundwater contamination from drilling/completion/production fluids and other surface sources. Additionally, the use of closed-loop or semi- closed loop drilling systems may be required by the BLM (see BLM-Wyoming Instruction Memorandum WY-2012- 007, "Management of Oil and Gas Exploration and Production Pits").

Stormwater Pollution Prevention Plans (SWPPs) are required by the State of Wyoming before any surface disturbance associated with construction actions greater than one acre in size. Prior to authorization of surface disturbance on a lease, the BLM will require a Surface Use Plan of Operations be submitted to the BLM; the BLM authorized officer may require additional erosion control measures to reduce the volume of surface runoff and subsequent sediment transport. Upon abandonment of the wells and/or when access roads are no longer in service, the BLM will require surface reclamation of the disturbed areas as described in Standard Lease Term No. 6 and in accordance with the approved APD or Sundry Notice.

All parcels are subject to Standard Lease Notice No. 1 which requires at a minimum 500' offset from perennial surface waters. Site-specific review could require a greater offset requirement if site-specific impact analysis finds that it is warranted. Several parcels also contain specific stipulations for water resources (see Appendix 4.10).

3.3.2.3. *Effects of Alternative 3 – Modified Proposed Alternative*

Under implementation of Alternative 3 impacts would be similar to those described for Alternative 2. Fifteen (15) fewer parcels would be offered (leaving 69,455.55 acres for the remaining 53 parcels) resulting in a reduction of potential impacts to groundwater resource supply from well development. The fifteen(15) parcels not being offered under this alternative would also result in likely fewer overall impacts to surface water from surface disturbance and well development.

3.3.2.4. *Summary of Effects*

Surface disturbance from ongoing oil and gas development, residential development, farming, ranching, and recreational activities would continue to result in disturbances to water resources. 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. 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, which could affect surface flows and groundwater elevations. These effects could be increased during periods of drought.

Usable water zones and sources of groundwater 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 effects could result from declines in surface or ground water resources, which could lead to increased groundwater withdrawals and net cumulative depletions of groundwater or dewatering of surface waters that are sustained by groundwater recharge.

The application of BMPs and design features to reduce runoff, erosion, and potentially associated nonpoint source pollution to downstream waterbodies would minimize cumulative effects to water quality. Based on information contained in the Hydraulic Fracturing White Paper, adequate water supply to support well development exists. The act of leasing would have negligible impacts to water resources. Neither Alternative 2 nor Alternative 3 is expected to have foreseeable impacts to water resources or contribute to trends in the area that may impact water resources.

3.4. Issue 3: Greater Sage-Grouse: What are the effects to Greater Sage-grouse habitats and populations if the parcels nominated for the Third Quarter 2025 lease sale are leased and subsequently developed for oil or gas production?

3.4.1. Affected Environment

Conservation of the Greater Sage-grouse (*Centrocercus urophasianus*) and their habitats is a critical land-management issue for the BLM, the public, and the BLM's partner agencies across the West.

The Greater Sage-grouse (GSG) currently occupies approximately about one-half of their historic distribution. On October 2, 2015, the U.S. Fish and Wildlife Service (FWS) published its finding that listing of the GSG under the Endangered Species Act of 1973 was not warranted. The FWS's finding was based, in part, on the conservation strategies developed in Wyoming and other states which led the FWS to conclude that "the primary threats to greater sage-grouse have been ameliorated by conservation efforts implemented by Federal, State, and private landowners." (80 FR 59858, dated October 2, 2015). As the FWS also acknowledged (id. at page 59882):

> *The key component of the Wyoming Plan is the application of State's regulatory measures associated with the Wyoming Plan on all lands in Wyoming… The Federal Plans in the State incorporate the Wyoming strategy,[12] thereby ensuring implementation of the strategy on Federal land surfaces and subsurface regardless of the need for a State permit (see further discussion below). The completion of the Federal plans also facilitates greater coordination between the State and Federal agencies in implementing and monitoring the Wyoming Plan. This addition to the Wyoming Plan further increases the value of this effort in conserving sage-grouse by covering all lands in the State with a single regulatory framework to reduce affects to sage-grouse in the most important habitats in the State. Therefore, the strategy conserves sage-grouse through an effective regulatory mechanism for conservation.*

For BLM-administered public lands in Wyoming, the BLM incorporated the State's Greater Sage-Grouse conservation strategy by revising and amending its RMPs. The State of Wyoming's Core Area Protection strategy for Greater Sage-Grouse "is based on the principle that conservation of important habitat essential to the maintenance of Greater Sage-Grouse and activities important to the State's economy are not mutually exclusive." (State of Wyoming Governor's Executive Order 2019-3, at Appendix A, page 5). The important habitat areas referred to in Executive Order (EO) 2019-3 are the Core Population Areas (CPAs), Connectivity Areas and Winter Concentration Areas designed by the State of Wyoming's Sage-Grouse Implementation Team (SGIT). The CPAs encompass approximately 83% of the Greater Sage-Grouse population within the State (see 80 FR 59882) as identified by peak male lek attendance, and were mapped by the SGIT to:

...assimilate[] the highest sage-grouse density areas identified [in published conservation studies] as they were identified as the most productive habitats for sage-grouse in Wyoming. In addition, the mapping of Core Areas considered current and potential energy development and encapsulated areas historically low in production [citation omitted]…

To assist in the implementation of the RMP management decisions, the BLM issued several Instruction Memorandums (IMs) to help provide guidance. One of these was Instruction Memorandum 2016-143 (IM-2016- 143 - "Implementation of Greater Sage-grouse Resource Management Plan Revisions or Amendments -Oil & Gas Leasing and Development Sequential Prioritization") which was issued on September 1, 2016. On December 27, 2017, IM 2016-143 was rescinded and replaced with IM No. 2018-026 ("Implementation of Greater Sage-grouse Resource Management Plan Revisions or Amendments - Oil & Gas Leasing and Development Prioritization Objective"). On March 15, 2019, the Wyoming Greater Sage-Grouse Approved Resource Management Plan Amendment and Record of Decision was signed. Through a District of Idaho court decision (*Western Watersheds Project, et al v. Schneider*, 1:16-cv-00083-BLW) BLM was enjoined from implementing the 2019 BLM Sage-Grouse Plan Amendments for Idaho, Wyoming, Colorado, Utah, Nevada/Northeastern California, and Oregon, until such time as the Court can adjudicate the claims on the merits. The 2015 Plans remain in effect during this time. On February 27, 2020, a separate court decision from the District of Idaho (*Western Watersheds Project, et al v. Bernhardt*, 1:18-cv-00187-REB) enjoined certain provisions of the IM-2018-034 and replaced them with provisions from the IM-2010-117. Finally, a third case from the District of Montana (*Montana Wildlife Federation v. Bernhardt*, 4:18-cv-00069-BMM) vacated IM-2018-026. Due to these decisions, BLM WSO developed a new strategy to prioritize leasing within sage-grouse habitats, which is incorporated here and in chapter 4 of this EA.

For ease of discussion, BLM Wyoming categorized all parcels by habitat type using the following method:

1) Identify which parcels are wholly or partially within PHMA and assign an evaluation label of 'PHMA' to those parcels (if a parcel contains both PHMA and GHMA, the evaluation label becomes PHMA),
2) Identify parcels which are wholly or partially within GHMA and assign an evaluation label of 'GHMA' to those parcels (if a parcel contains both GHMA and Non-habitat, the evaluation label becomes GHMA),
3) Identify all parcels completely outside of sage-grouse habitat and assign an evaluation label of 'Non-habitat' to those parcels.
4) Table 4.3-1 describes each parcel, its designated habitat type(s) and provides the 'Evaluation Label' for prioritization purposes.

In
Table 4.3-1, the P1 through P5 are priority habitat criteria discussed in Appendix **Error! Reference source not found.**4.9

In addition, the BLM has identified in Table 4.3-3 those parcels that are located within 5.28 miles (8.5 kilometers) of an active or occupied Greater Sage-Grouse lek to ensure support of breeding populations in low abundance or fragmented landscapes (Holloran and Anderson 2005, Doherty et al. 2010).

The Wyoming Game and Fish Department 2023-2024 Greater Sage-Grouse Job Completion Report (JCR) discusses each Sage-Grouse Local Working Group (LWG) Area. BLM used the maps for each LWG and identified which parcels were in the respective LWG areas Table 4.3-2. The 2021-2022 JCR has a discussion regarding lek monitoring, population trend, productivity, harvest, habitat, and disease. The 2023-2024 Greater Sage-Grouse Job Completion Report can be accessed at: https://wgfd.wyo.gov/Hunting/Job-Completion-Reports.

The JCR indicates that the statewide GSG population in Wyoming has been on an increase since the cycle low in 2021, as estimated by average peak males per occupied lek. The average male/occupied lek count for four recent years equaled: 16.8 in 2021, 17.9 in 2022, 21.1 in 2023, and 28 in 2024. The previous population high was 35.6 males/occupied lek in 2016. Sage-grouse harvest data suggest that productivity, measured as the number of chicks per female in the fall harvest, was below that needed for stable populations between 2016 and 2021. The WGFD estimate that >1.4 chicks/hen in the fall harvest generally result in stable to increasing sage-grouse populations, and productivity estimates since 2016 had been ≤1.2 chicks/hen. However, in 2022, 2023, and 2024, the number of chicks per hen in the fall harvest was 1.4, 1.8, and 1.3, respectively.

Greater Sage-grouse populations are cyclical with a range wide peak on average every 9.2 years (Prochazka et al. 2023). Different areas in Wyoming cycle at different rates with eastern Wyoming having a shorter cycle, around every 6 years and western Wyoming every 9 years (Prochazka et al 2023). Short-term trends in statewide populations are believed to be largely weather related. Observation trend estimates in Wyoming must be interpreted with caution due to varied observation effort over time, unknown lek locations, and lek locations changing over time. Current trends in working groups are summarized below, further details can be found in the JCR.

Bates Hole/Shirley Basin (4 parcels)

The Bates Hole/Shirley Basin Conservation Area (BHSBCA) includes Bates Hole, Shirley Basin, the Rattlesnake Hills, the southern Bighorn Mountains, the Laramie Range, and isolated occupied habitats in southern Niobrara and Platte County. The landscape is a mix of high plains and rolling basins, with elevations typically ranging from 6,000 to over 7,000 feet. Major habitat types within the area include sagebrush/grassland, salt desert shrub, mixed mountain shrub, grasslands, mixed forests (conifer and aspen), agricultural crops, riparian corridors, and urban areas. Land uses within the BHSBCA area include livestock grazing, wind energy development, oil and gas development, coal mining, and dry-land and irrigated crop production.

Within the BHSBCA average male per active lek counts have increased steadily over the past few years to 26.7 males per active lek in 2024 from the previous low of 16.3 in 2021. The chick per hen ratio was 1.8 in 2024. In general, chick per hen ratios around 1.5 indicate relatively stable population trends, ratios greater than 1.7 result in greater lek attendance, and ratios below 1.2 result in decline the following spring.

Northeast (10 parcels)

The Northeast Wyoming Sage Grouse Conservation Group Area (NECA) covers a broad region primarily within the Powder River Basin, including parts of Campbell, Crook, Weston, and Sheridan counties. This area is characterized by rolling plains, dissected badlands, and foothills,

with elevations generally ranging from 3,500 to 5,000 feet. The dominant vegetation type is sagebrush steppe, interspersed with grasslands and patches of conifer encroachment, particularly in higher elevations and along ridgelines. The primary economic uses of lands currently or historically providing sage-grouse habitat are agriculture and energy. Livestock grazing, mainly cattle along with some sheep production, is the primary agricultural use. Some crop production occurs as irrigated and dry land hay and some small grains. Most occupied habitat for GSG in the NECA is held in private ownership. Approximately 75 percent of known leks are found on private land with the remaining 25 percent found on BLM, USFS, and State-owned lands. Recent wildfires in the NECA have burned approximately 200,000 acres of GSG habitat, and Wyoming Big Sagebrush recovery, post-fire, can be slow (Cooper, 2011). This area of the state is considered to be on the fringe of sage-grouse habitat and contributes to fragmented and isolated subpopulations of sage-grouse.

Northeast Wyoming has one of the lowest average male lek attendance rates in the state, averaging only 14.6 males per active lek in 2024 compared to the statewide average of 28 males per active lek. Most leks in northeast Wyoming are small, with less than 20 males. In years when grouse are at the apex of their population cycle less than 10% of the active leks have greater than 50 males at peak count. Three leks exceeded 50 males in 2024. No lek has exceeded 100 males since 2007. This is important because regular population fluctuation presents small leks with a greater risk of becoming inactive in poor years and greater difficulty rebounding in productive years.

South-Central (53 parcels)

The South-Central Sage-Grouse Conservation Area (SCCA) is located in south-central Wyoming and includes portions of Carbon, Albany, and Sweetwater counties. This region encompasses a variety of landscapes, including the Shirley Mountains, the northern Laramie Range, and the Platte Valley. Elevations range from around 6,000 to over 8,000 feet, creating a mix of ecological zones. The dominant habitat type is sagebrush steppe, and includes mountain shrublands, grasslands, and riparian corridors, which contribute to the region's ecological diversity and support a wide range of wildlife species. Proliferation of cheatgrass throughout sagebrush communities within the SCCA is reducing native plant density and diversity as well as increasing the risk of large fires. Land use includes livestock grazing, energy development, and mineral extraction.

Within the SCCA average male per active lek counts have increased steadily over the past few years to 28.3 males per active lek in 2024 from the previous low of 18.5in 2021. This number is the highest observed total since the previous cyclical peak high of 31.5 in 2016. The chick per hen ratio was 1.2 in 2024. In general, chick per hen ratios around 1.5 indicate relatively stable population trends, ratios greater than 1.7 result in greater lek attendance, and ratios below 1.2 result in decline the following spring.

Southwest (3 parcels)

The Southwest Wyoming Sage-Grouse Conservation Area (SWCA) spans a vast and ecologically diverse region that includes portions of Sweetwater, Lincoln, Uinta, and southern Sublette counties. This area is part of the Wyoming Basin and is characterized by broad basins, rolling hills, badlands, and desert shrublands. Elevations range from about 6,000 to over 8,000 feet, creating a variety of sagebrush-dominated ecosystems. The dominant habitat type is sagebrush steppe, particularly Wyoming big sagebrush and mountain big sagebrush

communities. Naturally fragmented habitats also occur near forested areas, sand dunes, and salt desert shrublands, adding to the region's ecological complexity. Land use in the SWCA is heavily influenced by energy development, including oil, gas, and trona mining, as well as livestock grazing, which is widespread across both public and private lands.

Within the SWCA average male per active lek counts have increased over the past few years to 32.3 males per active lek in 2024 from the previous low of 15.5 in 2021 and 2022. The chick per hen ratio was 1.35 in 2024. In general, chick per hen ratios around 1.5 indicate relatively stable population trends, ratios greater than 1.7 result in greater lek attendance, and ratios below 1.2 result in decline the following spring.

Four of the nominated PHMA (Wyoming core area strategy v4) parcels (2185, 2243, 2246, and 7460) lie at least partially within (2185 completely within) the Greater South Pass core area. Adaptive management triggers for both population and habitat (factors 1 & 2) have been tripped within the Greater South Pass Core Area. Parcel 2185 has an occupied lek within 2 miles and 10 occupied leks within 4 miles, Parcel 2243 has an occupied lek within 3 miles and 6 occupied leks within 4 miles, Parcel 2246 has an occupied lek within 2 miles and 5 occupied leks within 4 miles, and Parcel 7460 has an occupied lek within the parcel and 2 occupied leks within 4 miles.

Five of the nominated PHMA parcels (2191, 2193, 2194, 6885, and 7453) lie at least partially within (2193, 2194, and 7453 completely within) the Hanna core area. Adaptive management triggers for both population and habitat (factors 1 & 2) have been tripped within the Hanna core area. Parcel 2191 has an occupied lek within the parcel and 4 occupied leks within 4 miles, Parcel 2193 has an occupied lek within 3 miles and 6 occupied leks within 4 miles, Parcel 2194 has an occupied lek within 2 miles and 2 occupied leks within 4 miles, Parcel 6885 has an occupied lek within 2 miles and 2 occupied leks within 4 miles, and Parcel 7453 has 2 occupied leks within 4 miles.

Six of the nominated parcels (2181, 2189, 7447, 7450, 7451, 7452) lie at least partially within the South Rawlins core area. The adaptive management trigger for population (factor 2) has been tripped within the South Rawlins core area. Parcel 2181 has an occupied lek within 1 mile and 6 occupied leks within 4 miles, parcel 2189 has 4 occupied leks within 4 miles, parcel 7447 has an occupied lek within 1 mile and 5 occupied leks within 4 miles, parcel 7450 has an occupied lek within 1 mile and 9 occupied leks within 4 miles, parcel 7451 has an occupied lek within 1 mile and 6 occupied leks within 4 miles, and parcel 7452 has an occupied lek within one mile and 6 occupied leks within 4 miles.

3.4.2. Environmental Effects

3.4.2.1. *Effects of Alternative 1 - No Action Alternative*

Under the No Action Alternative, the Proposed Action or alternatives would not be authorized and BLM Wyoming would not offer any of the 68 parcels nominated. Therefore, the 68 parcels would not be potentially developed as a result of this action and would not impact GSG. Ongoing oil and gas development, ranching, recreation, and other activities on private, state, and BLM-administered lands would continue.

3.4.2.2. *Effects of Alternative 2 - Proposed Alternative*

Under Alternative 2, portions of three (3) parcels (WY-2026-03-2181, 2187, and 7452) would be deleted because part of the parcels (1,273.57 acres) are within the Cow Butte/Wild Cow and Upper Muddy Creek Watershed/Grizzly Wildlife Habitat Management Areas and are unavailable to lease based on the Rawlins RMP. After this deletion, Alternative 2 would offer 68 parcels containing approximately 92,396.45 acres nominated through the Expression of Interest as indicated in Table 2.3-. As stated in the beginning of Chapter 3, Affected Environment and Environmental Impacts, BLM is assuming up to 354 wells would be drilled under Alternative 2 resulting in approximately 1,513.35 acres of disturbance.

Responses of individual birds and populations, coupled with variability in land-use patterns and habitat conditions, contribute to variability in the response of sage-grouse to development (Manier et al. 2014). As in Section 3.4.1, Table 4.3-3 (which identifies which parcels are within a specific distance of a lek), BLM identified which parcels are within 2 miles and 3.1 miles of PHMA using the minimum buffer distance in published research (Manier et al. 2014) along with the 2-mile timing limitation stipulation for leks situated in GHMA described in the ARMPA and the Wyoming Governor's Executive Order 2019-03. In addition, BLM identified parcels within 4 miles and 5.28 miles of PHMA (with 5.28, or 8.3 kilometers) similar to how the PHMA areas around leks were designated (Table 4.3-8).

It is reasonable to assume that leks within 3.1 miles of a well could experience negative impacts (NTT 2011) and that impacts as measured by the number of males attending leks are most severe near the lek and remain discernible out to >4 miles. This information suggests that the development of 36 parcels that are within 3.1 miles of leks could negatively impact GRSG populations (Table 4.3-31).

Direct and indirect impacts may affect GSG habitat through occupancy and development of the leased lands. For example, habitat loss and degradation from construction of roads and associated infrastructure (when and if the BLM receives a site-specific development proposal), GRSG collisions with vehicles, habitat avoidance from noise, or the potential for increased predation which could lead to localized population declines. Male sage-grouse could be displaced away from traditional leks near development to less suitable lek location to avoid noise, traffic, habitat fragmentation, and other human disturbance. Female grouse may be displaced from highly desirable nesting and brood-rearing habitats into less desirable habitats for the same reasons as male displacement.

Some of these impacts are reduced during the construction and drilling phases by implementing the appropriate timing, and/or surface use stipulations (see Appendix 4.10 4.10). However, these direct and indirect impacts could remain once a well is producing oil and/or gas and remain beyond reclamation. Based upon nesting habitat requirements, impacts could be observed 20-50 years after a well pad is reclaimed and sagebrush matures depending on site-specific factors (i.e., soil type, precipitation, etc.). The further the disturbance from PHMA the higher the likelihood of reducing impacts to sage-grouse that use these higher habitat quality areas. A disturbance and energy facility density cap would be applied to disturbance in leases within PHMA to limit aggregated disturbance and impacts. A lower level of allowable disturbance would have fewer impacts to GRSG, including both habitat and individuals. Adaptive management is included as a management action if habitat or populations continue to decline to the point that thresholds are

met. In that event, more restrictive measures could be applied. Adaptive management thresholds have been reached in the Greater South Pass, Hanna and South Rawlins PHMA areas. The goal of adaptive management is to detect effects on GRSG habitats and populations and act in an appropriate time frame to effectively offset impacts. The USFWS found that with the measures committed to in the 2015 Rocky Mountain Greater Sage-grouse ROD and RMPs were sufficient to prevent listing of the bird under the Endangered Species Act. Further, if determined necessary through site-specific analysis, BLM may modify production and routine maintenance operations if unanticipated impacts are foreseeable.

The majority of the new wells drilled within the past five years are horizontal or directional. Using this type of scenario (horizontal or directional) direct impacts from habitat loss would be minimized (1,239 acres for directional or horizontal wells compared to 6,726 acres of direct habitat loss for vertical wells). However, there could still be direct loss of individuals from the population due to vehicle collisions or from potential increased predation. Indirect impacts would be similar to those described above.

3.4.2.3. *Effects of Alternative 3 – Modified Proposed Alternative*

Under Alternative 3, the field office staff reviewed the potential parcels and recommended which lands to remove from further consideration (e.g. lands unavailable for lease due to RMP decisions); which lands to defer (potential conflicts that may have arisen); and which leasing stipulations to apply based on RMP decisions. The District Offices sent a compiled list back to the WSO. The WSO received input from the WGFD regarding habitats or populations that may be impacted by the lease and used that information to verify the appropriate stipulations were attached to each parcel. BLM Wyoming also reviewed/evaluated the parcels based on the criteria outlined in expression of interest leasing preferences 43 CFR 3120.32. The State Director (SD) and the District Managers (DMs) coordinated and discussed the results from all reviews and parcel recommendations. The SD concurred on which potential parcels, or portions of parcels, move forward for analysis and inclusion in Alternative 3.

Using the prioritization screening process (outlined in Appendix 4.9), the BLM reviewed the fifteen PHMA parcels nominated for the 2026 First Quarter lease sale and as a result under this Alternative fifteen of these parcels (WY-2026-03-2181, 2185, 2189, 2191, 2193, 2194, 2243, 2246, 6885, 7447, 7450, 7451, 7452, 7453, 7460) would be deferred (see Table 4.3-9). The result of the screening is based on the nominated parcels being situated in high value habitat and being situated in PHMA exceeding population and/or habitat triggers (as described in Appendix 4.9 in 2021).

Deferral of parcels due to GSG prioritization would reduce direct and indirect short-term impacts to sage-grouse and their habitat within the Greater South Pass, Hanna, and South Rawlins PHMAs. BLM is assuming 267 wells would be drilled in Alternative 3, resulting in approximately 1,141.43 acres of disturbance. There would be approximately 371.92 fewer acres of potential disturbance and habitat loss, in addition to a reduction in noise and collisions with vehicles, as compared to Alternative 2. All other impacts would be similar to those described in Alternative 2.

3.4.2.4. *Summary of Effects*

Due to the uncertainties from a lease development standpoint, it is difficult to predict exactly what impacts may occur. However, impacts from development of the Reasonably Foreseeable Development Scenario contemplated in the relevant RMPs, such as the anticipated noise, permanent and temporary facilities, and traffic, are discussed in the individual field office RMPs, the 2015 Greater Sage Grouse ARPMA, and above.

Additionally, under Alternative 2, within 1 mile of the 68 parcels there are 60 pending APDs, 0 approved APDs, 3,133 producing or shut-in Federal, State, or private wells (per WY Oil and Gas Commission), 386 authorized Oil and Gas leases, 23 Oil and Gas leases that were sold but not issued, 8 renewable projects, 51 existing grazing allotments, and numerous existing ROWs (as of September 25, 2025). Potential future development of these leases could contribute 354 APDs to cumulative impacts.

Under Alternative 3, within 1 mile of the 53 parcels there are 45 pending APDs, 0 approved APD, 2,500 producing or shut-in Federal, State, or private wells (per WY Oil and Gas Commission), 384 authorized Oil and Gas leases, 22 Oil and Gas leases that were sold but not issued, 7 renewable projects, 50 existing grazing allotments, and numerous existing ROWs. Potential future development of these leases could contribute 267 APDs to cumulative impacts.

Impacts to GSG habitat are minimized by implementing appropriate surface use stipulations, The required Timing Limitation (TLS), Controlled Surface Use (CSU) and No Surface Occupancy (NSO) stipulations within Appendix 4.10 4.104.10are derived from each FO RMP. The WGFD was a cooperating agency during the development of these RMPs and the stipulation timeframes are based on WGFD input and data. These stipulations are identical to those listed in the Wyoming Governor's Executive Order 2019-03. Standard Lease Notice 3 which is also attached to all leases indicates that an operator may be required to implement specific measures to reduce impacts of oil and gas operations on GSG populations and habitat quality (see Appendix 4.10 for exact language). Such measures shall be developed during the APD on-site and environmental review process. In addition, individual lease stipulations apply if a lek is located within a certain distance (e.g. Timing Limitation Stipulations [TLS]) or if a lek is located within the parcel itself (e.g. CSU or NSO).

There are approximately 15,854,692 acres of PHMA in the State of Wyoming, which is equivalent to the areas identified as Core Areas under the Governor's Executive Order. In addition, there are approximately 27,836,621 acres of GHMA within the State of Wyoming. Using the estimated number of acres that could be disturbed, 1,513.35 acres under Alternative 2, there could be an overall reduction in habitat of approximately 0.0035% statewide. Under Alternative 3, with a maximum disturbance of 1,141.43 acres, the overall reduction in GHMA is approximately 0.0026%, statewide. However, it must be noted that each development plan (Application for Permit to Drill) is different and should be considered during a site-specific development analysis. The major differences are the spacing of wells/pad, distances between new and tie-in points on existing pipelines, project design, land ownership patterns, etc.

Using the BLM Fiscal Year 2024 oil and gas statistics (https://www.blm.gov/programs-energy-and-minerals-oil-and-gas-oil-and-gas-statistics), there are approximately 11,407 active leases encompassing approximately 7,065,145 acres. Of the active leases, there are 7,318 leases (approximately 3,827,681 acres) which are actively producing oil, gas or both (or approximately 50.4% of all leased acres are producing) from 26,327 federal well bores. Assuming all existing

wells are vertical, 19 acres per well pad disturbance, approximately 500,213 acres have been directly disturbed for existing well pads, roads, pipelines and production facilities statewide (BLM did not calculate disturbance for directional or horizontal wells to assume maximum disturbed acres). Adding the potential disturbance from 354 wells would increase overall disturbance to 506,939 (500,213 existing acres plus 6,726 acres from 354 wells) statewide. This is approximately 1.16% of all sage-grouse habitat statewide (15,854,692 PHMA acres plus 27,836,621 GHMA acres = 43,691,313 acres; 506,939 disturbed acres/43,691,313 GRSG acres = 0.011603 or approximately 1.16%). However, this number is likely lower due to the surface disturbance assumptions previously discussed in the beginning of Chapter 3. When combining loss of vegetation cover from grazing, pads and roads associated with renewable energy projects (i.e. wind turbines), and other disturbance on the landscape (i.e. mines, gravel pits, etc.), overall impacts are expected to be minimal when combined with timing limitation, controlled surface use and no surface occupancy stipulations and other site-specific mitigation measures.

Impacts beyond those analyzed in the underlying RMP FEISs and the 2015 Greater Sage-Grouse ARMPA FEIS are not expected due to the use of adaptive management, imposition of lease stipulations and other site-specific mitigation, and the continual expiration of existing federal leases whether because they lack production in paying quantities or are never explored. Additional coordination with WGFD will occur for all projects proposed in Greater Sage-Grouse habitats as determined necessary, and in accordance with the BLM-WGFD interagency MOU.

3.5. Issue 4: Big Game Species: What are the effects from potential oil and gas development on parcels that may be offered for lease to big game habitats and populations within state identified crucial winter range and designated migration corridors?

3.5.1. Affected Environment

General information regarding wildlife species and impacts in the subject planning areas can be found within the respective Field Office's RMP (see section 1.3).

Big Game Herd Units

The distribution and abundance of big game in the planning area is primarily a function of habitat quality and quantity, the availability of water, climate/weather, and the ability to move, or migrate between seasonal habitats.

The WGFD manages big game populations in herd units (HU). HU boundaries generally do not match BLM field office boundaries, making analysis and correlation of resource data and big game population data difficult. The WGFD revises its population objectives for each big game species based on new habitat information, population trends, recreation demand, population stressors, and public input which are reported in annual Job Completion Reports (JCR).

The health of big game populations is generally inferred from population objectives set by the WGFD. Based on monitoring data, big game populations range greatly across the State when comparing these estimates to the HU population objectives. According to the WGFD's 2024 JCR, antelope HU population estimates range between 90% above to 76.2% below objective, mule deer range from 6% above to 86.7% below objective, and elk population estimates range from 172% above to 32.5% below HU objectives.

Antelope

Of the parcels evaluated, the majority are in the following HUs: Baggs, Bitter Creek, and Red Desert. See Table 4.4-1 for a list of HUs and parcel overlap numbers.

The 2024 WGFD JCR for the Green River Region indicates that the Baggs antelope HU is 65.8% below the population objective of 9,000 individuals. Antelope in the Baggs HU distribution following winter 2022-23 was heavily skewed downward due to winter mortality event, and that continued through the end of the 2024 biological year with only minor improvements. The 2024 JCR indicates the post-season model estimate was 3,078, which was well below the herd objective of 9,000. However, this estimate was nearly a 50% increase over 2023's estimate; in reality, with above average over winter survival the increase may have been greater which indicates a recovery in progress from the severe winter and mortality event from 2022-2023. The main stressors identified in the 2024 JCR were the severe winter of 2022-2023 and the innumerable woven wire fences across the river bottoms that pose a barrier to travel.

The 2024 WGFD JCR for the Green River Region indicates the Bitter Creek antelope HU is 53.3% below the population objective of 13,000 individuals. The severe winter of 2022-23 caused a drastic decline in this herd, which is currently recovering. The JCR found that the excellent fawn ratio across the Bitter Creek HU in 2024 bodes well for improvements for adults going into 2026. The 2024 JCR also indicated the growing season in 2023 was exceptional with great spring and summer precipitation with mild temperatures. In addition, counter to much of the rest of Wyoming, precipitation during the growing season in 2024 was above average, so range conditions were prime. As a result of these two factors, overwinter survival was excellent. The JCR stated stressors include barriers of the innumerable woven wire fences across the river bottom and feral horses which affected pronghorn distribution and populations through exclusion from water and other resources and habitat degradation, and effectively reduced the carrying capacity of all wildlife across this area.

The 2024 WGFD JCR for the Green River Region indicates the Red Desert antelope HU is 51.8% below the population objective of 15,000 individuals. This herd experienced two consecutive severe winters in 2018-19 and 2019-20, and then an extraordinarily severe winter in 2022-23 consisting of constant sub-zero temperatures, high winds, and record snowfall, ultimately causing significant mortality. The 2024 JCR indicated these losses, compounded with near-record low fawn crops from 2018-2020 and again in 2023, caused this population to decline well below objective. Winter severity for 2024 was considered "normal" or "mild," and is not expected to result in above-average winter mortality or a significant impact to overall population numbers. In addition, fawn production significantly improved in 2024 to 75 fawns per 100 does, the highest recorded since 1987 indicating recovery and potential growth of the herd, barring similar harsh winters and based on previous estimates has been at or above objective as recently as 2018. The 2024 JCR did not cite any other specific stressor other than harsh winters that contribute to below population objectives.

Mule Deer

Of the parcels evaluated, the majority are in the following HUs: Baggs, Sublette, and Chain Lakes. See Table 4.4-2 for a list of HUs and parcel overlap numbers.

The 2024 WGFD JCR for the Green River Region indicates that the Baggs HU is 24.5% below the population objective of 19,000 individuals. The 2024 JCR indicates this mule deer herd has experienced a significant population decline since about 2016. Factors that have contributed to this decline include a winter die-off in 2018-2019, two consecutive years of drought, five years of unfavorable fawn production, Chronic Wasting Disease/Epizootic Hemorrhagic Disease, and reduced habitat conditions. The 2024 JCR also indicates overall habitat through all seasonal ranges exhibited good growth, transition and winter ranges in particular seemed above average and remained "green" into late summer. Mule deer forage shrubs crucial for winter survival exhibited excellent leader growth, and winter range forage conditions through the 2024-25 winter were phenomenal. The 2024 JCR also indicated fawn ratios observed was 84 fawns per 100 does, the highest ever recorded for the herd. Fawn ratios were consistently high in both northern and southern crucial winter ranges in 2024 and represented a 30% herd increase over 2023. The 2024 JCR also indicated that habitat resources are relatively in balance with the existing population objective. This HU is a priority Chronic Wasting Disease herd with a 2024 adult male prevalence of 16%, although no action has been taken in part by WGFD.

The 2024 WGFD JCR for the Pinedale Region indicates the Sublette HU is 40.5% below the population objective of 32,000 individuals mostly due to extreme winter conditions during 2022-23 and local managers believe lowering the population objective is likely warranted, and could help sustain a more stable population. The 2024 JCR indicates the current annual growth on key winter browse species has varied among years, but the overall habitat conditions remain poor with some improvement on certain years The JCR also indicated winter survival, habitat condition and quality on winter ranges, and habitat loss (direct and indirect) from gas and residential development are the primary issues influencing population dynamics in this HU. In addition, the JCR also noted gas field development has and will continue to impact deer numbers within this HU. The Pinedale Anticline gas field development overlaps with crucial winter range located on the Mesa, where annual population estimates indicate deer numbers have declined by roughly 40% from 2001–2017. Studies have demonstrated that deer avoid areas with intensive winter gas development, resulting in less forage available for wintering deer within and adjacent to gas development. It is noted that all parcels that overlap this HU are located in the SE corner of the HU and is not part of the Pinedale Anticline gas field development area.

The 2024 WGFD JCR for the Lander Region indicates the Chain Lakes HU is based on satisfaction-based objective rather than a population-based objective. The 2024 JCR indicates the herds within this HU are small bands of deer dispersed across hundreds of square miles of sagebrush making both aerial and ground classifications prohibitively expensive and inefficient. After the 2022-23 severe winter, winter severity in 2024 was considered "normal" or "mild," and is not expected to result in above-average winter mortality or significantly impact overall population numbers. Currently, according to the 2024 JCR, this HU is meeting the satisfaction objective for this HU. Finally, this HU has not been prioritized for CWD surveillance because of its small size and low harvest rate.

Elk

Of the parcels evaluated, the majority are in the following HUs: Sierra Madre, Steamboat, and Petition. See Table 4.4-3 for a list of HUs and parcel overlap numbers.

The 2024 WGFD JCR for the Green River Region indicates that the Sierra Madre HU is NA% above the population objective of 5,000 individuals. The JCR indicated this HU trend count was not evaluated in 2024 due to budget constraints; the three-year average in 2023 was 5,528, which was within the objective range of 4,000 to 6,000 elk. The JCR also indicated that managers continued to have concerns with the extremely limited access in this HU due to the true checkerboard land ownership and would be keeping a close eye during future seasons. No habitat stressors were noted in the 2024 JCR for this HU.

The 2024 WGFD JCR for the Green River Region indicates that the Steamboat HU is 5% below the population objective of 1,200 individuals. The 2024 JCR indicates that after nearly a decade of increased harvest due to above objective population numbers, data from classification flights, along with field observations, as well as model estimates indicate that this herd is nearing or has reached the WGFD population objective. The Steamboat HU has limited CWD prevalence data available, has not been prioritized, and no CWD management actions have occurred.

The 2024 WGFD JCR for the Green River Region indicates the Petition HU is 2% below the satisfaction-based objective of 60%. The hunter satisfaction for 2024 met objective (89% satisfied) while landowner satisfaction did not meet objective (27% at desired levels). The JCR noted as stressor as feral horse distribution across the HU. The JCR stated that feral horse inside and outside established HMAs across the unit continued to be significantly above appropriate management levels (AML). These feral horses affected elk distribution and populations through exclusion from water and other resources and habitat degradation and effectively reduced the carrying capacity of all wildlife across this area. The JCR also indicated that the HU has limited CWD prevalence data available due to extremely low harvest, and no CWD management actions have occurred.

Designated Migration Corridors

Many big game species use seasonal migrations to avoid predators and deep snow, and to take advantage of spatially and temporally variable food sources (Kauffman et al 2021, Kauffman et al. 2024). Research into the movements of big game in large numbers and at seasonal transition times has resulted in the formal identification of migratory pathways resulting in the delineation and designation of State-recognized corridors.

As discussed in the WGFD's UNGULATE MIGRATION CORRIDOR STRATEGY (February 4, 2016):

Sawyer and Kauffman (2011) found that approximately 95% of the migratory period is spent foraging at stopover areas. Habitat quality is higher in stopover habitat than in the area between stopover sites. In this study, deer used the same stopover areas between years during all

migratory periods. Avoidance of disturbance on and around stopover areas was important to migrating ungulates while disturbance in the areas between stopover areas was tolerated.

Lendrum et al. (2012) and Sawyer et al. (2013) found that given an increase in disturbance, ungulates may modify the timing of migration, constrict the size of the area used for migration and move through areas of increased development faster. Changing the timing of migration or moving from one seasonal range to another faster (e.g., winter range to summer range) results in the loss of synchronization between plant green-up and ungulate movements thereby reducing energy intake (Sawyer and Kauffman 2011). Both Lendrum et al. (2012) and Sawyer et al. (2013) found correlations between disturbance levels and measurable changes in animal response as indicated by their movement rate and locations. Sawyer et al. (2013) found ungulates moved through disturbed areas faster, detoured around disturbance, and reduced their use of stopover areas, thus constricting their migration both temporally and spatially. Importantly, both studies recommended keeping the standard for allowable disturbance within migration corridors below the level of detected impact. (@ page 3: https://wgfd.wyo.gov/media/13364/download?inline).

This same document (at 4) also noted:

> *It is also important to understand that migratory behavior can be lost (Bolget et al. 2008, Harris et al. 2009) and loss of the ability to migrate has led to sudden and dramatic declines in animal populations (Bolger et al. 2008). Migration is a learned behavior that may be difficult to reestablish once lost or diminished (Sawyer et al. 2013).*

Acting under this strategy, the State of Wyoming has developed new methods for mapping these migration corridors and stopover areas. As a result of these new methods, the first mule deer migration corridor (MDC) designated was the Red Desert to Hoback (RD2H) which occurred on December 5, 2016. The Red Desert to Hoback (now called Sublette) corridor is the longest mule deer migration route ever recorded in the lower 48 states. Further information regarding big game migration can be located at https://wgfd.wyo.gov/wyoming-wildlife/movement-matters/big-game-migration.

New research data has also been produced as a result of these efforts. This research has provided a finer level of understanding into where migrating mule deer spend the most time (stopovers) during migration, where there are existing barriers or bottlenecks that constrict movement along the corridor. Other research has suggested that that the vegetation within the corridors may be extensively used as forage by the herd as they migrate between winter and summer habitats, twice a year.

Other new research suggests that migratory behavior must be learned (Jesmer et al 2018). The loss of corridor function is known to cause a migratory population to forget their migratory behavior under the most extreme of circumstances, including knowledge of where the main route is in the landscape. Questions remain regarding why corridors are where they are.

The WGFD has several ongoing mule deer collaring studies evaluating areas of seasonal movement. The WGFD has collected mule deer movement data to some degree in each of these areas and are currently working with stakeholders and agency personnel to identify related research and proactive conservation actions that are geared toward conserving habitats in each of

these herd areas. Three mule deer migration corridors have been formally designated within Wyoming (https://governor.wyo.gov/state-government/executive-orders).

No parcels are located within designated antelope, elk, or mule deer migration corridors, as designated in the Wyoming Governor's Executive Order 2020-1. In addition, the Wyoming Game and Fish Department (WGFD) did not raise migration corridors as an issue during their review. Therefore, big game migration corridors and high use and/or stopover areas will not be discussed further within this EA.

3.5.2. Environmental Effects

3.5.2.1. *Effects of Alternative 1 - No Action Alternative*

Under Alternative 1, no parcels would be offered. Therefore, the 68 parcels would not be available for development as a result of this action and there would be no direct or indirect impacts to big game. Impacts would be similar to those described in each FO RMP.

3.5.2.2. *Effects of Alternative 2 - Proposed Alternative*

Under Alternative 2, the BLM would offer 68 parcels for lease, covering 92,396.45 acres. At the lease sale stage, it is unknown where, or if, development would occur in any given nominated lease; as specific types and locations of development are proposed, their specific effects would be analyzed and addressed in detail at the time of proposed lease development. However, based on the Reasonable Foreseeable Development Scenarios discussed in Section 3.1, the acquisition and development of new leases covering 92,396.45 acres could directly affect approximately 1,513.35 acres of big game habitat statewide from surface disturbance associated with on-lease well development and associated infrastructure across the 68 parcels. It is also noted that historically speaking, of the total BLM WY authorized oil and gas development, approximately 54% of leases actually produce in payable quantities, therefore, the analysis below is likely an overestimation of impacts.

According to BLM WY FO RMPs, a summary of impacts to crucial winter range related to oil and gas disturbance can contribute to additional habitat fragmentation, human activity, noise and introduction of weeds, invasive, noxious, or invasive annuals, depending upon the proposal and status of existing development if/where present, and the level of activity. In addition, according to BLM WY FO RMPs, a summary of impacts to migration corridors related to oil and gas disturbance can contribute to avoidance or abandonment of high-quality habitat near oil and gas disturbance and isolation of migration corridors to the crucial winter range or parturition areas.

General Big Game Habitat

Big game habitat can be affected by oil and gas development that may occur outside of crucial winter range areas. Direct impacts to big game habitats include direct loss of surface acres, fragmentation of range, and may directly or indirectly impact ecological function (stream hydrology, water quantity/quality) and habitat availability. Impacts related to habitat disturbance are introduced during the construction and drilling phases and could remain once a well is producing oil and/or gas. These impacts remain until the well is plugged and the location is

reclaimed. Based upon habitat requirements, it could take approx. 20-50 years after a well pad is reclaimed depending on site-specific factors and the success of reclamation (i.e. soil type, precipitation, etc.) to regain pre-disturbance habitat functionality.

Statewide there are approximately 60,265,526 acres, 56,519,914 acres, and 60,385,520 acres of habitat for mule deer, antelope, and elk respectively. The proposed disturbed acreage (1,513.35 acres) across the state would be assumed to effect 0.0025%, 0.0027%, and 0.0025% of statewide mule deer, antelope, and elk habitats, respectively. The 68 parcels are located within 11 mule deer, 11 antelope, and 10 elk HUs across the state of Wyoming (see Table 4.4-1, Table 4.4-2, and Table 4.4-3). When reviewing the affected mule deer, antelope, and elk HUs, the habitat ranges encompass approximately 28,435,258 acres, 21,296,943 acres, and 24,550,827 acres respectively; therefore, the proposed disturbed acreage would affect 0.0053%, 0.0071%, and 0.0062% of mule deer, antelope, and elk HUs with parcels present, respectively.

When the statewide analysis is expanded to take into account potential indirect habitat impacts via avoidance (1-mile buffer around the *entire parcel*) from parcels, this results in indirect impacts to approximately 616,737.82 acres of mule deer habitat (1.02%), 583,401.92 acres of antelope habitat (1.03%) and 616,737.80 acres of elk habitat (1.02%). When reviewing the effected mule deer, antelope, and elk HU levels, the proposed indirect habitat impact is estimated to average 2.17%, 2.74%, and 2.51% of big game HUs, respectively. It is acknowledged that a consistent 1-mile buffer around each entire proposed parcel provides a very liberal standardized estimate of the indirect impacts since at a lease-sale level, we do not know exactly where within each parcel the impacts would take place. Timing limitation stipulations (TLS) and additional site-specific mitigation measures developed if or when a site-specific development plan would be proposed are expected to further minimize disturbance to wildlife.

Impacts to big game habitat are minimized by implementing appropriate surface use stipulations (see Appendix 4.10). The TLS, CSU, and NSO stipulations within Appendix 4.10 are derived from each affected FO RMP. The WGFD was a cooperating agency during the development of these RMPs and the stipulation timeframes are based on WGFD input and data. The stipulations reduce habitat effects by restricting or prohibiting activity in important areas by requiring reasonable measures to ensure big game crucial winter range functionality (WY_BFO_TLS_BGCWEC), requiring mitigation plans to ensure restoration of habitat from disturbance (WY_BFO_CSU_SE) and ensuring continued habitat connectivity (WY Std Special Lease Notice II – Big Game Migration), and by ensuring ecosystem function by preserving water quality and ecosystem function (WY_BFO_CSU_H20500F; WY_BFO_CSU_FQM). The WGFD did not recommend any additional stipulations or deferrals for big game habitat and the stipulations will mitigate potential impacts and additional site-specific mitigation may be required at the time an APD is submitted. If any of the parcels are sold and development is proposed on the lease, BLM would again consult with WGFD during the site-specific analysis.

In addition to big game specific stipulations, various non-big game stipulations in Appendix 4.10 also help mitigate effects to big game species. Stipulations for sage grouse, raptor, fish, etc. are expected to serve as an umbrella to big game, including mule deer, occupying the same habitats by reducing habitat direct and indirect impacts by further restricting presence and site disturbance during the respective species activity periods, requiring mitigation plans for restoration, and preserving habitat connectivity. As specific types and locations of development are proposed, their specific effects would be analyzed and addressed in detail at the time of proposed lease development and in consideration of conditions that exist at the time an APD is

submitted. Through site-specific analysis, timing stipulations can also be applied to routine maintenance operations.

Crucial Winter Range Habitat

Big game can be susceptible to disturbance during winter, particularly mule deer, because disturbance can cause undue energy expenditure when their vulnerability is greatest and their ability to respond to stress is lowest (USGS 2023). Of the 68 parcels evaluated in Alternative 2, 14 parcels fall within mule deer HUs with crucial winter range (CWR) (11 in Baggs and 3 in Platte Valley HUs); 18 parcels fall within antelope HU CWR (7 in Baggs, 6 in Bitter Creek, and 5 in Red Desert HUs); and, 1 parcels fall within elk HUs CWR (Sierra Madre HU). In addition, no parcels intersect managed parturition habitat or elk feed grounds. See **Error! Reference source not found.**.

At the lease sale stage, it is unknown where, or if, development would occur in any nominated leases that overlap with CWR; as specific types and locations of development are proposed, their specific effects would be analyzed and addressed in detail at the time of proposed lease development. However, statewide there are approximately 6,431,768.74 acres of mule deer CWR, 5,973,000 acres of antelope CWR, and 4,440,567 acres of elk CWR. Disturbance from well pads, roads, pipelines, etc. of 1,513.35 acres would affect approximately 0.024% of statewide mule deer CWR, 0.025% of statewide antelope CWR, and 0.034% of statewide elk CWR.

When reviewing the overlap of the parcels to designated CWR, at an HU level for each species, there are 2 mule deer, 3 antelope, and 1 elk HUs overlapped. Total designated CWR overlap within the 2 mule deer HU equal 3.20% (0.75% for Platte Valley; 5.17% for Baggs). When looking at CWR parcel overlap for 3 antelope HUs, the overlap encompassed 2.11% 1.05% Red Desert, 2.34% Bitter Creek, & 4.62% Baggs). Parcel overlap in designated CWR acres within elk HU equal 0.23% in the Sierra Madre HU.

Using the potential 95:5% horizontal/vertical well disturbance calculations expressed on page 20, (354 wells across the 68 parcels at 3.5 acres for horizontal wells and 19 acres for vertical wells), it is reasonable to assume that for the 14 parcels overlapping mule deer CWR could potentially develop 73 wells with an estimated direct impact of 311.6 acres of mule deer HU CWR habitat, which is 0.061% HU CWR disturbance. When completing the same analysis for antelope, it is reasonable to assume 18 parcels overlapping antelope CWR could potentially develop 94 wells with an estimated direct impact of 401.85 acres of HU CWR, which is 0.069% antelope HU CWR disturbance. When completing the same analysis for elk, it is reasonable to assume 1 parcels overlapping elk CWR could potentially develop 5 wells with an estimated direct impact of 22.26 acres of elk HU CWR, which is 0.011% elk HU CWR disturbance.

When the 14 mule deer HU parcel CWR overlap analysis is expanded to take into account potential indirect habitat impacts via avoidance (1-mile buffer around the *entire parcel*), this results in an addition of 3 parcels in the Baggs HU being indirectly impacted (17 total parcels overlapped), which would result to indirect impacts to designated CWR of 25.63% indirect overlaps in Baggs HU and 4.94% indirect overlap in the Platte Valley HU. When the 3 antelope HU CWR overlap analysis is expanded to take into account potential indirect habitat impacts via avoidance (1-mile buffer around the *entire parcel*), this results in an addition of 12 parcels across the overlapped antelope CWR HUs potential indirect impacts within designated CWR (30 total parcels overlapped), which would result to indirect impacts to designated CWR of 30.59% for

Baggs HU, 15.57% for Bitter Creek HU, 0.96% for Elk Mountain HU, 0.27% for Medicine Bow HU, and 7.45% for Red Desert. When the elk HU CWR overlap analysis is expanded to take into account potential indirect habitat impacts via avoidance (1-mile buffer around the *entire parcel*), this results in an addition of 3 parcels across the overlapped elk CWR HUs potential indirect impacts within designated CWR (5 total parcels overlapped), which would result to indirect impacts to designated CWR of 2.86% for Sierra Madre HU and 0.34% for Snowy Range HU. It is acknowledged that a consistent 1-mile buffer around each entire proposed parcel provides a very liberal standardized estimate of the indirect impacts since at a lease-sale level, we do not know exactly where within each parcel the impacts would take place. Timing limitation stipulations (TLS) and additional site-specific mitigation measures developed if and when a site-specific development plan would be proposed are expected to further minimize disturbance to wildlife.

Human presence in CWRs during winter season can cause displacement and avoidance where more intensive oil and gas related activities occur. Human disturbance is highest, mainly via vehicle traffic, during active drilling phase of development, then decreases during production phases. Increased human presence, via vehicle traffic disturbance, may cause progressive zones of avoidance (indirect habitat loss) that could extend over a mile for mule deer (Sawyer et al. 2008). In mule deer, population declines can be linked to avoidance behavior associated with development in open sage brush habitats in western Wyoming (Sawyer et al. 2017), this has been shown less so for antelope and elk. Due to this avoidance, or indirect habitat loss, animal numbers could increase in areas surrounding development which may raise the risk of density-dependent effects, such as range over-utilization or disease transmission, which can lower survival and reproduction (Sawyer et al. 2006). In addition, greater access via increased road numbers and densities can also increase both the legal and illegal harvest of wildlife by humans (Wyoming Game and Fish Department 2017).

Ungulates (mule deer, elk, antelope) are generally prey species, often reliant on a combination of visual, olfactory, and auditory cues to detect predators. Noise can be characterized by the onset, consistency, and regularity of the noise source. Noise during oil and gas development within CWR can range from short duration, such as a seismic blast or passing truck, to chronic, such as a compressor station (USGS 2023). Noise can shrink an individual's listening area and cause the individual to avoid an area within CWR that has higher noise and relocate to areas of lower noise. Noise has been shown to affect big game by increasing vigilance with moderate noise levels in the winter and decreased habitat use with increased noise levels in spring, summer, and fall (USGS 2023, Lynch et al. 2015). General population effects consist of avoidance of oil and gas well sites, roads in oil fields, and can have negative effects on abundance in open areas (USGS 2023, Sawyer et al. 2017).

Oil and gas development within CWR can also increase the spread of invasive non-native species (INNS) such as cheat grass, which contributes to loss of certain desirable wildlife habitats, increased soil erosion, reduced water quantity and quality, increased wildfire frequency, and reduced structural and species diversity. (Kemmerer RMP FEIS p 94-95). Introduction of weeds, invasive or noxious vegetation, or invasive annuals, can result in establishment of populations. These new species or populations can outcompete native vegetation, degrading the quality of big game habitat up to decreasing the carrying capacity of the land, which can then cause loss of genetic viability if sustained over long periods of time. To minimize the proliferation and establishment of INNS, design features and stipulations are in place, such as requiring each

proposed well permit to include an integrated pest management plan, a reclamation plan, and stipulations for weed management and prevention (weed wash stations, weed free seed).

Offering leases in CWR is not expected to result in new impacts to CWR in relation to habitat, human presence, noise and INNS beyond those identified in the base RMPs and narrative cited above. However general habitat disturbance could lead to incremental and cumulative habitat fragmentation, activity, and increased noise levels across the landscape.

To mitigate these potential impacts to ensure proper functioning habitat from potential surface disturbance, human presence, noise, and INNS there are multiple CSU, TLS, NSO stipulations in place across affected BLM field offices that prohibit surface disturbing activities or surface occupancy during these crucial winter periods thereby minimizing indirect habitat loss via human disturbance. There are also design features and stipulations requiring each proposed well to include an integrated pest management plan, a reclamation plan, and stipulations for weed management and prevention (weed wash stations, weed free seed), and requiring a CWR mitigation plans be submitted to the BLM by the applicant as a component of the permit to ensure that these impacts are minimized to the greatest extent practical. In addition, other species' NSO and TLS stipulations are also expected to help further reduce disturbance on crucial winter ranges that overlap areas with other special species (i.e. raptors, sage grouse, sensitive species, etc.). A complete list of stipulations is found within Appendix 4.10; the stipulations are derived from each FO RMP.

Migratory Corridors

Development of leases located in big game habitats can result in negative impacts to migration corridors. Whether occurring in a movement corridor or in other seasonal habitats, oil and gas related disturbance can result in wildlife populations shifting their foraging or reproductive behaviors from utilizing high quality habitat to areas of lower quality, less desirable habitat. Mule deer are sensitive to impacts of oil and gas development, particularly during migration and that migratory use and function deteriorate in routes or regions where surface disturbance exceeds 3% (Sawyer et al 2020). Areas of intensive activity or construction may become barriers to animal movement, including inhibiting big game from reaching crucial winter ranges and habitats important for reproduction (Sawyer 2010). Abandonment of important habitat can lower reproduction and survival rates of the species and result in a decline in wildlife populations." (ARMPA, 4-426) Over utilization can occur as a result, further limiting the productive nature of the land and sustaining the population at hand. The effects can be more pronounced when additional restrictions on access occurs either through fences or other man-made intrusions, other land uses are competing for the same range resources, or when conditions such as drought or other climatic occurrences, affect growth and/or vegetation regeneration rates, including fire (Rawlins RMP 4-455, 4-456).

Of the 68 parcels evaluated in Alternative 2, 15 parcels fall within designated Baggs and Platte Valley mule deer migratory corridors (11 in Baggs, 4 in Platte Valley). Currently, there is no pronghorn or elk formally designated migratory corridors, though the Sublette Antelope Migratory corridor is undergoing the WGFD formal designation process as stated in the WY EO 2020-01. In addition, it is noted that no parcels fell within High Use, Stopovers, or Migration Bottleneck portions of the overlapped migratory corridor. Total designated migratory corridor acres overlapped within the 15 parcels equal 5.14% for Baggs and 1.96% for Platte Valley.

Using the potential 95:5% horizontal/vertical well disturbance calculations expressed on page 20, (354 wells across the 68 parcels at 3.5 acres for horizontal wells and 19 acres for vertical wells), it is reasonable to assume that the 15 parcels overlapping mule deer migratory corridors could potentially develop 78 wells (57 in Baggs; 21 in Platte Valley) with an estimated direct impact of 333.83 acres of mule deer migratory corridors (244.81 acres in Baggs; 89.02 acres in Platte Valley), which if we assume all wells were developed within these designated corridors, it would result in 0.088% of migratory corridor disturbance.

When the 2 designated mule deer migratory corridor parcel overlap analysis is expanded to take into account potential indirect habitat impacts via avoidance (1-mile buffer around the *entire parcel*), this results in indirect impacts to designated migratory corridor of 25.59% Baggs migratory corridor/ and 8.0% Platte Valley migratory corridor. In addition, it is noted that no parcels fell within the indirect habitat impacts via avoidance for the High Use, Stopovers, or Migration Bottleneck portions of the overlapped migratory corridor.

Offering leases in designated migratory corridors is not expected to result in new directs impacts in relation to habitat, human presence, noise and INNS beyond those identified in the base RMPs and narrative cited above and does not exceed the surface disturbance thresholds determined by Sawyer et al 2020. However, any direct surface migrator corridor disturbance could lead to incremental and cumulative habitat fragmentation, activity, and increased noise levels across the landscape. The indirect effects of avoidance to the Baggs High use migratory corridor, if the parcel is developed, may cause incremental negative impacts to the functionality of the high use corridor, however TLS stipulations and mitigation plans would be put in place to sufficiently protect the continued functionality of the migratory corridor.

3.5.2.3. *Effects of Alternative 3 – Modified Proposed Alternative*

The difference between Alternative 2 and Alternative 3 is the deferral of parcels due to sage-grouse prioritization equating to BLM offering 53 parcels for lease, covering 69,455.55 acres (Table 3.1-1) Alternative 3 would reduce the potential area of disturbance of general big game habitat by 22,940.9 acres, reduce mule deer CWR overlap by 7,180.53 acres, antelope CWR overlap by 1,548.56 acres, and elk CWR overlap by 336.96 acres. There was no change in the elk effects between Alternative 3 and Alternative 2, therefore elk will not below as effects are the same as alternative 2. Alternative 3 would also eliminate all potential designated mule deer migratory corridor impacts; therefore migratory corridors will not be discussed further below.

General Big Game Habitat

Alternative 3 reduces parcels available by 15, which equates to the overall reduction of offered acreage by 22,940.9 acres. These fifteen parcels would not be developed; therefore, direct disturbance or activity associated with these parcels and acres would not occur from oil and gas leasing and development activity to big game habitat. Statewide there are approximately 60,265,526 acres, 56,519,914 acres, and 60,385,520 acres of habitat for mule deer, antelope, and elk respectively. The proposed disturbed acreage (1,141.43 acres) across the state under Alternative 3 would be assumed to affect 0.0019%, 0.0020%, and 0.0019% of statewide mule deer, antelope, and elk habitats, respectively. The 15 deferred parcels remove potential impacts from 4 mule deer, 6 antelope, and 5 elk HU across the state of Wyoming. When reviewing to the

effected mule deer, antelope, and elk HUs, the habitat ranges encompass approximately 21,093,320 acres, 16,225,214 acres, and 20,752,993 acres respectively; therefore, the proposed disturbed acreage would be reduced to 0.0054%, 0.0070%, and 0.0055% of mule deer, antelope, and elk, respectively.

When the statewide analysis is expanded to take into account potential indirect habitat impacts via avoidance (1-mile buffer around the *entire parcel*), this results in a reduction in alternative 3 acreage to approximately 485,432.21 acres of mule deer habitat (0.81%), 452,098.31 acres of antelope habitat (0.80%) and 485,432.21 acres of elk habitat (0.80%). When reviewing the effected mule deer, antelope, and elk HU levels, the proposed indirect habitat impact is estimated to average 1.18%, 2.66%, and 2.28% of big game HUs, respectively It is acknowledged that a consistent 1-mile buffer around each entire proposed parcel provides a very liberal standardized estimate of the indirect impacts since at a lease-sale level, we do not know exactly where within each parcel the impacts would take place. However, timing limitation stipulations (TLS) and additional site-specific mitigation measures developed if and when a site-specific development plan would further minimize disturbance to wildlife.

Crucial Winter Range

Impacts to big game crucial winter range (CWR) habitat would be reduced by 5 parcels for mule deer (9), 2 parcels for antelope (16), and no parcels for elk in Alternative 3 (Modified Proposed Action) as described in Alternative 2.

When reviewing the Alternative 3 overlap of the parcels to designated CWR, at an HU level for each species, there are 1 mule deer (excludes Platte Valley), 3 antelope, and 1 elk HUs overlapped. Total designated CWR overlap within the Baggs mule deer HU equal 3.24%. When looking at CWR parcel overlap for 3 antelope HUs, the overlap encompassed 1.84% (1.05% Red Desert, 1.95% Bitter Creek, & 3.88% Baggs). Parcel overlap in designated CWR acres within elk HU equal 0.07% in the Sierra Madre HU.

Using the potential 95:5% horizontal/vertical well disturbance calculations expressed on page 20, (267 wells across the 53 parcels at 3.5 acres for horizontal wells and 19 acres for vertical wells), it is reasonable to assume that for the 9 parcels overlapping Baggs mule deer CWR could potentially develop 45 wells with an estimated direct impact of 193.83 acres of mule deer HU CWR habitat, which is 0.068% Baggs HU CWR disturbance. When completing the same analysis for antelope, it is reasonable to assume 16 parcels overlapping antelope CWR could potentially develop 80 wells with an estimated direct impact of 344.60 acres of HU CWR, which is 0.059% antelope HU CWR disturbance.

When the 9 mule deer HU parcel CWR overlap analysis is expanded to take into account potential indirect habitat impacts via avoidance (1-mile buffer around the *entire parcel*), this results in an addition of 3 parcels in the Baggs HU being indirectly impacted (12 total parcels overlapped), which would result to indirect impact to designated CWR of 16.44% indirect overlaps in Baggs HU. When the 3 antelope HU CWR overlap analysis is expanded to take into account potential indirect habitat impacts via avoidance (1-mile buffer around the *entire parcel*), this results in an addition of 6 parcels across the overlapped antelope CWR HUs potential indirect impacts within designated CWR (22 total parcels overlapped), which would result to indirect impacts to designated CWR of 24.93% for Baggs HU, 13.41% for Bitter Creek HU, , and 7.45% for Red Desert. It is acknowledged that a consistent 1-mile buffer around each entire proposed parcel provides a very liberal standardized estimate of the indirect impacts since at a

lease-sale level, we do not know exactly where within each parcel the impacts would take place. Timing limitation stipulations (TLS) and additional site-specific mitigation measures developed if and when a site-specific development plan would be proposed are expected to further minimize disturbance to wildlife.

3.5.2.4. *Summary of Effects*

The incremental intensity of development and resultant impacts will be considered in combination with the context of the proposed action at the time development is proposed. These include other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Due to the uncertainties from a lease development standpoint, it is difficult to predict exactly what impacts may occur. However, impacts from development are accounted for in the individual field office RMPs, such as the anticipated noise, permanent and temporary facilities, traffic, and wildlife moving from high quality habitat to areas of lower quality, less desirable habitat. Abandonment of important habitat can lower reproduction and survival rates of the species and result in a decline in wildlife populations. Additional information on cumulative impacts to big game and big game habitats are provided in the ARMPA at pages 4-423 – 4-427, 4-562, 4-508.

Under Alternative 2, within 1 mile of the 68 parcels there are 60 pending APDs, 0 approved APD, 3,133 producing or shut-in Federal, State, or private wells (per WY Oil and Gas Commission), 386 authorized Oil and Gas leases, 23 Oil and Gas leases that were sold but not issued, 8 renewable projects, 65 existing grazing allotments, and numerous existing ROWs (as of March 24, 2025). Potential future development of these leases could contribute 354 APDs to cumulative impacts.

Under Alternative 3, within 1 mile of the 53 parcels there are 24 pending APDs, 4 approved APD, 780 producing or shut-in Federal, State, or private wells (per WY Oil and Gas Commission), 384 authorized Oil and Gas leases, 22 Oil and Gas leases that were sold but not issued, 3 renewable projects, 24 existing grazing allotments, and numerous existing ROWs. Potential future development of these leases could contribute 267 APDs to cumulative impacts.

Oil and gas development causes surface disturbance through construction of well pads, roads, pipelines, and other facilities. Reclamation and mitigation efforts would reduce impacts on wildlife habitat and fisheries; however, construction and maintenance of roads and well pads and the presence of humans would result in long-term or permanent impacts. Overall impacts would likely be greater where mineral development is more intense, in areas where development overlaps with crucial and winter wildlife ranges, and on state and private lands because of the lack of protections afforded to natural resources in these areas. If development expands, the ability of big game and other wildlife species to disperse into alternate habitats could become limited. This may create isolated populations in areas where habitats remain intact. The degree of impact would depend on the seasonal timing of development activities and whether the amount of activity outpaces the successful reclamation and revegetation efforts in disturbed areas. Because of this pace of development (whether federal mineral, commercial, or private residence), more pressure would be put on habitats outside of the development (likely private lands) as wildlife is displaced from the disturbances.

It is well known that CWR is important to the viability of big game. Persistent disturbance in sensitive habitats can shift the areas of use and weaken the tendency of the animals to return to the disturbed area. If animals don't return to disturbed habitat, populations could be lower as herds and individuals to move into native and unpredictable habitats that may not support the increased use by local and newly arrived, displaced populations. Mineral development activities would likely cause displacement of animals and selection of alternative habitats and would likely inhibit big game movement between winter ranges and birthing areas. The displacement of big game, and specifically mule deer, from high-use to low-use areas has the potential to influence survival and reproduction (Sawyer et al. 2006). It is likely that negative effects (both in the short-term and potentially in the long-term) from displacement of big game from these habitats would occur but is dependent on level and rates of development if they occur.

There are over 16.7 million acres of big game CWR in the State of Wyoming. Of this amount, approximately 6,431,769 acres in Mule Deer CWR, 5,973,000 acres in Antelope CWR, and 4,361,359 acres in Elk CWR. Under Alternative 2, 92,396.45 acres would be offered for lease. Of that total, 16,385 acres of mule deer CWR, 12,281.44 acres of antelope CWR, and 482 acres within elk CWR would be offered for lease. These total lease coverage numbers account for approximately 0.25% of all mule deer CWR and 0.21% of all antelope CWR, and 0.01% of all elk CWR within the state of Wyoming. Under Alternative 3, 69,455.55 acres would be offered for lease. Of that total, 9,204.91 acres of mule deer CWR, 10,732.88 acres of antelope CWR, and 145 acres within elk CWR would be offered for lease. These total lease coverage numbers account are reduced to approximately 0.14% of all mule deer CWR, 0.18% of all antelope CWR, and 0.003% of all elk CWR within the state of Wyoming.

Based on the 95:5 horizontal/vertical assumptions described at the beginning of Section 3 (p.20), the BLM is assuming that 267-354 wells will be developed. With the estimated assumption of 19 acres of surface disturbance from pads, roads, pipelines, and production facilities for vertical wells (2,128 acres total under Alternative 3 and 2,945 acres total under Alternative 2) and 28 acres disturbance from pads, roads, pipelines, and production facilities for horizontal wells (392 acres total under Alternative 3 Proposed Action, and 542.5 acres total under Alternative 2), the maximum potential disturbance that may occur within CWR from these leases is 0.11% - 0.25% of the mule deer, 0.18% - 0.21% of the antelope and 0.003% - 0.01% impacts on elk CWR statewide. If any development that occurs within CWR would be mitigated through RMP stipulations outlined in Appendices 4.1 and 4.2. Daily operations from developed wells that go into production will still pose the potential to disrupt big game populations from noise and human presence and increase the potential for vehicle collisions.

Where parcels are not located within approved project area EIS boundaries, and even to a certain extent those that are, as more reservoir data is gathered through exploratory drilling, the likelihood for sustained economic production should increase, and a decrease in dry holes should occur consistent with other types of field development. There are seven approved EIS areas (Hiawatha EIS, Atlantic Rim Natural Gas Development Project EIS, Converse County Oil & Gas Project EIS, TransWest Express Transmission Line Project EIS, Continental Divide/Wamsutter II Natural Gas EIS, Continental Divide-Creston Natural Gas Project EIS) within one mile of the parcels.

See ARMPA FEIS pg. 4-509–- 4-579, the Buffalo RMP FEIS pg. 871, 1167 and 1660-1665, Bighorn RMP FEIS pg. 4-642–- 4-674, and Lander RMP FEIS pg. 1276-1332 for more information on what activity was considered in the RMP cumulative impacts analysis.

In particular, in its analysis of impacts of impacts from oil and gas development, the ARMPA at page 4-508, concludes:

> *Loss of vegetation from development activities would degrade habitat and increase forage competition among grazing animals. Livestock grazing practices would further increase cumulative impacts through direct competition for forage, water, and space, and by limiting the ability to manage vegetation for fish and wildlife needs. These impacts would also reduce the capability to maintain current population objectives.*
>
> *Oil and gas development would cause the greatest amount of surface disturbance through construction of well pads, roads, pipelines, and other facilities. Reclamation and mitigation efforts would reduce impacts on wildlife habitat and fisheries; however, construction and maintenance of roads and well pads and the presence of humans would result in long-term or permanent impacts. Cumulative impacts would likely be greater where mineral development is more intense, in areas where development overlaps with crucial and winter wildlife ranges, and on state and private lands because of the lack of protections afforded to natural resources in these areas. Protection of non-federally listed species on private and state lands may not occur, resulting in potentially significant impacts on these species. As development expands throughout southwestern Wyoming, the ability of big game species to disperse into habitats outside of the planning area may become limited. This may create isolated populations in areas where habitats remain intact. The degree of impact would depend on the timing of development activities and whether the amount of activity outpaces the successful reclamation and revegetation efforts in disturbed areas. Because of this pace of development (whether federal mineral, commercial, or private residence), more pressure would be put on habitats outside of the development (likely private lands) as wildlife is displaced from the disturbances.*
>
> *Impacts on wildlife would likely occur under all alternatives because of the loss of habitat. The success of disturbed land reclamation, both short- and long-term, would determine the duration of impacts. Given the constancy of all other stressors, the potential for cumulative impacts would be greatest under Alternative A because of anticipated increases in development and fewer restrictions on such activity on public lands.*

Potentially significant impacts to migration and big game habitats were forecast to occur as a result of development in the approved EIS project areas. These parcels may contribute and potentially expand direct and indirect effects in both the short and long term. Within the Green River RMP FEIS (at 462) impact analysis indicates that "the capability of habitat to meet HU objective levels would likely be significantly affected" in the Sublette HU. Development of parcels in combination with other existing and/or future development could contribute to these significant impacts.

Where parcels are located outside of approved project areas, and if they are developed, an increase in exploratory activity could occur if conditions are favorable. Due to the scattered nature of the parcels, this activity could occur where there is little to no development currently. Due to the fractured nature of the fluid mineral estate in the HPD and in SE WY, most development is being sited on private or state lands resulting in off-lease federal production. In these cases, the State of Wyoming has primary jurisdiction for ensuring operations are compliant with state rules for the protection of surface lands.

The likelihood of an increase in activity in the HDD is low while continued exploratory and some development activity increases in the HPD. Exploratory and development activity could increase in the WR/BBD due to the number of previously nominated parcels, however, it is unknown as to what extent. Typically, less than 50% of all leases issued are explored. Further information concerning BLM leasing statistics can be located at: https://www.blm.gov/programs-energy-and-minerals-oil-and-gas-oil-and-gas-statistics. To the extent that existing oil and gas development is affecting big game herds, those impacts are expected to continue. New

development is likely to be consistent with current projections in the RMPs and are not expected to be at a level that would cause significant impacts beyond those reflected in the RMP FEIS. Impacts from other risk factors, such as severe weather events, are expected to continue but cannot be foreseen. Based on the analysis above, and in consideration of new information, no new impacts have been identified and the need for new or revised stipulations are not necessary to mitigate potential future effects.

Best management practices will be considered and, where required by stipulation, a mitigation plan will be developed to ensure that RMP objectives are achieved. Lease Notices and coordination with State Agencies will ensure cooperation and coordination across jurisdictions, increasing the consistency in application of mitigation and consideration of cumulative impacts. Master development plans will be considered as appropriate. Conditions at the time an APD is submitted will be assessed for significance; the need for additional mitigation will also be determined at the time development is proposed. All future projects will undergo site-specific review, and preparation of an environmental record of review will occur in accordance with Federal law, regulation, and policy. All oil and gas projects in the state are subject to State of Wyoming rules and require approval of an Application for Permit to Drill by both agencies if the proposal involves production of the Federal mineral estate. Monitoring and the use of adaptive management will continue in accordance with any applicable decision. As data is collected and made available, it will be considered at the time development is proposed, if a parcel is sold, a lease is issued and development proposed.

In consideration of the above, no significant cumulative impacts are expected from the offering of the parcels that contain big game habitats.

3.6. Issue 6: Socioeconomics: What are the socioeconomic effects of potential oil and gas development, including hydraulic fracturing, on parcels that may be offered for lease?

3.6.1. Affected Environment

3.6.1.1. *Economics*

Please refer to the applicable RMP FEISs for additional discussion on resource socioeconomics across the total project area.

The counties within which the proposed parcels are located collectively make up the socioeconomic analysis area in which potential socioeconomic impacts of the proposed lease sale are considered. The local customs, culture, and history of communities within Wyoming are entwined with the lands and mineral estates administered by the BLM. People derive a wide range of values from their access, use, development, and enjoyment of natural landscapes administered by each field office. These values contribute to the unique sense of place indicative to rural Wyoming, as well as to the social and economic well-being of households and communities across the analysis area. Just as BLM management actions can affect future access, use, development, and enjoyment of these natural landscapes, field office land use and leasing decisions can affect the social, cultural, and economic well-being of surrounding towns, cities, and rural areas. Wyoming has a long history in mineral development and accounted for more

than 2% of U.S. total crude oil output and more than 2% of U.S. marketed gas production in 2024 (EIA 2025a; EIA 2025b).

Federal mineral royalties, severance taxes, sales and use taxes, and ad valorem taxes associated with mineral development historically comprise a significant amount of state and local revenues (WY LSO 2025). Specifically, these revenues from both federal and non-federal mineral production contribute significantly to respective General Funds for State and local government operations, public K-12 education coffers, and community colleges. Wyoming is in an additionally unique position where its tax and federal mineral royalty (FMR) revenues are supplemented with investment income derived from "legacy" benefits associated with historically garnered severance taxes, as well. Such revenue associated with Permanent Wyoming Mineral Trust Fund investment income and FMRs assist in reducing the tax burden on current Wyoming residents to support the range of government and public services residents currently receive (WY LSO 2025).

The socioeconomic analysis area is characteristically rural, with sparse and fragmented residential populations speckled across the least populated state in the U.S. While the oil and gas industries of WY are embedded in the functionalities and livelihoods of the state's communities, WY residents also deeply value the aesthetic, recreational, and overall environmental and ecological health of these lands; such diverse interests must be delicately balanced and considered equitably when analyzing the impacts of any specific land use(s).

3.6.1.2. *Public Health and Safety*

Within the 62.5-million-acre management area of BLM WY there are 205,327 existing active well bores of all well types across all land jurisdictions. Such a level of development has previously been linked to the following public health and safety-related risks: occasional fire starts; spills of hazardous materials, hydrocarbons, produced water, or hydraulic fracturing fluid and corresponding potential contamination of air, soil, or water; exposure to naturally occurring radioactive material (NORM) in drill cuttings or produced water (refer to Appendix 4.8); traffic congestion and collisions from commercial vehicles and heavy use; infrequent industrial accidents; presence of hydrogen sulfide (H2S); or increased levels of fugitive dust particulate matter equal to or less than 10 microns in diameter [PM10] and particulate matter equal to or less than 2.5 microns in diameter [PM2.5]), other criteria pollutants, VOCs, and hazardous air pollutants (HAPs). Refer to the air quality analysis in Section 3.2.1 for projected levels of criteria pollutants, HAPs, GHG emissions, and VOC and NOX emissions that contribute to ozone (O3) formation, as well as NAAQS.

Future potential development of the nominated lease parcels would result in emissions of air pollutants that can lead to human health effects depending on the level and duration of exposure. The distance that air pollutants can travel depends on a multitude of environmental factors which vary geographically (e.g., climate, topography, land use) and temporally (e.g., time of day, meteorological conditions), making it inexact to predict the spatial extent of potential human health effects associated with future potential development of the lease parcels. In addition, there is no single distance from oil and gas wells that has been accepted across the scientific community as conveying health effects to human populations. However, several studies have found that residents living at varying distances within less than 1.25 miles of active oil and gas wells are at greater risk for experiencing health effects from air pollution than those living beyond 2000 m (Adgate et al. 2014; Czolowski et al. 2017; Haley et al. 2016).

HAPs are known or suspected to cause cancer or other serious health effects, such as compromises to immune and reproductive systems, birth defects, developmental disorders, or adverse environmental effects resulting from either chronic (long-term) and/or acute (short-term) exposure, and/or adverse environmental effects. Breathing ozone can trigger a variety of health problems, including coughing and sore or scratchy throat; difficulty breathing deeply and vigorously and pain when taking deep breaths; inflammation and damage to the airways; increased susceptibility to lung infections; aggravation of lung diseases such as asthma, emphysema, and chronic bronchitis; and an increase in the frequency of asthma attacks. Some of these effects have been found even in healthy people, but effects are more serious in people with lung diseases such as asthma. Breathing air with a high concentration of carbon monoxide (CO) reduces the amount of oxygen that can be transported in the blood stream to critical organs like the heart and brain. At very high levels, which are possible indoors or in other enclosed environments, CO can cause dizziness, confusion, unconsciousness, and death. Very high levels of CO are not likely to occur outdoors. However, when CO levels are elevated outdoors, they can be of particular concern for people with some types of heart disease. Particulate matter, also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. PM is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. PM is measured and regulated according to particle size. Smaller particles are associated with more negative health effects, including respiratory and cardiovascular problems, because they can become more deeply embedded in the lungs and may even get into the bloodstream.

The following links provide additional information on air pollution health effects:

Criteria Pollutants:

- Ozone (https://www.epa.gov/ground-level-ozone-pollution) (EPA 2022a)
- Particulates (https://www.epa.gov/pm-pollution/particulate-matter-pm-basics) (EPA 2022b)
- Nitrogen dioxide (https://www.epa.gov/no2-pollution/basic-information-about-no2) (EPA 2022c)
- Carbon monoxide (https://www.epa.gov/co-pollution/basic-information-about-carbon-monoxide-co-outdoor-air-pollution#Effects) (EPA 2022d)
- Lead (https://www.epa.gov/lead-air-pollution/basic-information-about-lead-air-pollution#health) (EPA 2022e)
- Sulfur dioxide (https://www.epa.gov/so2-pollution/sulfur-dioxide-basics#effects) (EPA 2022f)
- Hazardous air pollutants (https://www.epa.gov/haps/health-effects-notebook-hazardous-air-pollutants) (EPA 2021a)

3.6.2. Environmental Effects

3.6.2.1. *Effects of Alternative 1 - No Action Alternative*

Under the No Action Alternative, where none of the leases would be offered and subsequently sold, the employment, revenue, and purchasing opportunities associated with developing and producing wells on these leases would be foregone, as would the opportunity to provide oil and gas resources from these lease parcels to aid in meeting associated energy demands. None of the

proposed parcels would be offered for lease, resulting in reduced bonus bid revenues and rentals. Since not leasing these minerals would prevent private entities from exploring and developing these minerals, subsequent associated oil and gas production and generation of royalty revenues would not occur. The State of Wyoming, as well as many counties and communities within the state, rely on oil and gas development as an important part of their economic base for funding a majority of public services and livelihoods. However, adverse impacts to quality of life associated with future potential lease developments, such as impacts to air quality, water quality, biodiversity, cultural resources, non-use values and recreation values, would also be foregone.

See discussion in Section 3.6.1 about the short-term energy outlook about projections on U.S. energy portfolio.

For more detailed, management area-specific discussions regarding the potential impacts of foregoing leasing, please refer to the applicable RMP FEISs.

3.6.2.2. *Effects of Alternative 2 - Proposed Alternative*

Socioeconomics

At the lease sale stage, it is unknown where, or if, development would occur in any given nominated lease parcels; as specific types and locations of development are proposed, their specific effects would be analyzed and addressed in detail at the time of proposed lease development. However, in general, acquisition and development of new leases provide short-term local and regional jobs and long-term revenue on a sustained basis. These may include employment opportunities related to the oil and gas and service support industries in the region, as well as federal, state, and county government revenue related to taxes, royalty payments, and other revenue streams.

Federal oil and gas leases generate a one-time lease bonus bid, as well as annual rents during the life the lease, or until hydrocarbon production begins on the leased parcel. Nominated parcels approved for leasing are offered quarterly by the BLM at auctions starting at a minimum bid of $10.00 per acre. If parcels do not receive the minimum competitive bid, they may be offered at a later sale or cancelled. In general, lease sales in Wyoming are highly competitive and parcels with high potential for oil and gas production regularly command bonus bids in excess of the minimum bid.

Lessee rent payments are equal to $3.00 an acre for the first two years and increase to $5.00 an acre for six further years of the lease. For any lease extending beyond the first eight years, rent payments increase to at least $15.00 per acre thereon. Typically, these leases expire after 10 years unless held by production. During this lease period, annual rental payments are paid on leased parcels until one or more wells are drilled that result in production, then the lessee begins paying annual royalties calculated as a percentage of the value of production from the parcel. For this sale, the BLM is applying a 12.5% royalty rate. 51% of federal mineral leasing revenues go to the Treasury Department, while approximately 49% are distributed back to the state in which the revenues were generated. In Wyoming, federal mineral receipts distributed back to the state follow a legislatively established, two-tier formula. The first tier covers total annual receipts up to $200 million and the second tier applies to receipts over $200 million per year (W.S. § 9-4-601(a)). Based on the state's established two-tier formula, Wyoming allocates these revenues to

public school districts, the highway and county road fund, cities and towns, the University of Wyoming, capital construction projects, and the state's budget reserve account (WY LSO 2025).

Although the economic activity associated with mineral development plays an important role in supporting the overall socioeconomic well-being of Wyoming communities and their public services, such resource development can have adverse impacts on other, equally valued socioeconomic indicators, such as recreation (including hunting, fishing, and wildlife viewing), cultural resource preservation (including traditional ecological knowledge sharing), livestock grazing, and public health factors such as air quality. Continued expansion of the oil and gas industry may be perceived as having a negative effect on quality-of-life values associated with these indicators. To the extent that additional oil and gas development affect recreational, tourism, agricultural, educational, or preservation opportunities in the area of the nominated lease parcels, there may be related direct and indirect regional economic effects to associated local industry suppliers and support services.

The total landscape-level surface disturbance associated with reasonably foreseeable environmental trends and planned actions would include activities that generate increased human activity, traffic, noise, dust, odor, light and air pollution, and visual effects. These activities have the potential to affect quality of life of any existing nearby residences or facilities, depending on the intensity of development activities and proximity of structures to a given parcel. While the majority of these impacts to any significantly proximal residences or facilities would be short term and cease during operations (e.g., increased human activity, traffic, noise, dust, and odor during drilling and completion phases), residences may continue to experience longer-term visual, air, or other impacts that have potential to affect quality of life if they are located in areas in which oil and gas development is not currently nearby or visible. However, with consideration of total lease acreage, topography, and resources present within the nominated lease parcels, there are opportunities for future potential development to be placed in portions of the nominated lease parcels that are less proximal to any associated residences and facilities.

Air pollution can also impact Air Quality Related Values through ambient exposure to elevated atmospheric concentrations, such as ozone effects to vegetation, impairment of scenic views by particulate matter in the atmosphere, and deposition of air pollutants, such as sulfur and nitrogen compounds, on the Earth's surface through dry and wet precipitation.

Regarding water quality, traditional oil and gas resource exploration, development, and production typically do not significantly deplete ground water on a regional basis but may have a limited, short-duration, near-well bore drawdown around the water supply well depending upon length and intensity of pumping activity. Further discussion on water quality can be found in Appendix 4.8.

Other economic or social indicators can also influence the general health risks of a population, such as poverty status, educational attainment, broadband access or language proficiency. The intensity, and likelihood, of potential impacts to public health and safety, including the quality of usable water aquifers, is directly related to proximity of the proposed action to domestic and/or community water supplies (wells, reservoirs, lakes, rivers, etc.) and/or agricultural developments. Groundwater resources are also regional in nature and water withdrawals are not anticipated to affect domestic water sources (see Section 3.3 and Appendix 4.8 for water resource discussions). 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.

Due to the scattered nature and small area encompassed by the proposed parcels (as well as low population density and the presence of industrial safety programs, standards, and state and federal regulations) offering the proposed parcels is not expected to substantially increase health or safety risks to humans, wildlife, or livestock. Parcels that contain lands with private surface overlying federal minerals (i.e., split estate) have, or have the potential to, contain private residences and associated facilities such as domestic water supply wells. Twenty-four parcels contain or are entirely comprise of split estate lands. Several of these parcels may also be used for individual dispersed recreational activities which could expose these users to oil and gas-related activity, as mentioned previously.

If the proposed parcels are leased, and subsequently if the lessee submits an APD, local communities would have the opportunity to identify any perceived adverse environmental impacts at the time of site-specific review during the APD stage.

Public Health and Safety

While no formal human health risk assessments have been conducted specific to past and present development in the BLM WY management area, the results of EPA's 2019 Air Toxics Screening Assessment (Autocrine) indicate that cancer, neurological risks, and respiratory risks in the analysis area are all lower than national levels and are generally the same as state of Wyoming levels (EPA 2019) (refer to Sections 3.1 and Appendix 4.1).

While the 2019 AirToxScreen estimates the risk of cancer and/or other health impacts solely based on exposure to HAPs, other economic or social indicators can also influence the general health risks of a population, such as poverty status, educational attainment, or language proficiency. Headwaters Economics data for populations at risk (i.e., more likely to experience adverse health outcomes because of demographic or socioeconomic factors) show that most of the indicators for populations at risk are lower for the state of Wyoming compared with the nation as a whole. However, low-income, minority, and indigenous communities of potential concern within the analysis area constitute populations at risk for adverse health outcomes due to demographic and/or socioeconomic factors (US DOC 2022). Aside from ethnicity and poverty status, other factors contributing to increased risks for populations in the analysis area include, but are not limited to, age, education, employment, broadband access, and language proficiency. Human health risk assessments cannot be performed until project-specific details are known so that frequency, timing, and levels of contact with potential stressors may be identified (EPA 2022g). However, each of the reasonably foreseeable environmental trends and planned actions have been, or will be, subject to relevant rules and regulations regarding public health and safety. Ongoing and future potential development would continue to present aggregate risks to human health as detailed above. When wells reach the end of their useful life and are properly plugged and reclaimed, they would no longer contribute to air quality effects; however, depending on the level and duration of individual's exposure during well operation, some of the public health effects from air pollution may endure beyond the life of the wells (e.g., chronic respiratory problems such as asthma).

Future potential development on the nominated lease parcels under Alternative 2 is estimated to be 354 wells, based on emissions estimated using the BLM Lease Sale Emissions Tool based on

the total acreage of the lease parcels and the 5-year average of the number of lease acres held by production divided by the total acres leased and discussed in Section 3. For oil and gas development specifically, the distance at which residents may experience quality of life effects from increased human activity, traffic, noise, dust, odor, light pollution, and visual effects depends on a multitude of environmental factors, which vary geographically (e.g., topography, landscape, and land use) and temporally (e.g., phase of development, time of day, meteorological conditions), making it inexact to predict the spatial extent of potential quality of life effects associated with future potential development of the lease parcels. While some environmental factors can be analyzed at the lease sale stage (e.g., vegetation and landscape and topography and soils, and surrounding land uses), other influential factors cannot be analyzed until detailed site-specific studies are performed at the APD stage when the specific location of wells relative to nearby residences is known. In addition, there is no single distance from oil and gas wells that has been accepted across the scientific community as conveying quality of life effects on human populations. However, monitoring studies have found that residents living within approximately 0.5 mile or less of oil and gas wells (at varying stages of development) experienced nuisance levels of noise (≥50 A-weighted decibels) with residents less than 1,000 feet away experiencing the greatest effects (Blair et al. 2018; Hays et al. 2017; Kroepsch et al. 2019); residents living within 0.5 mile of oil and gas wells experienced nuisance levels of odors (Adgate et al. 2014); and residents living within 1.25 miles or less experienced greater risk of air pollution effects (including, but not limited to, dust) than those living beyond 1.25 miles (Adgate et al. 2014; Czolowski et al. 2017; Haley et al. 2016; Kroepsch et al. 2019). The visual effects of oil and gas development are negligible (i.e., unlikely to change the visual landscape) when development occurs in areas that are already highly modified in character due to a high degree of oil and gas development.

When authorizing development, federal and state laws, regulations, and policy are applied to reduce effects or respond to incidents. These include the following:

- Federal, state, county, and municipal fire managers shall coordinate on fire response and mitigation.
- Developers who install and operate oil and gas wells, facilities, and pipelines are responsible for complying with the applicable laws and regulations governing hazardous materials and for following all hazardous spill response plans and stipulations. The Wyoming Oil and Gas Conservation Commission (WYOGCC) requires similar spill response measures after release of hydrocarbons, produced water, or hydraulic fracturing fluids.
- All well pads, vehicles, and other workplaces must comply with worker safety laws as stipulated by the Occupational Safety and Health Administration.
- Vehicular traffic and pipelines are regulated according to safety laws as stipulated by the Department of Transportation.
- Measures to lower risks related to H2S exposure include flaring or venting gas and the use of stock tank vapor recovery systems.
- Fugitive dust is concentrated in the short-term during construction but may occur to a lesser degree in the long term because of increased vehicle use and ground disturbance. In addition to fugitive dust, refer to the air quality analysis in Section 3.2 and Appendix 4.1 for estimated emissions of other air pollutants, including criteria pollutants, VOCs, and HAPs. Dust is concentrated in the short-term during construction but may occur to a

lesser degree in the long term because of increased vehicle use and ground disturbance. In addition to fugitive dust, refer to the air quality analysis in Section 3.2 and Appendix 4.1 for estimated emissions of other air pollutants, including criteria pollutants, VOCs, and HAPs.

3.6.2.3. *Effects of Alternative 3 – Modified Proposed Alternative*

Socioeconomics

Socioeconomic impacts under the Modified Proposed Action Alternative are expected to be similar to those disclosed under the Proposed Action Alternative but may be reduced corresponding with the reduction in leasable acreage.

Public Health and Safety

Alternative 3 is the same as Alternative 2.

3.6.2.4. *Summary of Effects*

Socioeconomics

Overall impacts would likely be greater where mineral development is more intense, in areas where development overlaps with crucial and winter wildlife ranges, and on state and private lands because of the lack of protections afforded to natural resources in these areas. If development expands, the ability of big game and other wildlife species to disperse into alternate habitats could become limited. This may create isolated populations in areas where habitats remain intact. While multiple, overlapping timing stipulations can provide benefit to wildlife resources by preventing sustained disruptive activity, the Pinedale RMP FEIS, p 4-60 (2006), also notes "[W]hen areas with greater sage-grouse nesting restrictions overlap areas with big game crucial winter range restrictions, the oil and gas operator would potentially be restricted to a 3-and-a-half-month construction, drilling, and well completion season. This short drilling and development window in areas such as the Pinedale Anticline has led to accelerated operations, which results in congested traffic on primary access roads and a potential overload on local service and emergency resources. It also causes a yearly bust-and-boom cycle for the local communities as crews move in during the open development window then leave when the seasonal restrictions are invoked." This situation can be exacerbated when lease development is further reduced by other seasonal restrictions, including those for raptors.

Fugitive dust is concentrated in the short-term during construction but may occur to a lesser degree in the long term due to increased vehicle use and ground disturbance. In addition to fugitive dust, see Section 3.2 Air Resources for a comprehensive description of existing health and climate impacts and trends of other air pollutants, including criteria pollutants, VOCs, and HAPs. 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. Key weather and climate drivers of health impacts include increasingly frequent, intense, and longer lasting extreme heat, which worsens drought, wildfire, and air pollution risks; increasingly frequent

extreme precipitation, intense storms, and changes in precipitation patterns that lead to drought and ecosystem changes.

Other economic or social indicators can also influence the general health risks of a population, such as poverty status, educational attainment, broadband access or language proficiency. The intensity, and likelihood, of potential impacts to public health and safety, including to the quality of usable water aquifers, is directly related to proximity of the proposed action to domestic and/or community water supplies (wells, reservoirs, lakes, rivers, etc.) and/or agricultural developments. Groundwater resources are also regional in nature and water withdrawals are not anticipated to affect domestic water sources (see Section 3.3 and Appendix 4.2 for water resource discussions). 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.

Continued expansion of the oil and gas industry may be perceived as having a negative effect on quality-of-life considerations for people who value undeveloped landscapes, opportunities for isolation, and activities such as cultural practices, wildlife viewing and other forms of recreation, or rangeland management. The total landscape-level surface disturbance associated with reasonably foreseeable environmental trends and planned actions would include activities that generate increased human activity, traffic, noise, dust, odor, light pollution, and visual effects. These activities have the potential to affect quality of life of any existing nearby residences or facilities, depending on the intensity of development activities and proximity of structures to a given parcel. While the majority of these impacts to any significantly proximal residences or facilities would be short term and cease during operations (e.g., increased human activity, traffic, noise, dust, and odor during drilling and completion phases), residences may continue to experience long-term visual or other impacts that have potential to affect quality of life if they are located in areas in which oil and gas development is not currently nearby or visible. However, with consideration of total lease acreage, topography, and resources present within the nominated lease parcels, there are opportunities for future potential development to be placed in portions of the nominated lease parcels that are less proximal to any associated residences, populations, and facilities, thereby minimizing potential associated quality of life impacts.

The BLM uses a number of stipulations and lease notices applied to the nominated lease parcels in the current sale that may mitigate potential effects on wildlife and other resources that in turn may mitigate effects on related concerns (see Appendix 4.10) for specific stipulations and lease notices applied to the nominated lease parcels, and individual stipulation and lease notice summaries). Under the authority granted in standard terms and conditions attached to each lease, measures to reduce or avoid impacts to resource values, land uses, or users would be attached as COAs to the associated APD. Site-specific avoidance, minimization, and/or mitigation measures would be determined at the time of proposed lease development. This could include measures to reduce noise, dust, odor, and light effects during construction and operations. As with reasonably foreseeable environmental trends and planned actions, effects to quality of life and other socioeconomic values from these trends and actions would be examined at the APD level with consideration of site-specific locational information and development of COAs to reduce identified effects as needed.

Public Health and Safety

Fugitive dust is concentrated in the short-term during construction but may occur to a lesser degree in the long term due to increased vehicle use and ground disturbance. In addition to fugitive dust, see Section 3.2 Air Resources for a comprehensive description of existing health and climate impacts and trends of other air pollutants, including criteria pollutants, VOCs, and HAPs. 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. Key weather and climate drivers of health impacts include increasingly frequent, intense, and longer lasting extreme heat, which worsens drought, wildfire, and air pollution risks; increasingly frequent extreme precipitation, intense storms, and changes in precipitation patterns that lead to drought and ecosystem changes. Key drivers of vulnerability include the attributes of certain groups (age, socioeconomic status, race, and current level of health) and of place (floodplains, coastal zones, and urban areas), as well as the resilience of critical public health infrastructure. Health effects of these disruptions include increased respiratory and cardiovascular disease, injuries, and premature deaths related to extreme weather events; changes in the prevalence and geographical distribution of foodborne and waterborne illnesses and other infectious diseases; and threats to mental health. Milder winters resulting from a warming climate can reduce illness, injuries, and deaths associated with cold and snow. Vulnerability to winter weather depends on many non-climate factors, including housing, age, and baseline health. Although deaths and injuries related to extreme cold events are projected to decline due to climate change, these reductions are not expected to compensate for the increase in heat-related deaths. The frequency of heavy precipitation events has already increased for the nation as a whole and is projected to increase in all U.S. regions. Increases in both extreme precipitation and total precipitation have contributed to increases in severe flooding events in certain regions. In addition to the immediate health hazards associated with extreme precipitation events when flooding occurs, other hazards can often appear once a storm event has passed. Water intrusion into buildings can result in mold contamination that manifests later, leading to indoor air quality problems.

The intensity, and likelihood, of potential impacts to public health and safety, including to the quality of usable water aquifers, is directly related to proximity of the proposed action to domestic and/or community water supplies (wells, reservoirs, lakes, rivers, etc.) and/or agricultural developments as well as regional population density. Groundwater resources are also regional in nature and water withdrawals are not anticipated to affect domestic water sources (see Section 3.3 and Appendices 4.2 and 4.8 for water resource discussions). 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.

Potential cumulative impacts are also dependent on the extent of the production well's capture zone and well integrity. Standard Lease Notice No.1 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. Further information related to the rate of development is provided in Section 1. Human health risk assessments cannot be

performed until project-specific details are known so that frequency, timing, and levels of contact with potential stressors may be identified (EPA 2021h). However, each of the reasonably foreseeable environmental trends and planned actions have been, or will be, subject to relevant rules and regulations regarding public health and safety.

Ongoing and future potential development would continue to present aggregate risks to human health as detailed above and in previous chapters and sections. When wells reach the end of their useful life and are properly plugged and reclaimed, they would no longer contribute to air quality effects; however, depending on the level and duration of individual's exposure during well operation, some of the public health effects from air pollution may endure beyond the life of the wells (e.g., chronic respiratory problems such as asthma).

CHAPTER 4. APPENDICES

4.1. Air Resources Tables

Table 4.1-1 Global and U.S. Fossil Fuel GHG Emissions 2017 - 2022 (Mt CO2/yr)

Scale	2017	2018	2019	2020	2021	2022
U.S.	4,852.5	4,988.2	4,852.6	4,341.7	4,654.3	4,699.4
Wyoming	60.30	61.6	62.6	57.8	54.5	53.2

Source: Chap. 5, Table 5-1 (U.S.) and GHG DB (2024) state_ei, (State).
Mt (megatonne) = 1 million metric tons
NA = Not Available

Table 4.1-2 County level GHG Emissions (CO2e) in Metric Tonnes (t) for the 2020 Reporting Year

County	CO_2 (t)	CH_4 (t)	N_2O (t)	County Total
Albany	2,572,183.62	8,743.74	6.95	2,580,934.30
Big Horn	141,997.06	66.45	2.22	142,065.73
Campbell	613,782.34	191.46	9.08	613,982.88
Carbon	2,687,870.33	9,541.49	5.73	2,697,417.55
Converse	539,494.94	170.02	8.39	539,673.35
Crook	197,391.86	25.03	2.25	197,419.14
Fremont	406,588.93	59.96	6.17	406,655.06
Goshen	226,729.34	29.19	4.38	226,762.91
Hot Springs	65,287.27	28.65	0.83	65,316.75
Johnson	305,414.07	220.43	1.81	305,636.30
Laramie	1,129,836.90	89.65	15.77	1,129,942.32
Lincoln	244,821.53	26.09	3.74	244,851.36
Natrona	717,868.87	130.20	10.87	718,009.93
Niobrara	120,768.15	24.19	1.79	120,794.13
Park	369,305.27	167.21	5.45	369,477.94
Platte	313,967.42	112.24	3.59	314,083.25
Sheridan	425,034.98	358.89	5.49	425,399.36
Sublette	157,926.70	131.35	1.64	158,059.69
Sweetwater	1,128,165.07	111.48	11.95	1,128,288.50
Teton	421,638.31	543.21	4.02	422,185.53
Uinta	413,146.74	39.04	4.55	413,190.33
Washakie	239,578.45	533.83	1.37	240,113.65
Weston	158,823.53	21.87	3.23	158,848.64
State Total	**13,597,621.68**	**21,365.67**	**121.25**	**13,619,108.60**

Table 4.1-3 Estimated Max Year and Average Year Criteria and Hazardous Air Pollutant Emissions from Development of Alternative 2 (Proposed Action) Lease Parcels (tons/year)

Year	PM_{10}	$PM_{2.5}$	VOC	NO_X	CO	SO_2	HAPs
Max Emissions, Year 10	148.9	32.5	35.7	352.6	112.9	0.010	1.175
Average Emissions	114.6	25.0	27.4	271.3	86.9	0.008	0.904

Table 4.1-4 Alternative 2 (Proposed Action) Estimated Life of Lease Emissions (On-Site) from Well Development, Production Operations, and End Use (Metric tonnes)

Activity	CO_2	CH_4	N_2O	CO_2e (100-yr)	CO_2e (20-yr)
Well Development	626,127	356.76	4.925	638,103	656,904
Production Operations	2,984,789	72,656.21	37.308	5,160,129	8,989,111
Mid-Stream	7,804,756	81,111.89	114.434	10,253,131	14,527,728
End-Use	50,679,181	1,436.20	234.092	50,785,886	50,861,574
Total (Life of Lease)	62,094,853	155,561.06	390.759	66,837,249	75,035,317

Table 4.1-5 Alternative 2 (Proposed Action) Comparison of the Life of Lease Emissions to other Sources (Megatonnes)

Reference	Mt CO_2e[1] (per year)
Lease Sale Emissions (Maximum Year)	1.714
WY Onshore Federal (O&G)[2]	107.01
US Onshore Federal (Oil and Gas)[2]	686.62
U.S. Federal-All (Oil & Gas)[2]	1,092.94
U.S. Federal Onshore (Oil, Gas & Coal)[2]	1,066.14
WY Total (all sectors)[3]	53.22
U.S. Total (Oil, Gas, & Coal)	7,213.47

1 – Mt (megatonne) = 1 million metric tons. Estimates are based on 100-GWP values.
2 – Federal values come from the BLM Specialist Report on Annual Greenhouse Gas Emissions. Tables ES-1, ES-2 and Figure ES-1. U.S. Federal-All includes offshore and onshore oil and gas production.
3 – Total state emissions from all sectors is found in Table 5-2 of the BLM Specialist Report on Annual GHG Emission Trends.

Table 4.1-6 Estimated Max Year and Average Year Criteria and Hazardous Air Pollutant Emissions from Development of Alternative 3 (Modified Proposed Action) Lease Parcels (tons/year)

Year	PM_{10}	$PM_{2.5}$	VOC	NO_X	CO	SO_2	HAPs
Max Emissions, Year 10	110.0	24.0	26.4	260.6	83.4	0.008	0.868
Average Emissions	86.4	18.9	20.7	204.7	65.5	0.006	0.682

Table 4.1-7 Alternative 3 (Modified Proposed Action) Estimated Life of Lease Emissions (On-Site) from Well Development, Production Operations, and End Use (Metric tonnes)

Activity	CO_2	CH_4	N_2O	CO_2e (100-yr)	CO_2e (20-yr)
Well Development	472,248	269.08	3.715	481,281	495,462
Production Operations	2,251,239	54,800.02	28.139	3,891,962	6,779,923
Mid-Stream	5,886,638	61,177.61	86.310	7,733,294	10,957,354
End-Use	38,224,128	1,083.23	176.561	38,304,609	38,361,696
Total (Life of Lease)	46,834,253	117,329.95	294.725	50,411,146	56,594,434

Table 4.1-8 Alternative 3 (Modified Proposed Action) Estimated Life of Lease Emissions (On-Site) from Well Development, Production Operations, and End Use (Metric tonnes)

Reference	Mt CO_2e[1] (per year)
Lease Sale Emissions (Maximum Year)	1.293
WY Onshore Federal (O&G)[2]	107.01
US Onshore Federal (Oil and Gas)[2]	686.62
U.S. Federal-All (Oil & Gas)[2]	1,092.94
U.S. Federal Onshore (Oil, Gas & Coal)[2]	1,066.14
WY Total (all sectors)[3]	53.22
U.S. Total (Oil, Gas, & Coal)	7,213.47

1 – Mt (megatonne) = 1 million metric tons. Estimates are based on 100-GWP values.
2 – Federal values come from the BLM Specialist Report on Annual Greenhouse Gas Emissions. Tables ES-1, ES-2 and Figure ES-1. U.S. Federal-All includes offshore and onshore oil and gas production.
3 – Total state emissions from all sectors is found in Table 5-2 of the BLM Specialist Report on Annual GHG Emission Trends.

Table 4.1-9 GHG Emissions from Past, Present, and Reasonably Foreseeable Federal Onshore Lease Development (Megatonnes CO2e)

State	Existing Wells (Report Year)	Existing Wells (Projected)	Approved APDs	New Leasing	Short-Term Foreseeable Totals	Long-Term Projected Totals
AL	0.63	9.48	0.00	0.18	9.65	18.73
AK	1.27	19.11	30.07	43.96	93.14	35.64
AZ	0.00	0.00	0.00	0.00	0.00	0.00
AR	0.61	9.63	0.71	0.24	10.57	18.00
CA	4.92	68.59	0.32	2.26	71.18	124.75
CO	41.66	361.42	19.23	14.34	394.99	1,205.41
ID	0.00	0.00	0.00	0.29	0.30	0.00
IL	0.01	0.09	0.00	0.02	0.11	0.16
IN	0.00	0.00	0.00	0.02	0.02	0.00
KS	0.22	3.24	0.05	0.27	3.57	6.29
KY	0.01	0.07	0.00	0.03	0.10	0.24
LA	4.79	59.44	28.10	16.86	104.40	140.76
MD	0.00	0.00	0.00	0.00	0.00	0.00
MI	0.05	1.05	0.00	0.29	1.34	1.58
MS	0.19	2.57	0.19	0.38	3.14	4.80
MT	2.06	21.01	1.80	2.08	24.90	53.94
NE	0.01	0.21	0.00	0.03	0.24	0.35
NV	0.11	0.82	0.01	0.04	0.87	2.63
NM	463.78	3,298.82	795.77	89.69	4,184.28	12,321.64
NY	0.00	0.00	0.00	0.00	0.01	0.01
ND	37.69	315.95	24.48	7.14	347.56	985.07
OH	0.17	1.60	0.00	2.65	4.25	4.97
OK	1.09	10.74	1.66	1.18	13.58	30.83
OR	0.00	0.00	0.00	0.12	0.12	0.00
PA	0.00	0.03	0.00	0.67	0.70	0.07
SD	0.08	1.41	0.21	0.11	1.72	2.19
TN	0.00	0.00	0.00	0.00	0.00	0.00

State	Existing Wells (Report Year)	Existing Wells (Projected)	Approved APDs	New Leasing	Short-Term Foreseeable Totals	Long-Term Projected Totals
TX	2.72	30.11	11.79	3.28	45.17	80.01
UT	17.54	220.02	17.98	2.35	240.35	493.60
VA	0.01	0.13	0.00	0.03	0.15	0.24
WV	0.00	0.04	0.00	0.59	0.62	0.08
WY	107.01	946.69	120.38	105.55	1,172.61	3,005.64
Total Onshore Federal	**687**	**5,382**	**1,053**	**295**	**6,730**	**18,538**

Source: BLM Annual GHG Report, Section 7

4.2. Water Resources Tables

Table 4.2-1 Water Wells, Spring Developments, Major Lakes and Rivers within each Proposed Parcel

Parcel Num. 2026-03	Active Water Well Permits	Deepest Active Water Well (feet)	Active Water Well Permits (within 2 miles)	Deepest Active Water Well within 2 miles (feet)	Spring Dev Permits	Spring Dev Permits within 2 miles (feet)	Named Creeks (miles)	Major Lakes (acres) and Rivers (miles)
1404	-	-	-	-	-	-	-	-
1407	-	-	-	-	-	-		-
1515	-	-	-	-	-	-	Vermillion Creek	-
1897	-	-	-	-	-	4	-	-
2072	-	-	-	-	-	-	Wallows Creek	-
2180	-	-	-	-	-	-	Cherokee Creek	-
2181	-	-	-	-	-	-	Cherokee Creek	-
2183	-	-	-	-	-	-	Wild Cow Creek	-
2184	8	31,970	-	-	-	-	Fillmore Creek	-
2185	-	-	-	-	-	-	-	-
2186	-	-	-	-	-	-	Cow Creek	-
2187	-	-	-	-	-	-	-	-
2189	1	Unknown	-	-	-	12	Putt Creek, Willow Creek	-
2190	-	-	-	-	-	-	-	-
2191	-	-	1	5	-	5	Martinez Springs Creek, Weed Creek	-
2192	1	8,850	-	-	-	-	-	-
2193	-	-	-	-	-	-	-	-
2194	-	-	-	-	-	-	-	-
2195	-	-	-	-	-	-	-	-
2196	-	-	-	-	-	-	-	-

2197	3	1,315	-	-	-	-	-	-
2198	-	-	1	1	-	1	-	-
2199	1	500	-	-	-	-	-	-
2200	2	800	-	-	-	-	-	-
2201	-	-	-	-	-	-	-	-
2203	-	-	-	-	-	-	-	-
2204	-	-	-	-	-	-	-	-
2205	-	-	-	-	-	-	-	-
2206	-	-	-	-	-	-	-	-
2207	-	-	-	-	-	-	-	-
2210	-	-	-	-	-	-	Shallow Creek	-
2212	-	-	-	-	-	-	-	-
2213	-	-	-	-	-	-	West Branch Willow Creek	-
2214	1	2,850	-	-	-	-	-	-
2218	-	-	-	-	-	-	-	-
2220	-	-	-	-	-	-	-	-
2221	-	-	-	-	-	-	-	-
2222	10	1,894	-	-	-	-	-	-
2223	-	-	-	-	-	-	-	-
2226	-	-	-	-	-	-	-	-
2227	-	-	-	-	-	-	-	-
2228	-	-	-	-	-	-	-	-
2230	-	-	-	-	-	-	-	-
2231	-	-	-	-	-	-	-	-
2236	-	-	-	-	-	-	-	-
2238	-	-	-	-	-	-	-	-
2239	-	-	-	-	-	-	-	-
2241	-	-	-	-	-	-	-	-
2242	-	-	-	-	-	-	-	-
2243	-	-	-	-	-	-	-	-
2246	1	250	-	-	-	-	-	-
6885	-	-	-	-	1	-	Weed Creek	-
7446	-	-	-	-	-	-	-	-
7447	5	10,460	-	-	-	-	-	-
7448	-	-	-	-	-	-	-	-
7449	-	-	-	-	-	-	-	-
7450	-	-	-	-	-	-	Muddy Creek	-

7451	-	-	-	-	-	-	-	-
7452	-	-	-	-	-	-	Cherokee Creek, Wild Cow Creek	-
7453	-	-	-	-	-	-	-	-
7454	-	-	-	-	-	-	-	-
7455	-	-	-	-	-	-	-	-
7456	2	1,100	-	-	-	-	-	-
7458	1	980	-	-	-	-	-	-
7459	-	-	-	-	-	-	-	-
7460	-	-	-	-	-	-	-	-
7461	-	-	-	-	-	-	-	-
7462	-	-	-	-	-	-	-	-

4.3. Greater Sage-Grouse Tables

Table 4.3-1 Greater Sage-Grouse Parcel Evaluation Label

Parcel Number	Nominated Acres	Delete in Full	Delete in Part	Acres Available	Non-habitat (P1)	GHMA acres (P2)	PHMA acres (P3/P4/P5)	Evaluation Label
1404	2240.00	0.00	0.00	2240.00		X		GHMA
1407	1275.96	0.00	0.00	1275.96		X		GHMA
1515	1840.27	0.00	0.00	1840.27		X		GHMA
1897	321.13	0.00	0.00	321.13	X			Non-Habitat
2072	600.02	0.00	0.00	600.02		X		GHMA
2180	1360.00	0.00	0.00	1360.00		X		GHMA
2181	1181.12	0.00	230.28	950.84		X	X	PHMA
2183	800.00	0.00	0.00	800.00		X		GHMA
2184	2390.85	0.00	0.00	2390.85		X		GHMA
2185	520.00	0.00	0.00	520.00			X	PHMA
2186	80.00	0.00	0.00	80.00		X		GHMA
2187	603.29	0.00	563.29	40.00		X		GHMA
2189	888.53	0.00	0.00	888.53		X	X	PHMA
2190	162.46	0.00	0.00	162.46		X		GHMA
2191	1920.00	0.00	0.00	1920.00		X	X	PHMA
2192	155.18	0.00	0.00	155.18		X		GHMA
2193	648.80	0.00	0.00	648.80			X	PHMA
2194	1920.00	0.00	0.00	1920.00			X	PHMA
2195	81.45	0.00	0.00	81.45		X		GHMA
2196	200.00	0.00	0.00	200.00		X		GHMA
2197	560.75	0.00	0.00	560.75		X		GHMA
2198	520.00	0.00	0.00	520.00	X	X		Non-Habitat
2199	1431.95	0.00	0.00	1431.95		X		GHMA
2200	560.00	0.00	0.00	560.00		X		GHMA
2201	962.24	0.00	0.00	962.24		X		GHMA
2203	305.18	0.00	0.00	305.18		X		GHMA
2204	605.24	0.00	0.00	605.24		X		GHMA
2205	160.00	0.00	0.00	160.00		X		GHMA
2206	158.43	0.00	0.00	158.43		X		GHMA
2207	2276.58	0.00	0.00	2276.58		X		GHMA
2210	1600.00	0.00	0.00	1600.00		X		GHMA
2212	1917.18	0.00	0.00	1917.18		X		GHMA
2213	2228.72	0.00	0.00	2228.72		X		GHMA
2214	1261.69	0.00	0.00	1261.69		X		GHMA
2218	2560.00	0.00	0.00	2560.00		X		GHMA
2220	1762.64	0.00	0.00	1762.64		X		GHMA
2221	1948.17	0.00	0.00	1948.17		X		GHMA
2222	2231.31	0.00	0.00	2231.31		X		GHMA
2223	1280.00	0.00	0.00	1280.00		X		GHMA
2226	641.91	0.00	0.00	641.91		X		GHMA
2227	984.10	0.00	0.00	984.10		X		GHMA

Parcel Number	Nominated Acres	Delete in Full	Delete in Part	Acres Available	Non-habitat (P1)	GHMA acres (P2)	PHMA acres (P3/P4/P5)	Evaluation Label
2228	1919.87	0.00	0.00	1919.87		X		GHMA
2230	1640.00	0.00	0.00	1640.00		X		GHMA
2231	960.00	0.00	0.00	960.00		X		GHMA
2236	1118.76	0.00	0.00	1118.76		X		GHMA
2238	2560.00	0.00	0.00	2560.00		X		GHMA
2239	2080.00	0.00	0.00	2080.00		X		GHMA
2241	1691.92	0.00	0.00	1691.92		X		GHMA
2242	1746.84	0.00	0.00	1746.84		X		GHMA
2243	1600.00	0.00	0.00	1600.00		X	X	PHMA
2246	1280.00	0.00	0.00	1280.00		X	X	PHMA
6885	1026.34	0.00	0.00	1026.34		X	X	PHMA
7446	1920.00	0.00	0.00	1920.00		X		GHMA
7447	1790.56	0.00	0.00	1790.56		X	X	PHMA
7448	1920.00	0.00	0.00	1920.00		X		GHMA
7449	2360.00	0.00	0.00	2360.00		X		GHMA
7450	2434.40	0.00	0.00	2434.40		X	X	PHMA
7451	1427.67	0.00	0.00	1427.67		X	X	PHMA
7452	2560.00	0.00	480.00	2080.00		X	X	PHMA
7453	2545.07	0.00	0.00	2545.07			X	PHMA
7454	2535.89	0.00	0.00	2535.89		X		GHMA
7455	2560.00	0.00	0.00	2560.00		X		GHMA
7456	968.94	0.00	0.00	968.94		X		GHMA
7458	940.88	0.00	0.00	940.88		X		GHMA
7459	1507.51	0.00	0.00	1507.51		X		GHMA
7460	1908.69	0.00	0.00	1908.69		X	X	PHMA
7461	1911.69	0.00	0.00	1911.69		X		GHMA
7462	1609.84	0.00	0.00	1609.84		X		GHMA

Table 4.3-2 Parcels in Respective Greater Sage-Grouse Local Working Group Areas

2026-03 Parcel Num.	**Sage-Grouse Local Working Group (LWG) Area**
2191, 2193, 2194, 7453	Bates Hole/Shirley Basin
2072, 2190, 2192, 2195, 2196, 2197, 2198, 2199, 2200,2201	Northeast

2026-03 Parcel Num.	Sage-Grouse Local Working Group (LWG) Area
2180, 2181, 2183, 2184, 2185, 2186, 2187, 2189, 2203, 2204, 2205, 2206, 2207, 2210, 2212, 2213, 2214, 2218, 2220, 2221, 2222, 2223, 2226, 2227, 2228, 2230, 2231, 2236, 2238, 2239, 2241, 2242, 2243, 2246, 6885, 7446, 7447, 7448, 7449, 7450, 7451, 7452, 7454, 7455, 7456, 7458, 7459, 7460, 7461, 7462,	South Central
1404, 1407, 1515	Southwest
1897	Outside of Local Working Group

Table 4.3-3 Greater Sage-Grouse Lek Distance

2026-03 Parcel Num.	Habitat Evaluation Label	1 mile	2 miles	3.1 miles	4 miles	5.28 miles
1404	GHMA					
1407	GHMA					X
1515	GHMA					X
1897	NonGSG					
2072	GHMA					
2180	GHMA		X	X	X	X
2181	PHMA	X	X	X	X	X
2183	GHMA		X	X	X	X
2184	GHMA	X	X	X	X	X
2185	PHMA		X	X	X	X
2186	GHMA		X	X	X	X
2187	GHMA					X
2189	PHMA				X	X
2190	GHMA					
2191	PHMA	X	X	X	X	X
2192	GHMA					
2193	PHMA		X	X	X	X
2194	PHMA		X	X	X	X
2195	GHMA					
2196	GHMA					
2197	GHMA					
2198	NonGSG					
2199	GHMA			X	X	X
2200	GHMA				X	X
2201	GHMA			X	X	X

2026-03 Parcel Num.	Habitat Evaluation Label	1 mile	2 miles	3.1 miles	4 miles	5.28 miles
2203	GHMA					
2204	GHMA	X	X	X	X	X
2205	GHMA					
2206	GHMA					X
2207	GHMA			X	X	X
2210	GHMA	X	X	X	X	X
2212	GHMA				X	X
2213	GHMA					X
2214	GHMA			X	X	X
2218	GHMA				X	X
2220	GHMA		X	X	X	X
2221	GHMA					
2222	GHMA					
2223	GHMA			X	X	X
2226	GHMA				X	X
2227	GHMA					X
2228	GHMA				X	X
2230	GHMA	X	X	X	X	X
2231	GHMA		X	X	X	X
2236	GHMA					
2238	GHMA	X	X	X	X	X
2239	GHMA	X	X	X	X	X
2241	GHMA				X	X
2242	GHMA	X	X	X	X	X
2243	PHMA			X	X	X
2246	PHMA		X	X	X	X
6885	PHMA		X	X	X	X
7446	GHMA		X	X	X	X
7447	PHMA	X	X	X	X	X
7448	GHMA		X	X	X	X
7449	GHMA		X	X	X	X
7450	PHMA	X	X	X	X	X
7451	PHMA		X	X	X	X
7452	PHMA	X	X	X	X	X
7453	PHMA				X	X
7454	GHMA				X	X
7455	GHMA	X	X	X	X	X
7456	GHMA		X	X	X	X

2026-03 Parcel Num.	Habitat Evaluation Label	1 mile	2 miles	3.1 miles	4 miles	5.28 miles
7458	GHMA					X
7459	GHMA			X	X	X
7460	PHMA	X	X	X	X	X
7461	GHMA			X	X	X
7462	GHMA					X

Table 4.3-4 Assessment of Potential Impacts to Greater Sage-Grouse Populations: PHMA Parcels - Alternative 2

WY-2026-03 Parcel ID	Status	Pop. Trigger[1]	Habitat Trigger[1]	Land Health Status	Genetic Connect	Existing Develop	Prox. to Rest. Area	Initial Recomm-endation to SD
2181	PHMA	No	Yes	Yes	No	No	No	Lease
2185	PHMA	Yes	Yes	No	Yes	No	No	Lease
2189	PHMA	No	Yes	Yes	No	No	No	Lease
2191	PHMA	Yes	Yes	Yes	No	No	No	Lease
2193	PHMA	Yes	Yes	Yes	No	No	No	Lease
2194	PHMA	Yes	Yes	No	Yes	No	No	Lease
2243	PHMA	Yes	Yes	No	Yes	No	No	Lease
2246	PHMA	Yes	Yes	No	Yes	No	No	Lease
6885	PHMA	Yes	Yes	Yes	No	No	No	Lease
7447	PHMA	No	Yes	Yes	No	No	No	Lease
7450	PHMA	No	Yes	Yes	No	No	No	Lease
7451	PHMA	No	Yes	Yes	No	No	No	Lease
7452	PHMA	No	Yes	Yes	No	No	No	Lease
7453	PHMA	Yes	Yes	Yes	Yes	No	No	Lease
7460	PHMA	Yes	Yes	Yes	Yes	No	No	Lease

[1] 2021 adaptive management analysis considered (2022-24 data unavailable)

Table 4.3-5 Assessment of Potential Impacts to Greater Sage-Grouse Populations: GHMA Parcels - Alternative 2

WY-2026-03 Parcel ID		Status	Genetic Connect	Existing Develop	Proximity to Restoration Area	Indirect Impact High Value Habitat[1]	WGFD Area of Concern	Initial Recomm-endation to SD
1404		GHMA	Yes	No	No	Yes	No	Lease
1407		GHMA	No	Yes	No	Yes	No	Lease

1515		GHMA	No	Yes	No	No	No	Lease
2072		GHMA	No	Yes	No	Yes	No	Lease
2180		GHMA	No	Yes	No	Yes	No	Lease
2183		GHMA	No	Yes	No	Yes	No	Lease
2184		GHMA	No	No	No	Yes	No	Lease
2186		GHMA	No	Yes	No	Yes	No	Lease
2187		GHMA	No	Yes	No	Yes	No	Lease
2190		GHMA	No	No	No	No	No	Lease
2192		GHMA	No	Yes	No	No	No	Lease
2195		GHMA	No	Yes	No	No	No	Lease
2196		GHMA	No	Yes	No	No	No	Lease
2197		GHMA	No	Yes	No	No	No	Lease
2198		GHMA	No	Yes	No	No	No	Lease
2199		GHMA	No	Yes	No	No	No	Lease
2200		GHMA	No	Yes	No	No	No	Lease
2201		GHMA	No	Yes	No	No	No	Lease
2203		GHMA	No	Yes	No	No	No	Lease
2204		GHMA	No	Yes	No	No	No	Lease
2205		GHMA	No	Yes	No	No	No	Lease
2206		GHMA	No	Yes	No	No	No	Lease
2207		GHMA	No	No	No	No	No	Lease
2210		GHMA	No	Yes	No	No	No	Lease
2212		GHMA	No	No	No	No	No	Lease
2213		GHMA	No	No	No	No	No	Lease
2214		GHMA	No	No	No	No	No	Lease
2218		GHMA	No	Yes	No	No	No	Lease
2220		GHMA	No	No	No	No	No	Lease
2221		GHMA	No	Yes	No	No	No	Lease
2222		GHMA	No	Yes	No	No	No	Lease
2223		GHMA	No	No	No	No	No	Lease
2226		GHMA	No	Yes	No	No	No	Lease
2227		GHMA	No	Yes	No	No	No	Lease
2228		GHMA	No	No	No	No	No	Lease
2230		GHMA	No	Yes	No	No	No	Lease
2231		GHMA	No	No	No	No	No	Lease
2236		GHMA	No	No	No	Yes	No	Lease
2238		GHMA	No	No	No	No	No	Lease
2239		GHMA	No	No	No	No	No	Lease
2241		GHMA	No	No	No	No	No	Lease
2242		GHMA	No	Yes	No	No	No	Lease
7446		GHMA	No	Yes	No	Yes	No	Lease

7448		GHMA	No	Yes	No	Yes	No	Lease
7449		GHMA	No	Yes	No	Yes	No	Lease
7454		GHMA	No	Yes	No	No	No	Lease
7455		GHMA	No	No	No	No	No	Lease
7456		GHMA	No	Yes	No	No	No	Lease
7458		GHMA	No	Yes	No	No	No	Lease
7459		GHMA	No	Yes	No	Yes	No	Lease
7461		GHMA	No	Yes	No	No	No	Lease
7462		GHMA	No	No	No	Yes	No	Lease

[1] Parcel situated within 3.1 miles of a high value seasonal habitat (as defined)

Table 4.3-6 Assessment of Potential Impacts to Greater Sage-Grouse Populations: PHMA Parcels - Alternative 3

WY-2026-03 Parcel ID	Status	Pop. Trigger[1]	Habitat Trigger[1]	Land Health Status	Genetic Connect	Existing Develop	Prox. to Rest. Area	Initial Recomm-endation to SD
2181	PHMA	No	Yes	Yes	No	No	No	Defer
2185	PHMA	Yes	Yes	No	Yes	No	No	Defer
2189	PHMA	No	Yes	Yes	No	No	No	Defer
2191	PHMA	Yes	Yes	Yes	No	No	No	Defer
2193	PHMA	Yes	Yes	Yes	No	No	No	Defer
2194	PHMA	Yes	Yes	No	Yes	No	No	Defer
2243	PHMA	Yes	Yes	No	Yes	No	No	Defer
2246	PHMA	Yes	Yes	No	Yes	No	No	Defer
6885	PHMA	Yes	Yes	Yes	No	No	No	Defer
7447	PHMA	No	Yes	Yes	No	No	No	Defer
7450	PHMA	No	Yes	Yes	No	No	No	Defer
7451	PHMA	No	Yes	Yes	No	No	No	Defer
7452	PHMA	No	Yes	Yes	No	No	No	Defer
7453	PHMA	Yes	Yes	Yes	Yes	No	No	Defer
7460	PHMA	Yes	Yes	Yes	Yes	No	No	Defer

Table 4.3-7 Assessment of Potential Impacts to Greater Sage-Grouse Populations of Developing Parcels Nominated in GHMA - Alternative 3

WY-2026-03 Parcel ID	Status	Genetic Connect	Existing Develop	Proximity to Restoration Area	Indirect Impact High Value Habitat[1]	WGFD Area of Concern	Initial Recomm-endation to SD
1404	GHMA	Yes	No	No	Yes	No	Lease

1407	GHMA	No	Yes	No	Yes	No	Lease
1515	GHMA	No	Yes	No	No	No	Lease
2072	GHMA	No	Yes	No	Yes	No	Lease
2180	GHMA	No	Yes	No	Yes	No	Lease
2183	GHMA	No	Yes	No	Yes	No	Lease
2184	GHMA	No	No	No	Yes	No	Lease
2186	GHMA	No	Yes	No	Yes	No	Lease
2187	GHMA	No	Yes	No	Yes	No	Lease
2190	GHMA	No	No	No	No	No	Lease
2192	GHMA	No	Yes	No	No	No	Lease
2195	GHMA	No	Yes	No	No	No	Lease
2196	GHMA	No	Yes	No	No	No	Lease
2197	GHMA	No	Yes	No	No	No	Lease
2198	GHMA	No	Yes	No	No	No	Lease
2199	GHMA	No	Yes	No	No	No	Lease
2200	GHMA	No	Yes	No	No	No	Lease
2201	GHMA	No	Yes	No	No	No	Lease
2203	GHMA	No	Yes	No	No	No	Lease
2204	GHMA	No	Yes	No	No	No	Lease
2205	GHMA	No	Yes	No	No	No	Lease
2206	GHMA	No	Yes	No	No	No	Lease
2207	GHMA	No	No	No	No	No	Lease
2210	GHMA	No	Yes	No	No	No	Lease
2212	GHMA	No	No	No	No	No	Lease
2213	GHMA	No	No	No	No	No	Lease
2214	GHMA	No	No	No	No	No	Lease
2218	GHMA	No	Yes	No	No	No	Lease
2220	GHMA	No	No	No	No	No	Lease
2221	GHMA	No	Yes	No	No	No	Lease
2222	GHMA	No	Yes	No	No	No	Lease
2223	GHMA	No	No	No	No	No	Lease
2226	GHMA	No	Yes	No	No	No	Lease
2227	GHMA	No	Yes	No	No	No	Lease
2228	GHMA	No	No	No	No	No	Lease
2230	GHMA	No	Yes	No	No	No	Lease
2231	GHMA	No	No	No	No	No	Lease
2236	GHMA	No	No	No	Yes	No	Lease
2238	GHMA	No	No	No	No	No	Lease
2239	GHMA	No	No	No	No	No	Lease
2241	GHMA	No	No	No	No	No	Lease
2242	GHMA	No	Yes	No	No	No	Lease

7446	GHMA	No	Yes	No	Yes	No	Lease
7448	GHMA	No	Yes	No	Yes	No	Lease
7449	GHMA	No	Yes	No	Yes	No	Lease
7454	GHMA	No	Yes	No	No	No	Lease
7455	GHMA	No	No	No	No	No	Lease
7456	GHMA	No	Yes	No	No	No	Lease
7458	GHMA	No	Yes	No	No	No	Lease
7459	GHMA	No	Yes	No	Yes	No	Lease
7461	GHMA	No	Yes	No	No	No	Lease
7462	GHMA	No	No	No	Yes	No	Lease

Table 4.3-8 Distance to PHMA (all parcels)

Parcel ID 2026-06-	**Within PHMA**	**Within 2 miles**	**With 3.1 miles**	**Within 4 miles**	**Within 5.28 miles**
1404		X	X	X	X
1407		X	X	X	X
1515					X
2072		X	X	X	X
2180		X	X	X	X
2181	X				
2183		X	X	X	X
2184		X	X	X	X
2185	X				
2186		X	X	X	X
2187			X	X	X
2189	X				
2190					
2191		X	X	X	X
2192					
2193	X				
2194	X				
2195					
2196					
2197					
2198					
2199					
2200					
2200					
2201					

Parcel ID 2026-06-	Within PHMA	Within 2 miles	With 3.1 miles	Within 4 miles	Within 5.28 miles
2203					
2204					
2205					
2206					
2207					
2210					
2212				X	X
2213					
2214					
2218					
2220					
2221					
2222					
2223					
2226				X	X
2227					
2228					X
2230					
2231					X
2236		X	X	X	X
2238					
2239				X	X
2241			X	X	X
2242					
2243	X				
2246	X				
6885	X				
7446		X	X	X	X
7447	X				
7448		X	X	X	X
7449		X	X	X	X
7450	X				
7451	X				
7452	X				
7453	X				
7454					
7455					X

Parcel ID 2026-06-	Within PHMA	Within 2 miles	With 3.1 miles	Within 4 miles	Within 5.28 miles
7456					
7458					
7459			X	X	X
7460	X				
7461				X	X
7462		X	X	X	X

Table 4.3-9 Parcel evaluation and recommendation as described in the prioritization process described in Appendix 4.9 (all parcels)

WY-2026-03-Parcel Num.	Law or Reg. (i.e. drainage (P3)	Unit (P3)	Existing EIS or MLP (P3)	Area of High Dev-elopment Potential	Adjacent to Existing Lease (P3)	Area of Prioritized Restoration Project (P4)	Land Health Standards (P4)	No Criteria Met (P4)	Adaptive Mgmt. Metrics (P5)	Initial Recommendation to SD
2065	-	-	-	X	X	-	-	-	-	Lease-
2066	-	-	-	X	X	-	-	-	-	Defer-Coal Conflict
2070	-	-	-	X	X	-	-	-	-	Lease-
2089	-	-	-	X	X	-	-	-	-	Delete-Unavailable to Lease (Upper Muddy Creek watershed/Grizzle WHMA)
2090	-	-	-	X	X	-	-	-	-	Lease-
2091	-	-	-	X	X	-	-	-	-	Lease-
2092	-	-	X	X	X	-	-	-	-	Lease-
2093	-	-	-	X	X	-	-	-	-	Defer-Leasing Preference Criteria b

WY-2026-03-Parcel Num.	Law or Reg. (i.e. drainage (P3)	Unit (P3)	Existing EIS or MLP (P3)	Area of High Dev-elopment Potential	Adjacent to Existing Lease (P3)	Area of Prioritized Restoration Project (P4)	Land Health Standards (P4)	No Criteria Met (P4)	Adaptive Mgmt. Metrics (P5)	Initial Recommendation to SD
2094	-	-	-	X	X	-	-	-	-	Defer-Leasing Preference Criteria b
2095	-	-	X	X	X	-	-	-	-	Defer-Leasing Preference Criteria b
2096	-	-	-	X	X	-	-	-	-	Defer-Leasing Preference Criteria b
2098	-	-	-	X	X	-	-	-	-	Defer-Leasing Preference Criteria b
2099	-	-	-	X	X	-	-	-	-	Defer-Leasing Preference Criteria b
2100	-	-	-	X	X	-	-	-	X	Defer-GSG Prioritizatio
2102	-	-	-	X	X	-	-	-	X	Defer-GSG Prioritizatio
2108	-	-	-	X	X	-	-	-	-	Lease-
2110	-	-	-	X	X	-	-	-	-	Lease-
2111	-	-	-	X	X	-	-	-	-	Lease-
2112	-	-	-	X	X	-	-	-	-	Lease-
2113	-	-	-	X	X	-	-	-	-	Lease-
2116	-	-	-	X	X	-	-	-	-	Lease-
2117	-	-	-	X	X	-	-	-	-	Lease-
7388	-	-	-	X	X	-	-	-	-	Lease-
7389	-	-	-	X	X	-	-	-	-	Lease-
7390	-	-	-	X	X	-	-	-	-	Defer-Uranium Conflict
7399	-	-	-	X	X	-	-	-	-	Lease-
7401	-	-	-	X	X	-	-	-	-	Lease-
7402	-	-	-	X	X	-	-	-	X	Defer-GSG Prioritizatio

WY-2026-03-Parcel Num.	Law or Reg. (i.e. drainage (P3)	Unit (P3)	Existing EIS or MLP (P3)	Area of High Dev-elopment Potential	Adjacent to Existing Lease (P3)	Area of Prioritized Restoration Project (P4)	Land Health Standards (P4)	No Criteria Met (P4)	Adaptive Mgmt. Metrics (P5)	Initial Recommendation to SD
7403	-	-	-	X	X	-	-	-	X	Defer-GSG Prioritizatio
7404	-	-	-	X	X	-	-	-	X	Defer-GSG Prioritizatio
7405	-	-	-	X	X	-	-	-	-	Lease-
7406	-	-	-	X	X	-	-	-	-	Lease-
7407	-	-	-	X	X	-	-	-	-	Lease-
7408	-	-	-	X	X	-	-	-	-	Lease-
7409	-	-	-	X	X	-	-	-	-	Lease-
7410	-	-	-	X	X	-	-	-	-	Lease-
7411	-	-	-	X	X	-	-	-	-	Lease-
7412	-	-	-	X	X	-	-	-	-	Lease-

4.4. Big Game Tables

Table 4.4-1 Antelope Herd Units

DISTRICT OFFICE	FIELD OFFICE	HERD UNIT	WGFD 2024 Population Objective	WGFD Population Estimate, 2024	Status meeting Objective	Herd Unit Acres	# Parcels within
HDD	RFO	Baggs	9,000	3,078	65.8% Below	885,944.72	18
HDD	RSFO, RFO	Bitter Creek	13,000	6,065	53.3% Below	1,836,426.48	20
HPD	NFO, BFO, CFO	Black Thunder	49,000	30,509	37.7% Below	4,819,307.69	4
HPD	BFO, CFO	Crazy Woman	11,000	8,800	20% Below	749,673.52	1
HDD	RFO	Elk Mountain	5,000	6,200	24% Above	759,382.95	1
HPD	BFO	Gillette	11,000	6,200	43.6% Below	1,135,827.96	1
HPD, HDD	CFO, RFO	Hawk Springs	6,000	8,400	40% Above	1,835,989.56	1
HPD, HDD	CFO, RFO	Medicine Bow	40,000	41,400	4% Above	3,553,089.49	5
HPD	NFO, BFO	North Black Hills	17,000	12,400	27.1% Below	1,927,554.84	1
HPD	CFO, BFO	North Converse	28,000	23,960	14.4% Below	1,626,182.14	3
HDD, WRBBD,	RSFO, RFO, LFO	Red Desert	15,000	7,231	51.8% Below	2,167,564.05	20

Table 4.4-2 Mule Deer Herd Units

DISTRICT OFFICE	FIELD OFFICE	HERD UNIT	WGFD 2024 Population Objective	WGFD Population Estimate, 2024	Status meeting Objective	Herd Unit Acres	# Parcels within
HDD	RFO	Baggs	19,000	14,349	24.5% Below	2,145,085.35	33
HPD	NFO	Black Hills	30,000	13,055	56.5% Below	2,012,094.10	1
HDD, WR/BBD	RFO, LFO	Chain Lakes	N/A	N/A	N/A	699,981.53	8
HPD	NFO, BFO, CFO	Cheyenne River	27,000	13,371	61.6% Below	4,120,237.42	4
HDD	RFO	Goshen Rim	20,000	6,900	65.5% Below	3,391,636.33	1
HPD	CFO	North Converse	9,000	6,300	30% Below	1,626,239.39	3
HDD	RFO	Platte Valley	16,000	11,300	29.4% below	1,566,159.80	5
HPD	BFO, NFO	Powder River	45,000	21,500	52.2% Below	3,022,452.08	1
HPD	BFO	Pumpkin Buttes	9,000	5,300	41.1% Below	1,736,731.13	1
HDD	RSFO	South Rock Springs	8,500	3,600	57.6% Below	1,475,099.13	3
HDD, WR/BBD	PFO, RSFO	Sublette	32,000	19,034	40.5% Below	6,639,541.42	14

Table 4.4-3 Elk Herd Units

DISTRICT OFFICE	FIELD OFFICE	HERD UNIT	WGFD 2024 Population Objective	WGFD Population Estimate, 2024	Status meeting Objective	Herd Unit Acres	# Parcels within
HPD	NFO, BFO	Black Hills	NA	NA	NA	2,093,979.47	1

HPD	BFO, NFO, CFO	No Herd Unit (Hunt areas 126/129)	NA	NA	NA	8,364,947.64	8
HDD	RFO, RSFO	Petition	NA	NA	2% Below	1,836,547.04	20
HPD	CFO, BFO	Pine Ridge	NA	NA	14% Below	817,023.29	1
HPD, HDD	NFO, CFO, RFO	Rawhide	NA	NA	10% Below	3,391,636.57	1
HDD, WRBBD	RFO, LFO	Shamrock	75	9	88% Below	700,333.56	8
HDD, HPD	RFO, CFO	Shirley Mountain	1,200	752	37.3% Below	1,125,082.36	2
HDD	RFO	Sierra Madre	5,000	4,627	7.5% Below	1,697,064.02	18
HDD	RFO	Snowy Range	6,000	9,100	52% Above	2,131,606.30	3
HDD, WRBBD	RSFO, RFO, LFO	Steamboat	1,200	1,140	5% Below	2,392,606.52	14

4.5. Socioeconomics Tables

Table 4.5-1 Production Year 2024 Wyoming Fluid Minerals1 (Federal and Non-Federal) -- A Summary

Commodity	**Taxable Valuation (Total State Assessed Valuation)**	**Est. Ad Valorem (Property) Taxes [2]**	**Est. Mineral Severance Taxes**	**# of Producers (Federal and Non-Federal)**
Oil	$6,554,767,180	$414,241,360	$393,286,031	305
Natural Gas	$4,815,639,659	$3$302,357,450	$288,938,380	180
% of State Minerals Total	76.9%	76.8%	77.4%	55%
% of State Total	35.7%	N/A	N/A	N/A

Source: WY Department of Revenue 2023 Annual Report
[1] From both federal and non-federal production across Wyoming counties.
[2] Ad Valorem Taxes includes taxes on locally assessed values, while the Taxable Valuation column only accounts for State Assessed Values.

Table 4.5-2 Calendar Year WY Federal Oil and Gas Mineral Royalty Collections Associated Disbursements back to Wyoming State and Local Governments

Commodity	Federal Mineral Revenue Disbursements back to Wyoming[1]
2022	$785,726,556
2023	$832,863,721
2024	$590,920,971

Source: DOI Office of Natural Resources Revenue (ONRR 2023)
[1] Disbursement amounts also reflect revenues from bonuses and rents, however, estimated disbursements fluctuate primarily according to royalty revenues as royalties represent the largest source of funds disbursed back to states (Congressional Research Service 2020). The Wyoming oil and gas sector relies on both ongoing operational activities (development of existing leases) and new development opportunities (acquisition and development of new leases) to continue to provide local and regional jobs, income, and revenue on a sustained basis. Oil and gas lease sales contribute to employment for area residents, continued demand for oil and gas industry–related goods and services, and continued demand for industry support goods and services that generate additional indirect and induced economic contributions (such as sales and use tax revenue and employment from industries that supply goods and services to the oil and gas industry, like drilling equipment). More specifically, industry support goods and services contribute value in the form of employment and labor income associated with where fluid mineral development and operations personnel, and those who work in the oil and gas industry's supply chain, spend their income, such as restaurants and retail stores. Thus, this demand continuity as promulgated by oil and gas lease sales also contributes to employment stability in sectors outside of, or within the economic ripple effect, of the Wyoming oil and gas industry.

4.6. Lands with Wilderness Characteristics Tables

Table 4.6-1 Wilderness Review Checklist for Oil and Gas Lease Parcels for Sale Year 2026, Sale Month 03

Parcel No. WY-2026-03-	More than 5000 ac of roadless land (yes/no)	Imprint of man's work substantially unnoticeable (yes/no)	Outstanding opportunity for solitude or primitive recreation (yes/no)	Contains natural features of scientific, educational, scenic, or historical value (yes/no)	In Citizens Proposed Wilderness Area (yes/no). If yes but dropped during RMP process, state why.	Field Office Notes or Explanations
1897	No	No	No	No	No	
2180	Yes	No	No	No	No	
2181	Yes	No	No	No	No	
2183	No	No	No	No	No	
2184	No	No	No	No	No	Checkerboard region
2185	No	No	No	No	No	Checkerboard Parcel
2186	Yes	No	No	No	No	
2187	No	No	No	No	No	Checkerboard Parcel
2189	No	No	No	No	No	Outlier Survey's- UNIT X 49 & 59
2191	No	No	No	No	No	Checkerboard region, adjacent to I-80
2193	No	No	No	No	No	Checkerboard region, adjacent to I-80
2194	No	No	No	No	No	Checkerboard region
2203	No	No	No	No	No	Checkerboard Parcel
2204	No	No	No	No	No	Roadless area is only 100 acres short of sufficient size
2205	No	No	No	No	No	Checkerboard Parcel
2206	No	No	No	No	No	Checkerboard Parcel
2207	No	No	No	No	No	Checkerboard region

Parcel No. WY-2026-03-	More than 5000 ac of roadless land (yes/no)	Imprint of man's work substantially unnoticeable (yes/no)	Outstanding opportunity for solitude or primitive recreation (yes/no)	Contains natural features of scientific, educational, scenic, or historical value (yes/no)	In Citizens Proposed Wilderness Area (yes/no). If yes but dropped during RMP process, state why.	Field Office Notes or Explanations
2210	No	No	No	No	No	Roadless area is only 100 acres short of sufficient size
2213	No	No	No	No	No	Checkerboard region
2214	No	No	No	No	No	
2218	No	No	No	No	No	
2220	No	No	No	No	No	Checkerboard region
2221	No	No	No	No	No	
2222	No	No	No	No	No	
2223	No	No	No	No	No	Checkerboard region
2226	No	No	No	No	No	Checkerboard Parcel
2227	No	No	No	No	No	
2230	No	No	No	No	No	Checkerboard region
2236	No	No	No	No	No	Checkerboard Parcel
2238	No	No	No	No	No	Checkerboard region
2241	Yes	No	No	No	No	
2242	No	No	No	No	No	
2243	No	No	No	No	No	Checkerboard Parcel
2246	No	No	No	No	No	Checkerboard Parcel
6885	No	No	No	No	No	Checkerboard region
7446	Yes	No	No	No	No	
7447	Yes	No	No	No	No	
7448	Yes	No	No	No	No	
7449	Yes	No	No	No	No	
7450	Yes	No	No	No	No	
7451	Yes	No	No	No	No	

Parcel No. WY-2026-03-	More than 5000 ac of roadless land (yes/no)	Imprint of man's work substantially unnoticeable (yes/no)	Outstanding opportunity for solitude or primitive recreation (yes/no)	Contains natural features of scientific, educational, scenic, or historical value (yes/no)	In Citizens Proposed Wilderness Area (yes/no). If yes but dropped during RMP process, state why.	Field Office Notes or Explanations
7452	Yes	No	No	No	No	
7453	No	No	No	No	No	Checkerboard region
7454	No	No	No	No	No	Checkerboard Section
7455	No	No	No	No	No	
7456	No	No	No	No	No	
7458	No	No	No	No	No	
7459	No	No	No	No	No	Checkerboard Parcel
7460	No	No	No	No	No	Checkerboard Parcel
7461	No	No	No	No	No	Checkerboard Section
7462	Yes	No	No	No	No	19 flowing wells in the area of inventory in 2012
1404	No	No	No	No	No	Checkerboard
1407	No	No	No	No	No	Checkerboard
1515	No	No	No	No	No	
2207	No	No	No	No	No	Checkerboard
2212	No	No	No	No	No	Checkerboard
2213	No	No	No	No	No	Checkerboard
2220	No	No	No	No	No	Checkerboard
2223	No	No	No	No	No	Checkerboard
2228	No	No	No	No	No	Checkerboard
2230	No	No	No	No	No	Checkerboard
2231	No	No	No	No	No	Checkerboard
2238	No	No	No	No	No	Checkerboard
2239	No	No	No	No	No	Checkerboard
2072	No	No	No	No	No	No BLM surface
2192	No	No	No	No	No	No BLM surface
2195	No	No	No	No	No	No BLM surface

Parcel No. WY-2026-03-	More than 5000 ac of roadless land (yes/no)	Imprint of man's work substantially unnoticeable (yes/no)	Outstanding opportunity for solitude or primitive recreation (yes/no)	Contains natural features of scientific, educational, scenic, or historical value (yes/no)	In Citizens Proposed Wilderness Area (yes/no). If yes but dropped during RMP process, state why.	Field Office Notes or Explanations
2197	No	No	No	No	No	No BLM surface
2196	No	No	No	No	No	
2190	No	No	No	No	No	No BLM surface
2198	No	No	No	No	No	No BLM surface
2199	No	No	No	No	No	
2200	No	No	No	No	No	No BLM surface
2201	No	No	No	No	No	

4.7. Hydraulic Fracturing White Paper

BACKGROUND

Hydraulic fracturing (HF) is a well stimulation process used to maximize the extraction of underground resources – oil, natural gas and geothermal energy. The HF process includes the acquisition of water/mixing of chemicals, production zone fracturing, and HF flowback disposal.

In the United States, HF has been used since the 1940's. Early on, the HF process utilized pressures that are of a much smaller magnitude than those used today.

The HF process involves the injection of a fracturing fluid and propping agent into the hydrocarbon bearing formation under sufficient pressure to further open existing fractures and/or create new fractures. This allows the hydrocarbons to more readily flow into the wellbore. HF has gained interest recently as hydrocarbons previously trapped in low permeability tight sand and shale formations are now technically and economically recoverable. As a result, oil and gas production has increased significantly in the United States. The state of Wyoming classifies all gas production zones as Class 5 groundwater zones; this means these zones can be highly impacted by oil and gas activities and are exempt from regulation under the Clean Water Act. However, operations within these zones cannot cause other zones to lose their use classification.

Prior to the development of hydrocarbon bearing tight gas and shale formations, domestic production of conventional resources had been declining. In response to this decline, the federal government in the 1970's through 1992, passed tax credits to encourage the development of

unconventional resources. It was during this time that the HF process was further advanced to include the high-pressure multi-stage frac jobs used today.

Generally, HF can be described as follows:

1. Water, proppant, and chemical additives are pumped at extremely high pressures down the wellbore.
2. The fracturing fluid is pumped through perforated sections of the wellbore and into the surrounding formation, creating fractures in the rock. The proppant holds the fractures open during well production.
3. Company personnel continuously monitor and gauge pressures, fluids and proppants, studying how the sand reacts when it hits the bottom of the wellbore, slowly increasing the density of sand to water as the frac progresses.
4. This process may be repeated multiple times, in "stages" to reach maximum areas of the formation(s). The wellbore is temporarily plugged between each stage to maintain the highest fluid pressure possible and get maximum fracturing results in the rock.
5. The plugs are drilled or removed from the wellbore and the well is tested for results.
6. The pressure is reduced and the fracturing fluids are returned up the wellbore for disposal or treatment and re-use, leaving the sand in place to prop open the fractures and allow the oil/gas to flow.

OPERATIONAL ISSUES

Wells that undergo HF may be drilled vertically, horizontally, or directionally and the resultant fractures induced by HF can be vertical, horizontal, or both. Wells in Wyoming (WY) may extend to depths greater than 20,000 feet or less than 1,000 feet, and horizontal sections of a well may extend several thousand feet from the production pad on the surface[2].

The total volume of fracturing fluids is generally 95-99% water. The amount of water needed to fracture a well in WY depends on the geologic basin, the formation, and depth and type of well (vertical, horizontal, directional), and the proposed completion process.

In general, approximately 50,000 to 300,000 gallons may be used to fracture shallow coalbed methane wells in the Powder River Basin, while approximately 800,000 to 2 million gallons may be used to fracture deep tight sand gas wells in southwestern WY. In the Niobrara oil play, approximately 250,000 gallons may be used to fracture a vertical well, while up to 5 million gallons may be used to fracture a horizontal well.

Proppant, consisting of synthetic or natural silica sand, may be used in quantities of a few hundred tons for a vertical well to a few thousand tons for a horizontal well.

Drilling muds, drilling fluids, water, proppant and hydraulic fracturing fluids are stored in onsite tanks or lined pits during the drilling and/or completion process. Equipment transport and setup

[2] See Kemmerer RMP (2010), Pinedale RMP (2008), Green River RMP (1997), Rock Springs RMP Revision, and Rawlins RMP (2008) RFD and/or Mineral Occurrence Reports for specific information on current and projected oil and gas development.

can take several days, and the actual HF and flowback process can occur in a few days up to a few weeks. For oil wells, the flowback fluid from the HF operations is treated in an oil-water separator before it is stored in a lined pit or tank located on the surface. Where gas wells are flowed back using a "green completion process" fluids are run through a multi-phase separator, which are then piped directly to enclosed tanks or to a production unit.

Gas emissions associated with the HF process are captured when the operator utilizes a green completion process. Where a green completion process is not utilized, gas associated with the well may be vented and/or flared until "saleable quality" product is obtained in accordance with federal and state rules and regulations. The total volume of emissions from the equipment used (trucks, engines) will vary based on the pressures needed to fracture the well, and the number of zones to be fractured. Emissions associated with a project, and HF if proposed, will be analyzed through a site specific NEPA document to ensure that the operation will not cause a violation of the Clean Air Act.

Under either completion process, wastewaters from HF may be disposed in several ways. For example, the flowback fluids may be stored in tanks pending reuse; the resultant waste may be re-injected using a permitted injection well, or the waste may be hauled to a licensed facility for treatment, disposal and/or reuse.

Disposal of the waste stream following establishment of "sale-quality" product, would be handled in accordance with 43 CFR § 3177 regulations and other state/federal rules and regulations.

FRACTURING FLUIDS

As indicated above, the fluid used in the HF process is approximately 95to 99 percent water and a small percentage of special-purpose chemical additives[3,4] and proppant. There is a broad array of chemicals that can be used as additives in a fracture treatment including, but not limited to, hydrochloric acid, anti-bacterial agents, corrosion inhibitors, gelling agents (polymers), surfactants, and scale inhibitors. The 1 to 5 percent of chemical additives translates to a minimum of 5,000 gallons of chemicals for every 1.5 million gallons of water used to fracture a well (Paschke, Dr. Suzanne. USGS, Denver, Colorado. September 2011). Water used in the HF process is generally acquired from surface water or groundwater in the local area.

RE-FRACTURING

Re-fracturing of wells (RHF) may be performed after a period of time to restore declining production rates. RHF success can be attributed to enlarging and reorienting existing fractures while restoring conductivity due to proppant degradation and fines plugging.
Prior to RHF, the wellbore may be cleaned out. Cleaning out the wellbore may recover over 50% of the initial frac sand. Once cleaned, the process of RHF is the same as the initial HF. The need for RHF cannot be predicted.

WATER AVAILABILITY AND CONSUMPTION ESTIMATES

[3]FracFocus Chemical Registry. Hydraulic Fracturing Water Usage
[4] Chesapeake Energy. 2012. Hydraulic Fracturing Fact Sheet. http://www.chk.com/Media/Educational- Library/Fact-Sheets/Corporate/Hydraulic_Fracturing_Fact_Sheet.pdf (Last accessed March 1, 2012)

The Wyoming Framework Water Plan, A Summary, (Wyoming Water Development Commission, October 2007), indicates that approximately 15 million acre-feet per year of water becomes either surface water or groundwater and is available for use. This estimate includes water that flows into the state and the precipitation that runs off as stream flow or infiltrates as groundwater; it does not include volumes lost to evapotranspiration.

Water flowing out of WY is estimated to be 13,678,200 acre-feet per year. Wyoming's share of this supply under existing water compacts is estimated to be 3,313,500 acre-feet per year; approximately10, 364,700 acre-feet flows downstream out of the state.

The industrial water use sector includes electric power generation, coal mining, conventional oil and gas production, uranium mining, trona mining and soda ash production, bentonite mining, gypsum mining, coalbed methane (CBM) production, manufacturing of aggregate, cement, and concrete, and road and bridge construction.

Total current industrial surface water use for Wyoming is estimated to be 125,000 acre- feet per year. Total current industrial groundwater water use is estimated to be 246,000 acre-feet per year.

According to the state water plan, it appears likely that any new water-intensive industrial developments in the state over the next 30 years will fall into the electric power generation and/or chemical products categories. The other two intensive water use industries, primary metals and paper producers, tend to locate near the source of their largest process inputs – metals and wood respectively. The total projected industrial use under the Mid Scenario is 331,000 acre-feet per year. The Mid-Scenario is a middle of the road estimate versus the projected low or high scenarios.

Water needs for future fracturing jobs were estimated for this discussion paper using the current Reasonable Foreseeable Development (RFD) scenario numbers taken from each of the nine WY RMPs and multiplied by the maximum volume of water necessary based on information located at fracfocus.org. The table is provided, below. Based on a statewide RFD of 25,478 non-CBM wells and 18,299 CBM wells, the maximum projected water needs for HF is 401,319 acre-feet of water. This number is an estimate based upon maximum projected water needs per HF job, and assumes that 100% of the water is freshwater. While the total RFD projections have been reduced since the original drafting of the White Paper, because of RMP amendments and revisions, they have not been revised in this White Paper as total water needs are within what has been analyzed.

According to the WOGCC, as of December 11, 2024, there are approximately 422 active or approved Disposal wells in the state disposing of oil and gas wastewater. Data obtained from the Wyoming Oil and Gas Conservation Commission, for a period ending October 30, 2024, indicates that 6,798,803,775 barrels of water have been injected into underground formations for disposal purposes. These injection wells may also utilize HF depending upon the specific geology of the disposal zone; however, subsequent disposal operations utilize injection pressures below the fracture stress of the receiving formation to ensure containment in the targeted zone. Each formation for which injection is approved must receive an aquifer exemption from the

Environmental Protection Agency documenting that the injectate will be properly contained and that the formation receiving the water is not of useable quality (DEQ Class 4 Use).

POTENTIAL SOURCES OF WATER FOR HYDRAULIC FRACTURING

Freshwater-quality water is required to drill the surface-casing section of the wellbore per federal regulations; other sections of the wellbore (intermediate and/or production strings) would be drilled with appropriate quality makeup water as necessary. This is done to protect usable water zones from contamination, to prevent mixing of zones containing different water quality/use classifications, and to minimize total freshwater volumes. With detailed geologic well logging during drilling operations, geologists/mud loggers on location identify the bottoms of these usable water zones, which aids in the proper setting of casing depths.

Several sources of water are available for drilling and/or HF in WY. Because WY's water rights system is based in the prior appropriation doctrine, water cannot be diverted from a stream/reservoir or pumped out of the ground for drilling and/or HF without reconciling that diversion with the prior appropriation doctrine. Like any other water user, companies that drill or hydraulically fracture oil and gas wells must adhere to WY water laws when obtaining and using specific sources of water.

Below is a discussion of the sources of water that could potentially be used for HF. The decision to use any specific source is dependent on BLM authorization at the APD stage and the ability to satisfy the water appropriation doctrine. BLM must also consult in accordance with the Endangered Species Act (ESA) as amended (16 U.S .C.
1531 et seq.) with the U.S Fish and Wildlife Service (FWS on projects resulting in consumptive water use over de minimus levels, in the Platte and Colorado River Basins of WY. Where this is an issue, USFWS was consulted during the preparation of the appropriate RMP and would again be consulted on a case by case basis. From an operators' standpoint, the decision regarding which water source will be used is primarily driven by the economics associated with procuring a specific water source.

Water transported from outside the state. The operator may transport water from outside the state. As long as the transport and use of the water carries no legal obligation to Wyoming, this is an allowable source of water from a water rights perspective.

Irrigation water leased or purchased from a landowner. The landowner may have rights to surface water, delivered by a ditch or canal that is used to irrigate land. The operator may choose to enter into an agreement with the landowner to purchase or lease a portion of that water. This is allowable, however, in nearly every case, the use of an irrigation water right is likely limited to irrigation uses and cannot be used for well drilling and HF operations. To allow its use for drilling and HF, the owner of the water right and the operator must apply to change the water right through a formal process.

Treated water or raw water leased or purchased from a water provider. The operator may choose to enter into an agreement with a water provider to purchase or lease water from the water provider's system. Municipalities and other water providers may have a surplus of water in their system before it is treated (raw water) or after treatment that can be used for drilling and HF

operations. Such an arrangement would be allowed only if the operator's use were compliant with the water provider's water rights.

Water treated at a wastewater treatment plant leased or purchased from a water provider. The operator may choose to enter into an agreement with a water provider to purchase or lease water that has been used by the public, and then treated as wastewater.
Municipalities and other water providers discharge their treated wastewater into the streams where it becomes part of the public resource, ready to be appropriated once again in the priority system. But for many municipalities a portion of the water that is discharged has the character of being "reusable." As a result, it is possible that after having been discharged to the stream, it could be diverted by the operator to be used for drilling and HF operations. Such an arrangement would only be appropriate with the approval of the WY State Engineer's Office (WSEO) and would be allowed only if the water provider's water rights include uses for drilling and HF operations.

New diversion of surface water flowing in streams and rivers. New diversion of surface waters in most parts of the state are rare because the surface streams are already "over appropriated," that is, the flows do not reliably occur in such a magnitude that all of the vested water rights on those streams can be satisfied. Therefore, the only time that an operator may be able to divert water directly from a river is during periods of high flow and less demand. These periods do occur but not reliably or predictably.

Produced Water. The operator may choose to use water produced in conjunction with oil or gas production at an existing oil or gas well. The water that is produced from an oil or gas well is under the administrative purview of the WSEO and is either non-tributary, in which case, it is administered independent of the prior appropriation doctrine; or is tributary, in which case, the depletions from its withdrawal must be fully augmented if the depletions occur in an over-appropriated basin. The result in either case is that the produced water is available for consumption for other purposes, not just oil and gas operations. The water must not be encumbered by other needs and the operator must obtain a proper well permit from the WSEO before the water can be used for drilling and HF operations.

Reused or Recycled Drilling Water. Water that is used for drilling of one well may be recovered and reused in the construction of subsequent wells. The BLM encourages reuse and recycling of both the water used in well drilling and the water produced in conjunction with oil or gas production. However, as described above, the operator must obtain the right to use the water for this purpose.

On-Location Water Supply Wells. Operators may apply for, and receive, permission from the WSEO to drill and use a new water supply well. These wells are usually drilled on location to provide an on-demand supply. These industrial-type water supply wells are typically drilled deeper than nearby domestic and/or stock wells to minimize drawdown interference, and have large capacity pumps. The proper construction, operation and maintenance, backflow prevention and security of these water supply wells are critical considerations at the time they are proposed to minimize impacts to the well and/or the waters in the well and are under the jurisdiction of the WSEO. Plugging these wells are also under the jurisdiction of the WSEO.

POTENTIAL IMPACTS TO USABLE WATER ZONES

Impacts to freshwater supplies can originate from point sources, such as chemical spills, chemical storage tanks (aboveground and underground), industrial sites, landfills, household septic tanks, and mining activities. Impacts to usable waters may also occur through a variety of oil and gas operational sources which may include, but are not limited to, pipeline and well casing failure, and well (gas, oil and/or water) drilling and construction of related facilities. Similarly, improper construction and management of open fluids pits and production facilities could degrade ground water quality through leakage and leaching.[5]

Should hydrocarbons or associated chemicals for oil and gas development, including HF, exceeding EPA/WDEQ standards for minimum concentration levels migrate into culinary water supply wells, springs, or usable water systems, it could result in these water sources becoming non-potable. Water wells developed for oil and gas drilling could also result in a draw down in the quantity of water in nearby residential areas depending upon the geology; however, it is not currently possible to predict whether or not such water wells would be developed.

Usable groundwater aquifers are most susceptible to pollution where the aquifer is shallow (within 100 feet of the surface depending on surface geology) or perched, are very permeable, or connected directly to a surface water system, such as through floodplains and/or alluvial valleys or where operations occur in geologies which are highly fractured and/or lack a sealing formation between the production zone and the usable water zones. If an impact to usable waters were to occur, a greater number of people could be affected in densely populated areas versus sparsely populated areas characteristic of WY.

Potential impacts on usable groundwater resources from fluid mineral extraction activities can result from the five following scenarios:

- Contamination of aquifers through the introduction of drilling and/or completion fluids through spills or drilling problems such as lost circulation zones.
- Communication of the induced hydraulic fractures with existing fractures potentially allowing frac fluid migration into usable water zones/supplies. The potential for this impact is likely dependent on the local hydraulic gradients where those fluids are dissolved in the water column. To date, this is an unproven theory.
- Cross-contamination of aquifers/formations that may result when fluids from a deeper aquifer/formation migrate into a shallower aquifer/formation due to improperly cemented well casings.
- Localized depletion of unconfined groundwater availability.
- Progressive contamination of deep confined, shallow confined, and unconfined aquifers if the deep confined aquifers are not completely cased off, and geologically isolated, from deeper units. An example of this would be saltwater intrusion resulting from sustained drawdown associated with the pumping of groundwater.

[5] See Subject RMP, Chapter 4, Environmental Consequences, for additional information.

The impacts above could occur as a result of the following processes:

Improper casing and cementing.
A well casing design that is not set at the proper depths or a cementing program that does not properly isolate necessary formations could allow oil, gas or HF fluids to contaminate other aquifers/formations.

Natural fractures, faults, and abandoned wells.
If HF of oil and gas wells result in new fractures connecting with established natural fractures, faults, or improperly plugged dry or abandoned wells, a pathway for gas or contaminants to migrate underground may be created posing a risk to water quality. The potential for this impact is currently unknown but it is generally accepted that the potential decreases with increasing distance between the production zone and usable water zones. This potential again is dependent upon the site specific conditions at the well location.

Fracture growth.
A number of studies and publications report that the risk of induced fractures extending out of the target formation into an aquifer—allowing hydrocarbons or other fluids to contaminate the aquifer —may depend, in part, on the formation thickness separating the targeted fractured formation and the aquifer. For example, according to a 2012 Bipartisan Policy Center report, the fracturing process itself is unlikely to directly affect freshwater aquifers because fracturing typically takes place at a depth of 6,000 to 10,000 feet, while drinking water aquifers are typically less than 1,000 feet deep. Fractures created during HF have not been shown to span the distance between the targeted l formation and freshwater bearing zones. If a parcel is sold and development is proposed in usable water zones, those operations would have to comply with federal and/or state water quality standards or receive a Class 5 designation from the WDEQ.

Fracture growth and the potential for upward fluid migration, through coal and other geologic formations depend on site-specific factors such as the following:

1. Physical properties, types, thicknesses, and depths of the targeted formation as well as those of the surrounding geologic formations.
2. Presence of existing natural fracture systems and their orientation in the target formation and surrounding formations.
3. Amount and distribution of stress (i.e., in-situ stress), and the stress contrasts between the targeted formation and the surrounding formations.

Hydraulic fracture stimulation designs include the volume of fracturing fluid injected into the formation as well as the fluid injection rate and fluid viscosity; this information would be evaluated against the above site specific considerations**.**

Fluid leak and recovery (flowback) of HF fluids.
It is theorized that not all fracturing fluids injected into the formation during the HF process may be recovered. It is theorized that fluid movement into smaller fractures or other geologic substructures can be to a point where flowback efforts will not recover all the fluid or that the pressure reduction caused by pumping during subsequent production operations may not be

sufficient to recover all the fluid that has leaked into the formation. It is noted that the fluid loss due to leakage into small fractures and pores is minimized by the use of cross-linked gels.

Willberg et al. (1998) analyzed HF flowback and described the effect of pumping rates on cleanup efficiency in initially dry, very low permeability (0.001 md) shale. Some wells in this study were pumped at low flowback rates (less than 3 barrels per minute (bbl/min). Other wells were pumped more aggressively at greater than 3 bbl/min.
Thirty- one percent of the injected HF fluids were recovered when low flowback rates were applied over a 5-day period. Forty-six percent of the fluids were recovered when aggressive flowback rates were applied in other wells over a 2-day period. In both cases, additional fluid recovery (10 percent to 13 percent) was achieved during the subsequent gas production phase, resulting in a total recovery rate of 41 percent to 59 percent of the initial volume of injected HF fluid. Ultimate recovery rate however, is dependent on the permeability of the rocks, fracture configuration, and the surface area of the fracture(s).

The ability of HF chemicals to migrate in an undissolved or dissolved phase into a usable water zone is likely dependent upon the location of the sealing formation (if any), the geology of the sealing formation, hydraulic gradients and production pressures. The following discussion, adapted from: Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs; Chapter 3 Characteristics of CBM Production and Associated HF Practices (3-5EPA 816-R-04-003, June, 2004), takes place where there is not a sealing formation between the fractured formation and usable waters; the two zones are separated by approximately 1000’ of earth in the Powder River Basin of WY.

HF Fluids can remain in the subsurface unrecovered, due to “leak off” into connected fractures and the pores of rocks. Fracturing fluids injected into the primary hydraulically induced fracture can intersect and flow (leak off) into preexisting smaller natural fractures. Some of the fluids lost in this way may occur very close to the well bore after traveling minimal distances in the hydraulically induced fracture before being diverted into other fractures and pores. Once “mixed” with the native water, local and regional vertical and horizontal gradients may influence where and if these fluids will come in contact with usable water zones, assuming that there is inadequate recovery either through the initial flowback or over the productive life of the well. Faults, folds, joints, etc., could also alter localized flow patterns as discussed below.

The following processes can influence effective recovery of the fracture fluids:

Check-Valve Effect
A check-valve effect occurs when natural and/ or newly created fractures open and HF fluid is forced into the fractures when fracturing pressures are high, but the fluids are subsequently prevented from flowing back toward the wellbore as the fractures close when the fracturing pressure is decreased (Warpinski et al., 1988; Palmer et al., 1991a). A long fracture can be pinched-off at some distance from the wellbore. This reduces the effective fracture length. HF fluids trapped beyond the “pinch point” are unlikely to be recovered during flowback and oil/gas is unlikely to be recovered during production.

In most cases, when the fracturing pressure is reduced, the fracture closes in response to natural

subsurface compressive stresses. Because the primary purpose of hydraulic fracturing is to increase the effective permeability of the target formation and connect new or widened fractures to the wellbore, a closed fracture is of little use.
Therefore, a component of HF is to "prop" the fracture open, so that the enhanced permeability from the pressure- induced fracturing persists even after fracturing pressure is terminated. To this end, operators use a system of fluids and "proppants" to create and preserve a high- permeability fracture-channel from the wellbore deep into the formation.

The check-valve effect takes place in locations beyond the zone where proppants have been placed (or in smaller secondary fractures that have not received any proppant). It is possible that some volume of stimulation fluid cannot be recovered due to its movement into zones that were not completely "propped" open.

Adsorption and Chemical Reactions
Adsorption and chemical reactions can also prevent HF fluids from being recovered. Adsorption is the process by which fluid constituents adhere to a solid surface and are thereby unavailable to flow with groundwater. Adsorption to coal is likely; however, adsorption to other geologic material (e.g., shale, sandstone) is likely to be minimal.
Another possible reaction affecting the recovery of fracturing fluid constituents is the neutralization of acids (in the fracturing fluids) by carbonates in the subsurface.

Movement of Fluids Outside the Capture Zone
Fracturing fluids injected into the target zone flow into fractures under very high pressure. The hydraulic gradients driving fluid flow away from the wellbore during injection are much greater than the hydraulic gradients pulling fluid flow back toward the wellbore during flowback and production (pumping) of the well. Some portion of the fracturing fluids could be forced along the hydraulically induced fracture to a point beyond the capture zone of the production well. The size of the capture zone will be affected by the regional groundwater gradients, and by the drawdown caused by producing the well. Site-specific geologic, hydrogeologic, injection pressure, and production pumping details should provide the information needed to estimate the dimension of the production well capture zone and the extent to which the fracturing fluids might disperse and dilute.

Incomplete Mixing of Fracturing Fluids with Water
Steidl (1993) documented the occurrence of a gelling agent that did not dissolve completely and actually formed clumps at 15 times the injected concentration in an induced fracture. Steidl also directly observed, in his mined- through studies, gel hanging in stringy clumps in many other induced fractures. As Willberg et al. (1997) noted, laboratory studies indicate that fingered flow of water past residual gel may impede fluid recovery. Therefore, some fracturing fluid gels appear not to flow with groundwater during production pumping and remain in the subsurface unrecovered. Such gels are unlikely to flow with groundwater during production, but may present a source of gel constituents to flowing groundwater during and after production.

Authorization of any future proposed projects, would require full compliance with local, state, and federal regulations and laws that relate to surface and groundwater protection and would be subject to routine inspections by the BLM and the Wyoming Oil and Gas Commission as

described in Memorandum of Understanding WY920-94- 09-79, dated September 21, 1994, prior to approval.

GEOLOGIC HAZARDS (INCLUDING SEISMIC/LANDSLIDES)

Potential geologic hazards caused by HF include induced seismic activity. Induced seismic activity could indirectly cause surficial landslide activity where soils/slopes are susceptible to failure.

Landslides involve the mass movement of earth materials down slopes and can include debris flows, soil creep, and slumping of large blocks of material. There are no identified landslides in the project area [Kemmerer RMP (2010), Pinedale RMP (2008), Green River RMP (1997), Rock Springs RMP Revision, and Rawlins RMP (2008) Chapter 2, Affected Environment and/or Summary of the Management Situation Analysis; Wyoming State Geological Survey (2011)].

Earthquakes occur when energy is released due to blocks of the earth's crust moving along areas of weakness or faults. Earthquakes attributable to human activities are called "induced seismic events" or "induced earthquakes." In the past several years induced seismic events related to energy development projects have drawn heightened public attention. Although only a very small fraction of injection and extraction activities at hundreds of thousands of energy development sites in the United States have induced seismicity at levels that are noticeable to the public, seismic events caused by or likely related to energy development have been measured and felt in Alabama, Arkansas, California, Colorado, Illinois, Louisiana, Mississippi, Nebraska, Nevada, New Mexico, Ohio, Oklahoma, and Texas.

A study conducted by the National Academy of Sciences[6] studied the issue of induced seismic activity from energy development. As a result of the study, they found that: (1) the process of hydraulic fracturing a well as presently implemented for shale gas recovery does not pose a high risk for inducing felt seismic events; and (2) injection for disposal of waste water derived from energy technologies into the subsurface does pose some risk for induced seismicity, but very few events have been documented over the past several decades relative to the large number of disposal wells in operation.

The potential for induced seismicity cannot be made at the leasing stage; as such, it will be evaluated at the APD stage should the parcel be sold/issued, and a development proposal submitted.

SPILL RESPONSE AND REPORTING

Spill Prevention, Control, and Countermeasure (SPCC) - EPAs rules include requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires that operators of specific facilities prepare, amend, and implement SPCC Plans. The SPCC rule is part of the Oil Pollution Prevention regulation, which also includes the Facility Response Plan (FRP) rule. Originally published in 1973 under the authority of §311 of the Clean Water Act, the Oil Pollution Prevention regulation sets forth requirements for prevention of, preparedness for, and response to oil discharges at specific non-

[6] Induced Seismicity Potential in Energy Technologies, National Academy of Sciences, 2012

transportation- related facilities. To prevent oil from reaching navigable waters and adjoining shorelines, and to contain discharges of oil, the regulation requires the operator of these facilities to develop and implement SPCC Plans and establishes procedures, methods, and equipment requirements (Subparts A, B, and C). In 1990, the Oil Pollution Act amended the Clean Water Act to require some oil storage facilities to prepare Facility Response Plans. On July 1, 1994, EPA finalized the revisions that direct facility owners or operators to prepare and submit plans for responding to a worst- case discharge of oil.

In addition to EPA's requirements, operators must provide a plan for managing waste materials, and for the safe containment of hazardous materials, per 43 CFR § 3171 with their APD proposal. All spills and/or undesirable events are managed in accordance with Notice to Lessee (NTL) 3-A and WY Information Memorandums 2008-028: *NTL- 3A Reporting Requirements* and 2009-021 *Guidance & Standards for Response to Oil & Gas-Related Spills & Clean-Up Criteria.* Regulations found at 43 CFR 3162.5(c) provide BLM with the necessary regulatory framework for responding to all spills and/or undesirable events related to hydraulic fracturing operations.

PUBLIC HEALTH AND SAFETY

The intensity, and likelihood, of potential impacts to public health and safety, and to the quality of usable water aquifers is directly related to proximity of the proposed action to domestic and/or community water supplies (wells, reservoirs, lakes, rivers, etc.) and/or agricultural developments. The potential impacts are also dependent on the extent of the production well's capture zone and well integrity. Standard Lease Notice No.1 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. Further information related to the rate of development is provided in the Leasing Environmental Analysis.

Table 4.7-1 HF White Paper Table

Field Office (Year of RFD)	Proj. Num. of CBM wells	Projected Number of Non-CBM/ Conven-tional Wells	Max Frac Vol. CBM (gal. x 1,000)	Total Est. H2O for CBM (x 1,000)	Max Frac Volume Non-CBM (gal. x 1,000)	Total Est. H2O for Non-CBM (x 1,000,000)	Total Projected H2O for HF (gal. x 1,000)	Total Projected H2O for HF (barrels)	Total Project ed H2O for HF (acre-feet)
BFO (2012)	10,343	3,865	300	3,102,900	5,000	19,325	22,427,900	711,996,824	67,736.09
BHB (2010) (WFO/ CYFO)	150	1,890	300	45,000	5,000	9,450	9,495,000	301,428,571	28,676.52
CFO (2005)	700	2,100	300	210 ,000	5,000	10,500	10,710,000	340,000,000	32,346.03
NFO (2004)	0	30	300	0	5,000	150	150,000	4,761,905	453.03
LFO (2009)	861	2,566	300	258,300	5,000	12,830	13,088,300	415,501,587	39,528.90
RFO (2004)	4,655	4,655	300	1,396,500	5,000	23,275	24,671,500	783,222,221	74,512.14
RSFO (GRRM P/ 1991)	300	1,258	300	90,000	5,000	6,290	6,380,000	202,539,682	19,268.69
RSFO (JMH/ 2002)	50	314	300	15,000	5,000	1,570	1,585,000	50,317,460	4,786.97
KFO (2006)	640	220	300	192,000	5,000	1,100	1,292,000	41,015,873	3,902.06
PFO (2006)	600	8,580	300	180,000	5,000	42,900	43,080,000	1,367,619,046	130,108.96
Total	18,299	25,478		5,489,700		127,390	132,879,700	4,218,403,168	401,319

Calculation assumes 100% of HF H2O is freshwater.
*Conversion factor: gallons to barrels: *0.0317460317 Conversion factor: barrels to acre feet: /10511.3365126*

4.8. Water Resources

Surface water hydrology within the area is typically influenced by geology, soil characteristics, precipitation, and vegetation. Anthropogenic factors that currently affect surface include livestock grazing management, private, commercial, and industrial development, recreational use, drought, and vegetation control treatments. Based on best available data, the vast majority of the nominated parcels are within the following HUC8 watersheds: Lower Wind, Lighting, Little Wind, Badwater, and Antelope HUC8 units. Groundwater hydrology within the area is influenced by geology and recharge rates.

Groundwater quality and quantity can be influenced by precipitation, water supply wells and various disposal activities. Groundwater quality across the applicable field offices varies with depth from potable waters with low total dissolved solids (TDS) to highly saline, non-potable sources. Groundwater quality in Wyoming is regulated by three agencies. The Wyoming Department of Environmental Quality (WDEQ) Water Quality Division (WQD) regulates groundwater quality for the uses of Wyoming aquifers. Public groundwater systems are regulated by the U.S. Environmental Protection Agency (USEPA). Both of these agencies have chemical standards for groundwater uses under their respective regulations. The third agency that regulated groundwater quality in Wyoming is the Wyoming Oil and Gas Conservation Commission (WOGCC). The WOGCC regulates the disposal of wastewater that does not meet domestic, livestock, irrigation and other general use standards.

Groundwater in Wyoming are classified with respect to water quality in order to apply the standards set by the WDEQ/WQD per Water Quality Rules and Regulation Chapter 8-Quality Standards for Wyoming Groundwaters (Wyoming Department of Environmental Quality, 2018). The standards that are set are as follows:

Class I: Groundwater that is suitable for domestic use ((TDS<500 mg/L)
Class II: Groundwater that is suitable for agricultural (irrigation) use where soil conditions and other factors are adequate for such use (TDS<2,000 mg/L)
Class III: Groundwater that is suitable for livestock (TDS<5,000 mg/L)
Class IV: Groundwater that is suitable for industry
Class IV (A): Groundwater that has a TDS concentration not in excess of 10,000 mg/L
Class IV (B): Groundwater that has a TDS concentration in excess of 10,000 mg/L.
Class V: Groundwater that is associated with commercial deposits of hydrocarbons (oi and gas) or other minerals or is a geothermal energy resource
Class VI: Groundwater that may be unusable or unsuitable for use and could be so contaminated that it would be economically or technologically impractical to make useable, or is located in such a way, including depth below the surface, so as to make use economically and technologically impractical.

Along with the criteria for meeting groundwater quality standards based on intended use, regulations contained in 43 CFR § 3172 Drilling Operation on Federal and Indian Oil and Gas Leases must be followed. These regulations establish national standards for the minimum levels of performance expected from operators and lessees when conducting drilling operations on Federal lands. Contained within these regulations are the requirements to protect and isolate usable water zones. Usable water zones are defined as water bearing layers that contain up to

10,000 mg/L of TDS. For reference, Table 4.8-1 defines levels of TDS to the salinity levels of the water.

Table 4.8-1 USGS Salinity Classification (Heath, 1983)

Classification	**Total Dissolved Solids mg/L**
Fresh	0-999
Slightly saline	1,000-2,9999
Moderately saline	3,000-9,999
Very saline	10,000-34,999
Briny	More than 34,999

Most of the groundwater in Wyoming is used for industrial, domestic and livestock/irrigation purposes. The information contained in Appendix 4.7, Hydraulic Fracturing White Paper (see section entitled Operational Issues/Water Availability and Consumption Estimates) is incorporated by reference.

Several parcels contain land with private surface overlying federal minerals (i.e., split-estate). The private surface lands have or have the potential to contain private residences and associated facilities such as domestic or stock water supply wells. Lands used as rangeland can also have stock water supply wells.

WIND RIVER BASIN

Areas of Oil and Gas Activities

Oil and gas activities are spread across the Wind River Basin and appear to have an affinity along primarily northwest-southeast intrabasinal faults. Both oil and gas are produced in the basin and preference for hydrocarbon phase is play-dependent.

Potential hydrocarbon production zones include the Tertiary Lower Wind River and Fort Union/Shotgun Formations; the Cretaceous Lance, Meeteetse, Mesa Verde, Cody Shale, and Frontier Formations; the Cretaceous-Jurassic Morrison Formation; the Jurassic Nugget Formation; the Triassic Chugwater Group; the Permian-Carboniferous Phosphoria and Tensleep Sandstone Formations (WSGS, 2024, 1.).

Identification of Usable Water Zones and Aquifers

The two principal groundwater-bearing zones and water well production in vicinity of these parcels is from Quaternary age unconsolidated deposit aquifers (alluvium) and the aquifer/usable water zones of the Eocene age Upper Wind River Formation, which is up to 5000 ft thick in the Wind River Basin. Both aquifers are considered major aquifers in the Wind River Basin and are both important sources of useable groundwater. These aquifers have limited continuity and are variegated with complex interbedded clay, shale, silt, and conglomerate beds and lenticular sand layers of variable extents and thicknesses.

Characterization of Usable Water Zones and Aquifers and Usage

Generally, water wells in alluvial aquifers and the usable water zones and aquifer of the Upper Wind River Formation in the Wind River Basin average around 100ft depths with some wells up to 1000ft deep (WSGS, 2024, 2.). Water quality from the alluvial aquifers in the Wind River Basin are generally fresh or moderately saline with TDS concentrations ranging from 102 to 4,630 mg/L, with a median of 539 mg/L (WSGS, 2012). Water quality from the Wind River aquifer is variable throughout Wind River Basin and TDS concentrations from water wells include mostly fresh water (67% of samples) and range from slightly saline to moderately saline ranging from 224 mg/L to 5,110 mg/L, with a median of 707 mg/L (WSGS, 2012). TDS concentrations from produced water samples from the Wind River aquifer are slightly saline to briny and range from 1,060 to 38,800 mg/L, with a median of 2,730 mg/L (WSGS, 2012).

Other major aquifers within the Wind River Basin include the Nugget Sandstone, Tensleep Sandstone, Madison Limestone, and Bighorn Dolomite in which fluid stratification generally occurs with more buoyant hydrocarbons overlying brines and usable water combined with interbedded shales and other less porous rocks serve as geologic isolation of hydrocarbons and brines from usable water, but notably at depth or on the fringes of the basin.

Geological Isolation of Usable Water Zones and Aquifers

Less porous Eocene through Miocene inter-bedded shales and tight sandstones, fluid stratification of buoyant hydrocarbons, faulting and discontinuous stratigraphy can independently or collectively geologically isolate hydrocarbon zones from brine and usable water zones. Similarly, inter-bedded shales within the Wind River Formation locally isolates usable water zones from lower Wind River productive hydrocarbon zones and collectively from productive hydrocarbon zones in deeper hydrocarbon reservoirs.

Engineered Protection of Usable Water Zones and Aquifers

Oil and gas wells permitted in vicinity of these parcels generally have surface casing between 1500 and 2500ft deep within the Wind River Formation or top of the Fort Union/Shotgun Formation and serve as engineered protections of useable water zones and aquifer in the Upper Wind River Formation. Applications for Permit to Drill (APDs) further analyze the significantly more local requirements for casing and cementing to ensure isolation of usable water zones on a well pad by well pad and borehole by borehole basis.

POWDER RIVER BASIN

Areas of Oil and Gas Activities

Oil and gas activities are spread across the Powder River Basin and appear to have an affinity along primarily northwest-southeast intrabasinal faults as well as systematic west-southwest to east-northeast trending counter-regional faults. Both oil and gas are produced in the basin and preference for hydrocarbon phase is play-dependent.

Potential hydrocarbon production zones include the Tertiary Fort Union Formation coalbeds, Upper Cretaceous Parkman, Sussex, Shannon, Niobrara, Carlile Shale, and Frontier Formations; the Lower Cretaceous Mowry Shale, Muddy, and Cloverly Formations; and the Carboniferous Minnelusa Formation.

Identification of Usable Water Zones and Aquifers

The Lower Eocene Wasatch Formation; the Tongue River, Lebo, and Tullock Members of the Paleocene Fort Union Formation; and the Upper Cretaceous Fox Hills Sandstone Formation are the primary aquifer and usable water zones in the Powder River Basin (Long et al, 2014). The overall Lower Tertiary system can be as thick as 7,180ft (Long et al, 2014) and is the most widely utilized source of groundwater (Taboga et al, 2019) with wells down to 2000ft. The Fox Hills system as thick as 7,600ft and is used for groundwater near the basins periphery (Taboga et al, 2017). In the Wyoming portion of the Powder River Basin, these intervals have varying permeability due to a variety of depositional environments resulting in lithostratigraphic complexity (Taboga et al, 2017) and to faulting and fracturing (Long et al, 2014).

Characterization of Usable Water Zones and Aquifers and Usage

The Fort Union Formation contains coal seams interbedded with lenticular sandstones to more ubiquitous shales (Taboga et al, 2017) while the Fox Hills Formation near-shore deltaic mudstones to sandstones (Tischerman et al, 2022). Production in the Fort Union coal seams and adjacent sandstones is geologically isolated from usable water zones by changes in lithology, stratigraphic barriers between formational bedding as well as fracturing and faulting (Tobago et al, 2017). The Wasatch Formation shales derived from nonmarine fluvial and paludal (swamp/marsh environments) (Taboga et al, 2019) serves as a more localized traditional confining unit for the biogenically-sourced hydrocarbons found in the Fort Union coal seams.

Water Quality in Usable Water Zones and Aquifers

Water quality in the Wasatch ranges from 160 to 8,620mg/L with a median of 1,125mg/L while Fort Union ranges from 113 to 5,480 mg/L with a median of 1,015mg/L (Taboga et al, 2019). In the Lance, water quality ranges from 244 to 3,060 mg/L with a median of 946mg/L and the Fox Hills ranges from 28 to 3,520 mg/L with a median of 1,170 mg/L (Taboga et al, 2019).

Geological Isolation of Usable Water Zones and Aquifers

The Upper Cretaceous Lewis Shale and Pierre Shale Formations combine to provide a more traditional confining unit cap to the basin's primarily thermogenically-sourced hydrocarbons and geologically isolating those hydrocarbons from the primary usable water zones for the basin. Usable water zones in deeper hydrocarbon bearing formations geologically isolate more buoyant hydrocarbons and brines from usable water zones. Isolation is also facilitated by stratigraphic barriers in bedding and by faulting and fracturing.

Engineered Protection of Usable Water Zones and Aquifers

Oil and gas wells generally employ surface casing and cement to protect the Wasatch and Fort Union usable water zones. Some wells may require intermediate or production casing and cement to protect the Fox Hills usable water zones. Further during plugging operations of particularly older wells, usable water zones are identified and plugged with to further isolate those zones. Applications for Permit to Drill (APDs) further analyze the significantly more local requirements for casing and cementing to ensure isolation of usable water zones on a well pad by well pad and borehole by borehole basis.

GREEN RIVER BASIN

Areas of Hydrocarbon Activity

There are multiple areas of oil and gas activities in the Green River Basin. The Pinedale Anticline (PA), the Jonah Infill Drilling (JID), and the Normally Pressured Lance (NPL) project areas lie in the north of the basin while additional activities occur along the Moxa Arch and along the LaBarge Platform along the western flank of the basin (WOGCC Data Explorer, Figure 1 from Lynds and Lichtner, 2016). The hydrocarbon phase produced in each of these areas is predominantly natural gas with historic oil production.

Potential hydrocarbon production zones include the Paleocene Fort Union Formation, Upper Cretaceous Lance, Lewis Shale, Almond, Ericson, Rock Springs, Baxter Shale, and Frontier Formations; the Lower Cretaceous Bear River and Cloverly Formations; the Jurassic Nugget Formation, and the Carboniferous Tensleep Sandstone and Madison Limestone. Of these, the Mesaverde, Lance, and Fort Union are generally the target intervals in the project areas listed above.

Identification of Usable Water Zones and Aquifers

Across the Green River Basin, undivided Tertiary formations and intervals occur stratigraphically younger than the Lower Eocene Wasatch Group (Wasatch) and include uppermost Eocene through Miocene aged stratigraphic intervals (Love et al., 1993). The undivided Tertiary interval, the Wasatch, and to a much lesser extent the Paleocene Fort Union Formation are the most common usable water zones. Of these, the Wasatch is the primary aquifer and usable water zone in the Green River Basin. The Wasatch occurs from the surface to approximately 6,200ft deep at an average thickness of about 8,000 feet.

Characterization of Usable Water Zones and Aquifers and Usage

The undivided Tertiary section overlies the Wasatch and does not include the Green River which interfingers with the Wasatch, but for these analyses will be included in the undivided Tertiary section. In general, the undivided Tertiary section is highlighted by the Miocene Bishop Conglomerate and the Battle Spring conglomerates and sandstones as well as other isolated permeable sandstone aquifers that intertongue with silts and shales.

The Wasatch both conformably and unconformably overlies the Fort Union and is largely comprised of alluvial deposits, more specifically, fluvial sands, flood plain shales, and coal that interfingers with the more lacustrine facies of the undivided Tertiary formations (Roberts, 2005). As such, local initial geologic isolation generally begins at deposition and persists through lithification to present day.

The Fort Union contains coal seams embedded with lenticular-shaped sandstones and includes fluvial, paludal, and lacustrine shales, claystones, and mudstones (Lynds and Lichtner, 2016) which geologically isolate from usable water zones by changes in lithology, stratigraphic barriers between formational bedding as well as fracturing and faulting (Tobago et al, 2017).

Water Quality in Usable Water Zones and Aquifers

Water quality measured by total dissolved solids (TDS) in milligrams per liter (mg/L) in the undivided Tertiary ranges from 1,401 to 20,531mg/L with a mean average of 5,035mg/L (Taboga et al, 2020) including 4 samples (11% of samples) >10,000 mg/L. These 4 samples are clustered near the center of the western flank of the Green River basin. For the Wasatch, TDS values range from 1,050 to 4,775 mg/L with a mean average of 2,778 mg/L while the Fort Union ranges from 1,542 to 3,519 mg/L with a mean average of 2,531 mg/L (Taboga et al, 2020).

Geological Isolation of Usable Water Zones and Aquifers

In general, the lacustrine shales of the Wasatch and undivided Tertiary as well as the Upper Cretaceous Lewis Shale combined with interbedded shales, mudstones, and siltstones with their lower permeabilities in the Paleocene Fort Union Formation and the Upper Cretaceous Fox Hills and Lance Formations provide a confining regional seal to the basin's deeper primarily thermogenically sourced hydrocarbons and thereby geologically isolating those hydrocarbons from the primary usable water zones for the basin (Buursink et al., 2012; Finn et al., 2005; Love et al., 1993). Usable water zones in deeper hydrocarbon bearing formations are locally geologically isolated from more buoyant hydrocarbons and brines. Isolation is also facilitated by stratigraphic barriers namely finer-grained, less-permeable shales and siltstones in bedding and by faulting and fracturing. Buursink et al., 2012 identify multiple carbon dioxide storage assessment units within the Green River Basin that have intervening shales and tight sandstones that serve as confining units for geologic carbon sequestration.

Engineered Protection of Usable Water Zones and Aquifers

Oil and gas wells generally employ surface casing and cement to protect the undivided Tertiary, the Wasatch and the Fort Union usable water zones. Some wells may require intermediate or production casing and cement to protect the in these or other usable water zones. Further during plugging operations of particularly older wells, usable water zones are identified and plugged to further isolate those zones. Applications for Permit to Drill (APDs) further analyze the significantly more local requirements for casing and cementing to ensure isolation of usable water zones on a well pad by well pad and borehole by borehole basis.

WASHAKIE-GREAT DIVIDE BASIN

Areas of Hydrocarbon Activity

The Wamsutter area is the primary area of oil and gas activities. This area is defined as the area along the Wamsutter Arch and across the Washakie Basin. Secondary areas of oil and gas activities occur along the Rock Springs Uplift and along the northern flank of the Great Divide Basin (WOGCC Data Explorer, Figure 1 from Lynds and Lichtner, 2016). The main hydrocarbon phase produced in the Wamsutter is predominantly natural gas and coal-bed methane gas with more historic oil production.

Potential hydrocarbon production zones include the Paleocene Fort Union Formation, Upper Cretaceous Lance, Lewis Shale, Almond, Ericson, Rock Springs, Baxter Shale, and Frontier Formations; the Lower Cretaceous Muddy Sandstone and Cloverly Formations; the Jurassic Nugget Formation, and the Carboniferous Weber Sandstone and Madison Limestone.

Identification of Usable Water Zones and Aquifers

Across the Green River Basin, undivided Tertiary formations and intervals occur stratigraphically younger than the Lower Eocene Wasatch Group (Wasatch) and include uppermost Eocene through Miocene aged stratigraphic intervals (Love et al., 1993). The undivided Tertiary interval, the Wasatch, and to a much lesser extent the Paleocene Fort Union Formation are the most common usable water zones. Of these, the Wasatch is the primary aquifer and usable water zone in the Green River Basin. The Wasatch occurs from the surface to approximately 6,200ft deep at an average thickness of about 8,000 feet.

Characterization of Usable Water Zones and Aquifers and Usage

The undivided Tertiary section overlies the Wasatch and does not include the Green River which interfingers with the Wasatch, but for these analyses will be included in the undivided Tertiary section. In general, the undivided Tertiary section is highlighted by the Miocene Bishop Conglomerate and the Battle Spring conglomerates and sandstones as well as other isolated permeable sandstone aquifers that intertongue with silts and shales.

The Wasatch both conformably and unconformably overlies the Fort Union and is largely comprised of alluvial deposits, more specifically, fluvial sands, flood plain shales, and coal that interfingers with the more lacustrine facies of the undivided Tertiary formations (Roberts, 2005). As such, local initial geologic isolation generally begins at deposition and persists through lithification to present day.

The Fort Union contains coal seams embedded with lenticular-shaped sandstones and includes fluvial, paludal, and lacustrine shales, claystones, and mudstones (Lynds and Lichtner, 2016) which geologically isolate from usable water zones by changes in lithology, stratigraphic barriers between formational bedding as well as fracturing and faulting (Tobago et al, 2017).

Water Quality in Usable Water Zones and Aquifers

Water quality from 1,000-2,000 feet measured by total dissolved solids (TDS) in milligrams per liter (mg/L) in the undivided Tertiary ranges from 2,433 to 8,458 mg/L with a mean average of 4,863mg/L (Taboga et al, 2020). For the Wasatch, TDS values range from 1,320 to 10,611 mg/L with a mean average of 4,971 mg/L with one sample (6% of all Wasatch samples) >10,000 mg/L. The Fort Union ranges from 1,938 to 14,366 mg/L with a mean average of 4,690 mg/L (Taboga et al, 2020) with one sample (14% of all Fort Union samples) >10,000 mg/L.

From 2,000-3,000 feet, water quality for the undivided Tertiary ranged from 2,407 to 18,421 mg/L with 2 samples (22% of all undivided Tertiary samples) >10,000 mg/L.

Geological Isolation of Usable Water Zones and Aquifers

In general, the lacustrine shales of the Wasatch and undivided Tertiary as well as the Upper Cretaceous Lewis Shale combined with interbedded shales, mudstones, and siltstones with their lower permeabilities in the Paleocene Fort Union Formation and the Upper Cretaceous Fox Hills and Lance Formations combine to provide a confining regional seal to the basin's deeper primarily thermogenically sourced hydrocarbons and thereby geologically isolating those hydrocarbons from the primary usable water zones for the basin (Buursink et al., 2012; Finn et al., 2005; Love et al., 1993). Usable water zones in deeper hydrocarbon bearing formations are locally geologically isolated from more buoyant hydrocarbons and brines. Isolation is also facilitated by stratigraphic barriers namely finer-grained, less-permeable shales and siltstones in bedding and by faulting and fracturing. Buursink et al., 2012 identify multiple carbon dioxide storage assessment units within the Washakie and Great Divide basins that have intervening shales and tight sandstones that serve as confining units for geologic carbon sequestration.

Engineered Protection of Usable Water Zones and Aquifers

Oil and gas wells generally employ surface casing and cement to protect the undivided Tertiary, the Wasatch and the Fort Union usable water zones. Some wells may require intermediate or production casing and cement to protect the in these or other usable water zones. Further during plugging operations of particularly older wells, usable water zones are identified and plugged to

further isolate those zones. Applications for Permit to Drill (APDs) further analyze the significantly more local requirements for casing and cementing to ensure isolation of usable water zones on a well pad by well pad and borehole by borehole basis.

DENVER-JULESBURG BASIN

Areas of Hydrocarbon Activity

There are multiple areas of oil and gas activities in the Denver-Julesburg basin. According to the WOGCC Data Explorer the primary activity for current hydrocarbon activity is to the east and northest of Cheyenne. Also based on the WOGCC Data Explorer, potential future development based on APD's are located to the southeast, east, and northeast of Cheyenne.

Identification and Characterization of Usable Water Zones and Aquifers

The Denver-Julesburg groundwater basin contains different types of aquifers depending on the location within the basin. The majority of the basin consists of Upper Tertiary (sandstone) aquifers such as the Ogallala in the southeastern portion of the Denver-Julesburg basin and the Arikaree in the northeastern section of the basin. The Ogallala aquifer is composed of permeable parts and is primarily used as source water for domestic, stock, industrial, public-supply, and irrigation (Taucher et al. 2013). The Arikaree aquifer is a water source for domestic and stock use, and less often for public-supply and irrigation.

The aquifers in the Denver-Julesburg basin have different characteristics leading to availability of usable water. The Ogallala aquifer has a maximum thickness of 300ft consisting of siltstone and gravel with aquifer recharge rates of of 1-5 inches per year. The Arikaree aquifer has a maximum thickness of 500ft with lithology consisting of tuffaceous. This aquifer generally has a 1-5 inches per year recharge rate with maximum yields of 1,000 gallons per minute.

Quaternary aquifers within the Denver-Julesburg basin consist of alluvial deposits along streams and rivers which supply most of the region's irrigation wells. Quaternary eolian aquifers are located in the northern section of the basin east of Chugwater, WY. These eolian deposits are composed of fine-grained sand that is about 50ft thick (Rapp et al. 1957). The Quaternary aquifers are alluvium consisting of sand, gravel, silt and clay and generally have a maximum thickness of 200ft, with recharge rates ranging from 0.25 to 5 inches per year and maximum yields of 1,000 gallons per minute or higher.

The Mesozoic aquifers in the Denver-Julesburg basin are the Fox Hills and Lance Aquifers. The Fox Hills and the Lance aquifers are located in the northern portion of the basin near Hawk Springs, WY. The Fox Hills aquifer lithology is made of shale with a maximum thickness of 500ft and a maximum water yield of 1,000 gallons per minute. The Fox Hills aquifer is overlain by the Lance aquifer and confined from below by the Pierre confining unit (Taucher et al. 2013). The aquifer has not been developed extensively because of the deep burial depth and availability of water from shallower aquifers and has primarily been used for oil and gas activity. However, the town of Pine Bluffs, WY uses this aquifer as public-water supply in the eastern part of Laramie County.

The Lance aquifer lithology consists of siltstone shale with thin coal and carbonaceous shale beds. The maximum thickness is 3,000ft and a maximum water yield of 250 gallons per minute. The majority of the Lance aquifer is deeply buried and used for oil and gas development. The Lance aquifer exhibits low water yields, and is also used for domestic and stock watering where

the aquifer is closer to the ground surface. Water in the Lance aquifer is used as public-supply in the town of Rolling Hills, WY.

Water Quality in Usable Water Zones and Aquifers

Groundwater quality varies within the Denver-Julesburg basin. The Quaternary alluvial aquifers within this basin are considered mostly fresh water with TDS concentrations ranging from 207mg/L to 1,530mg/L with a median of 528mg/L (Taucher et al. 2013). Quaternary eolian aquifers east of Chugwater, WY are currently used for domestic, agriculture and livestock water and meet the water quality standards for these uses.

Upper Tertiary aquifers such as the Ogallala and Arikaree are both considered freshwater aquifers containing less than 999 mg/L of TDS (Taucher et al. 2013). Water quality samples in the Ogallala aquifer from 120 wells show a TDS concentration ranging from 70mg/L to 1,270mg/L with a median value of 227mg/L. The Arikaree aquifer was characterized from 40 different wells that were sampled yielding TDS values ranging from 202mg/L to 868mg/L with a median value of 265mg/L.

The Mesozoic aquifer water quality in the Fox Hills and Lance was characterized by water samples collected from wells completed in these formations. Sampling of 19 wells was conducted and showed that 87% of samples collected were considered fresh water with TDS level below 999mg/L. Of the samples collected, TDS concentrations ranged from 264mg/L to 1,950mg/L with a median of 699mg/L. The Fox Hills aquifer has had limited water testing, however has been characterized with TDS levels ranging from 28mg/L to 3,520mg/L.

A study was completed by the State of Wyoming Geological Survey (Toboga et al. 2016) studying the groundwater salinity (TDS) levels in the Denver-Julesburg Basin. The study was conducted using 695 spontaneous measurements from 234 borehole geophysical logs and 14 water quality analyses from oil and gas wells. The study informed estimates of TDS levels based on depths underground. The results are summarized below:

500–999 ft interval: Estimated TDS levels in this interval are below 5,000 mg/L except one well located on the northeastern edge of the basin in an area characterized by TDS concentrations that exceed 5,300 mg/L.

1,000–1,499 ft interval: All estimated TDS concentrations within this interval fall below 5,000 mg/L. However, several areas with TDS levels above 4,000 mg/L are scattered along the western margin of the basin and at one site in the southcentral area.

1,500–1,999 ft interval: One moderately saline well (TDS > 5,000 mg/L) occurs on the northwestern margin of the basin. Areas with TDS levels above 4,000 mg/L are found in the northwest and southwest.

2,000–2,499 ft interval: All estimated TDS concentrations within this interval fall below 5,000 mg/L. Several wells located in the southcentral and western basin exceed 4,000 mg/L.

2,500–2,999 ft interval: Estimated TDS concentrations within this interval also fall below 5,000 mg/L. Several areas with TDS levels above 4,000 mg/L are located on the northern, western and eastern basin margins.

3,000–3,499 ft interval: Only one well, located in the northcentral part of the basin exhibits a salinity of 5,000 mg/L. All other data points fall below 5,000 mg/L. Again, several areas with TDS levels above 4,000 mg/L are scattered throughout the basin.

3,500–3,999 ft interval: Three wells in the northeast and one well on the western margin are moderately saline (5,000 < TDS < 10,000 mg/L).

4,000–4,499 ft interval: Several moderately saline (5,000 < TDS < 10,000 mg/L) wells are located in the south-east and two occur in the north.

4,500–5,000 ft interval: Within this interval, areas with moderate to high salinity have expanded over wider geospatial extents than in the shallower zones discussed above. Two highly saline wells (16,000 and 30,833 mg/L) and one moderately saline (7,000) well occur on the western margin of the basin. Other moderately saline wells are located in northeastern (5,000 and 6,600 mg/L), eastern (5,600, 8,000 and 9,100 mg/L) and southcentral (5,000 and 8,500 mg/l) areas. Additionally, elevated (> 4,000 mg/L) TDS concentrations of peripheral wells illustrate the expansion of saline.

Geological Isolation of Usable Water Zones and Aquifers

Tertiary Miocene and Upper Cretaceous aquifers are regionally isolated from underlying Mesozoic and Paleozoic hydrocarbon formations largely by regionally thick shales in the Upper Cretaceous Pierre Shale and Niobrara formations (Love et al., 1993). Upper Cretaceous aquifer intraformational clays, mudstones, claystones, siltstones, lavas and tuffs with their lower effective porosity and permeability facies provide more local isolation from formational coals and associated hydrocarbons that may also migrate into formational sands and conglomerates (Higley and Cox, 2007). Similarly, Mesozoic and Paleozoic intraformational shales, again, with significantly lower porosity and permeability facies provide local isolation of water zones in otherwise hydrocarbon-rich source and reservoir rocks. The asymmetric architecture of the Denver-Julesburg foreland basin results in steeply dipping formations in a roughly north-south strike orientation on the western flank of the basin resulting in regionally more shallow structures in which to trap hydrocarbons (Higley and Cox, 2007). As a result, the more gently east to west dipping eastern flank of the basin results in larger more areal water zones in the same Mesozoic and Paleozoic formations with occasional trapping configuration into which hydrocarbons may have migrated. However, these are at depths which TDS concentrations are expected to exceed moderate levels (>4,000 mg/L) as indicated above (Taboga et al., 2016) and are considered Class III to Class IV groundwater quality.

Engineered Protection of Usable Water Zones and Aquifers

Oil and gas wells generally employ surface casing and cement to protect the undivided Tertiary, the Wasatch and the Fort Union usable water zones. Some wells may require intermediate or production casing and cement to protect the in these or other usable water zones. Further during plugging operations of particularly older wells, usable water zones are identified and plugged to further isolate those zones. Applications for Permit to Drill (APDs) further analyze the significantly more local requirements for casing and cementing to ensure isolation of usable water zones on a well pad by well pad and borehole by borehole basis.

BIGHORN BASIN

Areas of Hydrocarbon Activity

There are multiple areas of oil and gas activities in the Bighorn basin. According to the WOGCC Data Explorer the primary activity for current hydrocarbon activity is to the east of Worland and west of Ten Sleep. There is also established activity between Greybull and Tensleep, northwest of Lovell and north of Meeteetse, WY. Based on the WOGCC Data Explorer, potential future development using APD's, some develop is showing in these previously mentioned areas.

Identification and Characterization of Usable Water Zones and Aquifers

The Bighorn groundwater basin contains different types of aquifers depending on the location within the basin. Quaternary aquifers are located within the Bighorn basin that are widely used sources of water for domestic, stock, irrigation and public supply purposes. These aquifers are composed of sand and gravel interbedded with finer grained sediments such as silt and clays (Taucher et al., 2012). These aquifers are generally located along stream margins as alluvial aquifers.

Tertiary aquifers make up a large portion of the Bighorn basin which coincides with the boundaries of the structural basin and is thousands of feet thick in the interior basin. The tertiary aquifer is confined from below by the Cody confining unit, which separates the system from underlying lower and middle Mesozoic aquifers (Taucher et al., 2012). The largest aquifers in the tertiary aquifer system are the Willwood aquifer, Fort Union aquifer, and the Lance aquifer.

The Willwood aquifer and the Fort Union aquifer have similar characteristics which are located near the land surface throughout the basin. The Willwood aquifer is located in the central part of the basin while the Fort Union aquifer is located along the Bighorn basin margins and are comprised of fine to coarse grained sandstone beds interbedded with shale and other fine-grained rocks with some coal deposits (Taucher et al., 2012). The thickness of the Willwood Formation is 800ft to 5,000ft whole the thickness of the Fort Union Formation is about 1,000ft. Both of these aquifers have a low water yield at about 10 gal/min with recharge rates of .25-.75 inches per year, however are both important sources of water which supply irrigation, stock, and domestic use.

The Lance aquifer is a thick sandstone interbedded with shale, claystone, siltstone, and thin coal. The thickness of the aquifer is 800ft to 1,800ft (Lowy et al., 1976). The Lance Formation is overlain by the Fort Union Formation and underlain by the Meeteetse Formation. Confined conditions predominate with unconfined areas where outcrops exist. The Lance aquifer currently supports water use for sock, domestic, and limited public-supply with 1-5 inches per year of recharge.

The Mesaverde aquifer is Tertiary/Upper Cretaceous-age and composed of lenticular, clayey to silty, fine-grained sandstone interbedded with shale, claystone, siltstone, bentonite, and thin coal (Lowy et al., 1976). The Mesaverde aquifer thickness ranges from 900ft to 1,800ft and has primarily been used for oil and gas wells.

The Frontier aquifer is classified as a minor aquifer consisting of lenticular, fine to medium grained sandstone interbedded with shale and bentonite. Water yields in this basin are likely low with primary uses occurring for stock and domestic use. The thickness of this aquifer ranges from 400ft to 700ft.

The Cloverly aquifer is considered a major aquifer consisting of upper Dakota sandstone interbedded with silty sandstone and shale with thickness that ranges from 85ft to 470ft. The

aquifer is confined above by the Mowry-Thermopolis confining unit and below by the Morrison confining unit. The Cloverly aquifer is primarily used for domestic and stock watering.

The Paleozoic aquifer system in the Gros Ventre unit basin comprises of four hydrogeologic units. Major aquifers are Tensleep aquifer, Flathead aquifer and Madison-Bighorn aquifer and the minor aquifer is the Goose Egg aquifer. The Paleozoic aquifer is confined from above by overlying low permeability shales of the Chugwater-Dinwoody unit and confined from below by the Gallatin-Gros Venture unit. The Tensleep aquifer and the Madison-Bighorn aquifer are the most developed of these four. Some wells completed in this aquifer have water yields of hundreds to thousands of gallons per minute. The aquifers in the Paleozoic system have been developed for domestic, public-supply, *irrigation* and stock use.

Water Quality in Usable Water Zones and Aquifers

Groundwater quality varies within the Bighorn basin. Water samples were collected from 108 wells to test TDS levels in the Quaternary alluvial aquifer. The Quaternary alluvial aquifers within this basin are considered mostly fresh water with TDS concentrations ranging from 67mg/L to 9,160mg/L with a median of 1,080mg/L. The Willwood aquifer was characterized with samples from 92 wells. Of the samples collected, 51 percent of the waters were slightly saline and the others were considered fresh water. TDS concentrations ranges from 352mg/L to 9,000mg/L with median value of 1,350mg/L. The Fort Union aquifer was characterized by 31 wells with TDS levels ranging from fresh to moderately saline waters. TDS concentrations ranged from 372mg/L to 4,920mg/L with a median value of 1,550mg/

Water quality testing was conducted in the Lance aquifer using 53 wells. TDS concentrations ranged from 1,101mg/L to 6,827mg/L with a mean value of 3,989mg/L (Taboga et al., 2022). The Mesaverde aquifer was sampled using 24 wells to test water quality. TDS concentrations ranged from 2,062mg/L to 22,911mg/L with a mean value of 6,246mg/L indicating the aquifer is slightly saline (Taboga et al., 2022). The Frontier aquifer was sampled using 62 wells to test water quality. TDS concentrations ranged from 1,288mg/L to 32,425mg/L with a mean value of 8,132mg/L indicating the aquifer is slightly saline (Taboga et al., 2022). Water quality in this aquifer is generally considered poor with most uses needing treatment before use. The TDS mean value is moderately saline.

Cloverly Water quality is variable, generally fresh in outcrop areas declining with depth. Water quality was evaluated using 32 wells. TDS concentrations ranged from 1,657mg/L to 25,539mg/L with a mean value of 8,234mg/L and is generally considered moderately saline (Taboga et al., 2022).

Paleozoic aquifers have varying water quality and salinity/TDS levels. The Tensleep aquifer was tested for water quality conditions using 118 wells. TDS concentrations ranged from 1,050mg/L to 23,440mg/L with a mean value of 4,247mg/L and is generally considered slightly saline with 18% of samples testing over 5,000mg/L (Taboga et al., 2022). The Madison-Bighorn aquifer was sampled for water quality analysis using 44 wells. TDS concentrations ranged from 1,017mg/L to 15,557mg/L with a mean value of 3,067mg/L and is generally considered slightly saline with 7% of samples testing over 5,000mg/L (Taboga et al., 2022). The Flathead aquifer water quality was characterized with a limited number of six wells. Of the samples, TDS concentrations ranged from 2,729mg/L to 12,889mg/L with a mean value of 5,065mg/L and is generally considered slightly saline with 17% of samples testing over 5,000mg/L (Taboga et al., 2022). The Goose-Egg aquifer was also characterized with a limited number of 10 wells. TDS

concentrations ranged from 205mg/L to 2,690mg/L with a mean value of 397mg/L (Taucher et al., 2012). The water contained in this aquifer is generally considered fresh water.

Toboga et al. quantified salinity/TDS levels in the Bighorn Basin and how they vary with depth. See Table 4.8-2.

Table 4.8-2 Summary statistics for salinity levels in the Bighorn Basin by depth intervals feet below ground surface (ft bgs)prevalence of saline groundwater Source: (Taboga et al., 2022).

Depth interval (ft bgs)	Salinity as TDS (mg/L)								
	Minimum	10th percentile	25th percentile	Median	75th percentile	90th percentile	Maximum	Mean	Sample size
1,000–2,000	1,078	1,495	2,165	4,882	9,265	15,946	38,862	7,570	52
2,000–3,000	1,062	1,404	2,408	4,284	9,286	13,109	41,683	7,213	70
3,000–4,000	1,022	1,884	2,654	4,585	8,027	12,505	62,163	6,631	92
4,000–5,000	1,081	1,974	2,715	3,855	8,608	13,860	52,680	6,643	79
5,000–6,000	1,183	1,823	2,843	4,289	10,573	18,297	54,513	8,609	59
6,000–7,000	1,101	2,069	2,677	4,507	9,579	16,177	115,997	9,361	49
7,000–8,000	1,017	1,534	2,965	6,334	12,845	22,234	66,676	9,991	48
8,000–9,000	1,604	1,893	2,807	4,640	8,487	17,715	22,461	7,257	30
9,000–10,000	1,050	1,626	2,232	3,752	6,041	17,448	38,111	6,817	25
10,000–11,000	2,052	2,512	5,771	13,397	17,579	20,653	55,482	14,820	24
11,000–12,000	1,810	2,838	3,376	6,615	14,005	22,678	22,911	9,664	11
>12,000	3,080	3,763	6,057	8,377	12,640	17,235	18,275	9,589	7

Geological Isolation of Usable Water Zones and Aquifers

Thicker shale formations such as the Late Cretaceous Cody Shale and Lewis Shale formations more regionally isolate the shallower and stratigraphically younger Tertiary Willwood, Fort Union, and Lance aquifers from older, deeper, and stratigraphically older oil and gas prone intervals (Love et al., 1993). Hydrocarbons in the Bighorn Basin occur primarily in Paleozoic formations such as the Phosphoria, Tensleep Sandstone, and Madison Limestone, but secondarily occurs in Mesozoic formations such as the Frontier, Mowry Shale, Cloverly, Morrison, and Sundance. Lower porosity and permeability Paleozoic and Mesozoic inter-formational shales, mudstones, and siltstones provide initial isolation of hydrocarbons from formational water zones (Taboga et al., 2022, Lillis and Selby, 2012). Basin centric and structurally deeper "water legs" are expected to be further structurally isolated from hydrocarbon bearing zones in updip trapping configurations.

Engineered Protection of Usable Water Zones and Aquifers

Oil and gas wells generally employ surface casing and cement to protect the undivided Tertiary, the Wasatch and the Fort Union usable water zones. Some wells may require intermediate or production casing and cement to protect the in these or other usable water zones. Further during plugging operations of particularly older wells, usable water zones are identified and plugged to further isolate those zones. Applications for Permit to Drill (APDs) further analyze the significantly more local requirements for casing and cementing to ensure isolation of usable water zones on a well pad by well pad and borehole by borehole basis.

4.9. Parcel Evaluation in Greater Sage-Grouse Habitat

BLM Wyoming follows the 2015 Greater Sage Grouse ARMPA which indicates that prioritization would occur for leasing and development. In addition, BLM Wyoming uses the information provided from various court decisions to describe the prioritization process. Using the ARMPA, along with the decisions from the court cases, the WSO describes the prioritization process in the following paragraphs.

For all steps in the prioritization process, the field office first completes a review of the parcel(s) and applies the appropriate stipulations in conformance with the applicable FO RMP. Once a field office has completed its review, the parcel list is sent back to the BLM WSO, who then reviews the parcels; any parcel(s) located in Non-habitat are given first priority (see Section Table 4.3-1 (P1)) within the Prioritization Flowchart (below). The BLM WSO provides the proposed parcel list to the WGFD to review and provide comments to the BLM at the same time the parcels are being reviewed by the field offices. Once the WSO receives the input from both the field offices and the WGFD, the stipulations applied by the field office are reviewed to ensure input from the WGFD has been captured by field office stipulations.

Parcels completely within GHMA (or partially in non-habitat and partially within GHMA) were then reviewed to verify that the BLM is using the most current GHMA/PHMA boundaries, the most current lek location database information (maintained by WGFD) and most current Winter Concentration Area locations before being considered for sale offering. All parcels with the 'Evaluating Label' of GHMA were recommended to be offered for lease in Alternative 2 (see Table 4.3-1 (P2) and in the flowchart below).

For all parcels (wholly or partially) located within designated PHMA, the BLM WSO has taken the following approach. Identify whether any of the PHMA parcels are located in an area in which a habitat and/or population metric indicates a need for further review (MD SSS 13, pg. 37-38, 2015 ARMPA). If a parcel is located within one of these areas, BLM WSO will use the adaptive management process outlined in Appendix D of the 2015 ARMPA and notify the BLM WY SD (P5). The decision made by the SD to lease or defer the parcel(s) would be based on criteria located in Appendix D along with other available information.

For the parcels with an Evaluation Label of PHMA, the WY BLM Resource Policy and Management division (WY930) reviewed potential conflicts between Greater sage-grouse (GRSG) and parcels nominated for the 2026-03 lease sale based on steps 1-7 in the following. GHMA parcels were assessed based on steps 5-9 which resulted in some parcels being recommended for deferral in Alternative 3.

1. 2021 population adaptive management triggers [P5] as determined by the Wyoming Statewide Adaptive Management Working Group (SAMWG; 2022-2024 population trends have yet to be formally examined). The SAMWG was established in consultation with the State's Sage-grouse Implementation Team (SGIT) to assess abnormal GRSG population trends. The SAMWG includes representatives from BLM, Forest Service, USFWS, NRCS and an equal number of representatives from the State of Wyoming. This group reviewed an assessment of GRSG population trends conducted by regional WGFD wildlife and habitat biologists detailed in the document *Sage-grouse Areas of Concern-2021* and answers to a subsequent questionnaire given to the GRSG Local Working Groups (LWG) asking for any concerns or concurrence with the WGFD assessment.

These documents were used by the SAMWG to inform the determination of core area population triggers that had tripped in 2021. In May 2022 SAMWG issued a letter to LWGs in Wyoming establishing that 16 core areas in the State had tripped a population trigger in 2021: Blacks Fork, Buffalo, Douglas, Greater South Pass, Hanna, Heart Mountain, Hyattville, Jackson, Natrona, Newcastle, North Glenrock, North Laramie, Oregon Basin, Sage, South Rawlins, and Washakie. Adaptive management triggers are used to identify potential concerns in GRSG population trends so that managers have the opportunity to address and respond to unintended negative impacts to GRSG populations before consequences become severe or irreversible (leases in PHMA only).

2. 2021 habitat adaptive management triggers [P5] calculated as described in EO 2019-3 from data provided by the WGFD (2022 - 2024 data unavailable). A subcommittee convened in 2020 that included representatives from the WGFD, BLM and USFWS developed habitat trigger calculations following WY EO 2019-3 and the 2015 GRSG ARMPA as: a habitat trigger (no differentiation between hard and soft habitat triggers) could be tripped if habitat loss is greater than 60% normal range of variation in one year or loss is greater than 40% over a 3-year trend. Normal range of variation was established by examining available habitat reductions in each Core Area, using DDCT-derived data, compared to the state-wide average of habitat loss in all Core Areas. A habitat trigger was tripped if loss deviated more than 60% over 1 year or more than 40% over 3 years from the state-wide average habitat loss. Each Core Area is weighted in the calculation based on the proportion of sage-grouse habitat in the entire state contained within the core area to provide biological relevance for habitat loss thresholds. The BLM determined that habitat triggers had been tripped in 9 core areas in 2021: Buffalo, Daniel, Greater South Pass, Hanna, Hyattville, Natrona, North Gillette, Thunder Basin, and Washakie. As with population triggers, habitat triggers are used to identify potential concerns in GRSG habitat trends so that managers have the opportunity to address and respond to unintended negative impacts to GRSG habitats before consequences become severe or irreversible (leases in PHMA only).

3. Land Health Standards (LHS) status [P4] of livestock grazing allotments. If one or more of the allotments overlapping the parcel did not meet LHS, the parcel was considered to have not met LHS (leases in PHMA only).

4. High value seasonal habitats [P4] established as PHMA within 4 miles of occupied GRSG leks located in PHMA if a population or habitat trigger is tripped (leases in PHMA only).

5. Genetic connectivity identified as areas in the top 15% cumulative connectivity (i.e., the most likely connectivity pathways among GRSG genetic nodes as estimated by Cross et al. (2023; Royal Society Open Science 10:220437; reference Fig. 4) and situated within 3.1 miles (Manier et al. 2014; USGS OFR 2014-1239) of an occupied GRSG lek as defined by the WGFD (Whitford and Bish 2022).

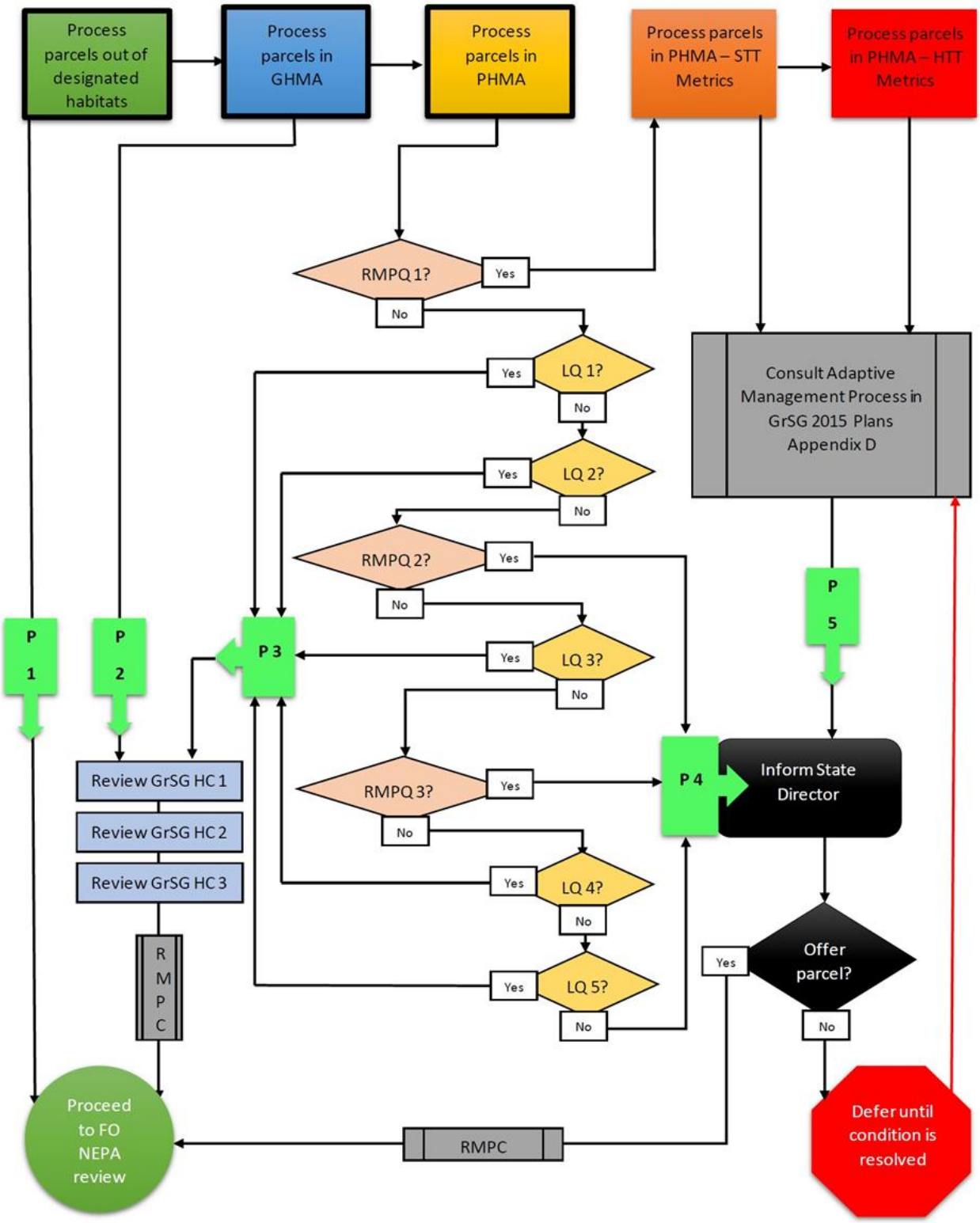
6. Existing anthropogenic infrastructure [P4] within proposed parcel estimated from 2022 NAIP imagery. Existing anthropogenic infrastructure located near proposed leases is also considered in deferral recommendations (leases in PHMA and GHMA).

7. Proximity (within 4 miles; to align with DDCT [WGFD] monitoring scales) to BLM priority restoration areas [P4] (leases in PHMA and GHMA).

8. Potential for indirect impacts on high value seasonal habitats (Spence et al. 2017; PLoS ONE 12:0185885) established as potential surface disturbance occurring within 3.1 miles of high value seasonal habitats as described above (leases in GHMA only).

9. Areas of concern based on WGFD regional wildlife and habitat biologist assessment of GRSG population trends detailed in the document *Sage-grouse Areas of Concern-2021*. Note that although this document is the same document used by SAMWG to determine population adaptive management triggers in PHMA as described above, the regional trend assessments presented in the document included populations in GHMA (leases in GHMA only).

Figure 4.9-1 Greater Sage-grouse Prioritization Flowchart



Refer to the list below when using the flowchart for prioritizing leasing.

Prioritization (**P**)
The prioritization arrows summarize consideration of parcels in addition to the sequence displayed across the top of the flowchart. The early enhanced review steps within the flowchart allow for categorization of proposed lease parcels into the following five leasing priorities:

P1 - These parcels receive the highest priority for leasing.
P2 - These parcels receive the second highest priority for leasing (after considering all parcels nominated for the current sale categorized as **P1**).
P3 - These parcels receive the third highest priority for leasing (after considering all parcels nominated for the current sale categorized as **P1** and/or **P2**).
P4 - These parcels receive the fourth highest priority for leasing (after considering all parcels nominated for the current sale categorized as **P1, P2**, and/or **P3**).
P5 - These parcels receive the lowest priority for leasing (after considering all parcels nominated for the current sale categorized as **P1, P2, P3**, and/or **P4**).

Greater Sage-Grouse (**GrSG**) Habitat Conditions (**HC**)
Wyoming State Office staff (WYSO 930) will verify with the appropriate agency that the most current and accurate data layers are available to the Field Offices for the review of these parcels. Current agreements with the Wyoming Game and Fish Department (WGFD) will be followed for utilization of the most current published data. A value assessment of these conditions and the subsequent application of RMP Management Decisions and Lease Stipulations will be addressed within the Leasing EA or during site-specific development proposal NEPA reviews. GrSG HCs within the flowchart refer to three types of potentially changing habitat designation conditions:

GrSG HC 1 – Verify with the BLM Wyoming Division of Resource Policy and Management (WYSO 930) that the most current PHMA boundaries are utilized.
GrSG HC 2 – Verify with WYSO 930 that the most current lek location database is utilized.
GrSG HC 3 – Verify with WYSO 930 that the most current Winter Concentration Area location database is utilized.

Resource Management Plan Questions (**RMPQ**)
Resource Management Plan Questions within the flowchart address RMP-level population and habitat disturbance/restoration/suitability conditions. The following three questions will provide evaluation considerations to determine prioritization of parcels located within PHMA.

RMPQ 1 - Discuss the Adaptive Management metrics with WYSO 930 for the PHMA unit containing this parcel.
RMPQ 2 – Is the parcel within an area of a prioritized restoration project?
RMPQ 3 - Is the parcel within an allotment that is failing to achieve the land health standards and conform with the guidelines?

Leasing Questions (**LQ**)
Leasing Questions within the flowchart encourage new development in lands already impacted by development factors. Parcels meeting any of the criteria in these questions are given a higher priority for leasing. Parcels meeting none of the criteria should be considered of lower priority

for leasing. The following five questions inform the decision to categorize a parcel as either Priority 3 or Priority 4.

LQ 1 - Does the parcel lie within an area where law or regulation indicates that offering the lands for leasing is in the government's interest, due to drainage of Federal minerals, 43 CFR § 3162.2-2, or trespass drilling on unleased lands?
LQ 2 - Is the parcel within an existing Federal oil and gas unit?
LQ 3 - Is the parcel immediately adjacent or proximate to existing oil and gas leases and development operations or other land use development?
LQ 4 - Is the parcel within an area with a completed field-development Environmental Impact Statement or Master Leasing Plan that allows for adequate site-specific mitigation and is in conformance with the objectives and provisions in the GrSG Plans?
LQ 5 - Is the parcel in an area with higher potential for development (for example, considering the oil and gas potential maps developed by the BLM for the GrSG Plans)?

Resource Management Plan Conditions (**RMPC**)
RMPC- Ensure that a decision to lease those lands would conform to the conservation objectives and provisions in the GrSG Plans.

For parcels located in an area where the habitat and/or population metrics are within normal ranges, BLM WSO would identify any parcel(s) where law or regulation indicates that offering the lands for lease would be in the government's best interest. An example would be if any of the parcels are subject to potential fluid minerals drainage from a nearby/adjacent lease (see Table 4.3-9 for any parcel meeting this criteria). If any of the proposed parcels identified as being in an area where law or regulation indicates that offering the lands is in the government's best interest (LQ1), BLM WSO would apply the appropriate stipulations (P3).

If none of the parcels are identified within the first two criteria, BLM WSO would identify whether any of the parcels are located within an existing federal oil and gas unit (LQ2, see Table 4.3-9 for any parcel meeting this criteria). If a parcel is located within an existing unit, BLM WSO would apply the appropriate stipulations (P3) to the lease as described in Non-habitat process. Leasing parcels in an existing federal oil and gas unit congregates leases in a particular area, potentially minimizing the amount of surface disturbance.

Any parcels that are not located in an area in which a habitat and/or population metric indicates a need for further review (RMPQ1), in an area where it is the government's best interest to lease (LQ1), or in an existing Federal Oil and Gas Unit (LQ2), BLM WSO will identify any parcel(s) that are located within areas of prioritized restoration projects (RMPQ2, see Table 4.3-9 for any parcel meeting this criteria). An example of this could be where BLM WY, along with state and local resources and/or private entities, have invested large amounts of time and resources to restore the habitat within an area. These areas would be considered a priority if they are trending toward successful reclamation and new disturbance that may occur as a result of leasing would hinder the continuation of that trend. If a parcel is identified within one of these areas, the BLM WY SD would make the final determination to lease the parcel or defer the parcel (P4). If the SD chooses to lease the parcel, BLM WSO would apply the appropriate sage-grouse stipulations (P3).

If none of the above criteria are met, BLM WSO would identify any of the parcels are located within a completed oil and gas field-development Environmental Impact Statement or Master

Leasing Plan area (see Table 4.3-9 for any parcel meeting this criteria) that allows for adequate site-specific mitigation and is in conformance with the objectives of the Greater Sage-Grouse (GSG) plans (LQ3). Any parcels that meet this criterion would have stipulations applied accordingly (P3).

If any of the above screening criteria are not met, BLM WSO would identify if any of the parcels are located within an allotment that is failing to achieve the land health standards (see Table 4.3-9 for any parcel meeting this criteria) and conform with the guidelines (RMPQ3). If a proposed parcel is located within an allotment that is failing land health standards, the BLM WY SD will be notified (P4). It will be the discretion of the SD to defer the parcel(s) or lease the parcel(s) based upon the information available concerning the particular allotment. If a parcel is proposed for lease, the appropriate sage-grouse stipulations will be applied (P3).

If none of the parcels are located within the criteria listed above, BLM WSO would identify any parcel that is immediately adjacent or proximate to existing oil and gas leases and development (LQ4, see Table 4.3-9 for any parcel meeting this criteria). Any parcel adjacent to an existing oil and gas lease or development would have the appropriate stipulations applied (P3).

The BLM WSO would identify any parcel located in an area with high potential for development (LQ5) (i.e. consider the oil and gas potential maps developed by the BLM for the GSG Plans) if none of the above criteria are met. Again, any parcel located within these areas with high potential for development, the BLM WSO would apply the appropriate stipulations (P3).

Finally, the BLM WSO would provide the SD a list of parcels, location, and any additional information required, if none of the criteria are met (P4). This would allow the SD to make an informed decision to lease the parcel during this sale (P3) or defer and review again during the next sale. The process is also outlined in the flowchart in Figure 4.9-1 with the flowchart guidance on the following pages.

NEPA Review

Once all of these reviews are completed, the State Director (SD) and the District Managers (DMs) coordinate and discuss the recommendations and concur on which potential parcels, or portions of parcels move forward for analysis and inclusion into the quarterly CLS environmental assessment (EA). The WSO fluid minerals staff prepares the EA and posts it on the ePlanning website for a 30-day public comment period and then makes changes to the EA, if necessary. The WGFD reviews and comments on the EA at this time as well. A State of Wyoming, WGFD, and BLM Wyoming coordination meeting occurs after the comment period closes. Any major conflicts identified are discussed with the SD and Deputy State Director (DSD) for Lands and Minerals (and other staff if determined necessary by the SD) for a decision on whether to delete, defer or move the parcel forward. The public comments and responses are then posted on ePlanning at the same time the Sale Notice is posted for a 30-day protest period. After the 30-day protest period, the fluid minerals staff reviews the protests and prepares responses. At any point in the review process, parcels or portions of parcels, in addition to those identified through this prioritization process, may be deleted or deferred.

4.10. Lease Sale Parcel List with Proposed Stipulations

WY-2026-03-1897
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 17 N., R. 60 W., Sixth Principal
Sec. 6 LOTS 3;
Sec. 6 S1/2NE1/4, ENW1/4, N1/2SE1/4;
Sec. 8 N1/2NW1/4.
Laramie County
321.13 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00019196

WY-2026-03-2198 Split Estate
WY, Newcastle Field Office, Bureau of Land Management, PD
T. 36 N., R. 64 W., Sixth Principal
Sec. 30 SE1/4NE1/4;
Sec. 31 SE1/4;
Sec. 34 S1/2.
Niobrara County
520 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
EOI# WY00020104

WY-2026-03-2199 Split Estate
WY, Newcastle Field Office, Bureau of Land Management, PD
T. 36 N., R. 65 W., Sixth Principal
Sec. 4 LOTS 1 thru 4;
Sec. 4 S1/2NE1/4, S1/2NW1/4;
Sec. 5 LOTS 1 thru 4;
Sec. 5 S1/2NE1/4, S1/2NW1/4, S1/2;
Sec. 6 LOTS 1 thru 7;
Sec. 6 S1/2NE1/4, SE1/4NW1/4, E1/2SW1/4.
Niobrara County
1431.95 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
EOI# WY00020105

WY-2026-03-2200 Split Estate
WY, Newcastle Field Office, Bureau of Land Management, PD
T. 36 N., R. 65 W., Sixth Principal
Sec. 8 N1/2NE1/4, NW1/4;
Sec. 9 S1/2.

Niobrara County
560 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
EOI# WY00020106

WY-2026-03-2201
WY, Newcastle Field Office, Bureau of Land Management, PD
T. 36 N., R. 65 W., Sixth Principal
Sec. 17 S1/2;
Sec. 18 LOTS 1 thru 4;
Sec. 18 E1/2, E1/2NW1/4, E1/2SW1/4.
Niobrara County
962.24 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
EOI# WY00020107

WY-2026-03-2190 Split Estate
WY, Newcastle Field Office, Bureau of Land Management, PD
T. 54 N., R. 68 W., Sixth Principal
Sec. 11 LOTS 10, 12, 13, 15.
Crook County
162.46 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
EOI# WY00019891

WY-2026-03-2195
WY, Buffalo Field Office, Bureau of Land Management, PD
T. 41 N., R. 74 W., Sixth Principal
Sec. 29 LOTS 1, 6.
Converse County
81.45 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY BFO_CSU_FQM4013
BLM Stipulations for Fish Populations and Habitat
WY BFO_CSU_PD4009
BLM Stipulations for Prairie Dog Colonies
WY BFO_CSU_RN4028
BLM Stipulations for Raptor Nests (Non-Special Status Species)
WY BFO_CSU_SE1004
BLM Stipulations for Severe Erosion Hazard
WY BFO_CSU_SSP4008
BLM Stipulations for Ute Ladies'-Tresses Orchid Habitat
WY BFO_CSU_SSPF4008
BLM Stipulations for Plant Habitats for Special Status Species
WY BFO_CSU_SSWLA4034
BLM Stipulations for Amphibian Species Breeding, Sheltering, and Hibernation Habitat
WY BFO_CSU_SSWLH4007

BLM Stipulations for Wildlife Habitat for Special Status Species
WY BFO_NSO_SSP4008
BLM Stipulations for Plant Populations (Special Status Species)
WY BFO_NSO_SSRN4032
BLM Stipulations for Raptor Nest (Special Status Species)
WY BFO_TLS_NSSRN4030
BLM Stipulations for Raptor Nests (Non-Special Status Species)
WY BFO_TLS_SSRN4031
BLM Stipulations for Raptor Nests (Special Status Species)
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00020096

WY-2026-03-2192

WY, Buffalo Field Office, Bureau of Land Management, PD
T. 57 N., R. 74 W., Sixth Principal
Sec. 36 LOTS 3 thru 7;
Sec. 36 SE1/4NE1/4.
Campbell County
155.18 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY BFO_CSU_FQM4013
BLM Stipulations for Fish Populations and Habitat
WY BFO_CSU_PD4009
BLM Stipulations for Prairie Dog Colonies
WY BFO_CSU_SLOPES25to501006
BLM Stipulations for Slopes Greater than 25% and Less than 50%
WY BFO_CSU_SSWLA4034
BLM Stipulations for Amphibian Species Breeding, Sheltering, and Hibernation Habitat
WY BFO_CSU_SSWLB4034
BLM Stipulations for Bat Species Breeding, Nursery, Roosting, and Hibernation Habitat
WY BFO_CSU_SSWLH4007
BLM Stipulations for Wildlife Habitat for Special Status Species
WY BFO_TLS_STG4026
BLM Stipulations for Sharp-Tailed Grouse Nesting Habitat
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00020080

WY-2026-03-2196 Split Estate
WY, Casper Field Office, Bureau of Land Management, PD
T. 38 N., R. 75 W., Sixth Principal
Sec. 26 S1/2SW1/4;
Sec. 35 NE1/4SE1/4, W1/2SE1/4.
Converse County

200 Acres
12.50% Royalty Rate
Stipulations:
CFO-TLS Nesting Raptor
BLM Stipulations for Nesting Raptor
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020085

WY-2026-03-2197 Split Estate
WY, Buffalo Field Office, Bureau of Land Management, PD
T. 41 N., R. 75 W., Sixth Principal
Sec. 3 LOTS 1 thru 4;
Sec. 3 S1/2NE1/4, S1/2NW1/4, N1/2SW1/4, SE1/4.
Campbell County
560.75 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY BFO_CSU_FQM4013
BLM Stipulations for Fish Populations and Habitat
WY BFO_CSU_H5006
BLM Stipulations for Historic Properties Setting
WY BFO_CSU_RN4028
BLM Stipulations for Raptor Nests (Non-Special Status Species)
WY BFO_CSU_SSWLA4034
BLM Stipulations for Amphibian Species Breeding, Sheltering, and Hibernation Habitat
WY BFO_CSU_SSWLH4007
BLM Stipulations for Wildlife Habitat for Special Status Species
WY BFO_LN_UW
BLM Lease Notice for Unplugged Wellbore(s) and/or other Facilities
WY BFO_NSO_SSRN4032
BLM Stipulations for Raptor Nest (Special Status Species)
WY BFO_TLS_NSSRN4030
BLM Stipulations for Raptor Nests (Non-Special Status Species)
WY BFO_TLS_SSRN4031
BLM Stipulations for Raptor Nests (Special Status Species)
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat

WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00020086

WY-2026-03-2072
WYWY106727313 Split Estate
WY, Buffalo Field Office, Bureau of Land Management, PD
T. 49 N., R. 81 W., Sixth Principal
Sec. 6 LOTS 1, 3;
Sec. 6 S1/2NE1/4, SE1/4NW1/4, E1/2SW1/4, SE1/4;
Sec. 7 LOTS 4;
Sec. 7 N1/2NE1/4, NE1/4NW1/4.
Johnson County
600.02 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY BFO_CSU_H5006
BLM Stipulations for Historic Properties Setting
WY BFO_CSU_H20500F1014
BLM Stipulations for Surface Waters and Associated Riparian Habitats - 500 feet of springs, reservoirs, etc.
WY BFO_CSU_PD4009
BLM Stipulations for Prairie Dog Colonies
WY BFO_CSU_RN4028
BLM Stipulations for Raptor Nests (Non-Special Status Species)
WY BFO_CSU_SE1004
BLM Stipulations for Severe Erosion Hazard
WY BFO_CSU_SLOPES25to501006
BLM Stipulations for Slopes Greater than 25% and Less than 50%
WY BFO_CSU_SSWLA4034
BLM Stipulations for Amphibian Species Breeding, Sheltering, and Hibernation Habitat
WY BFO_CSU_SSWLH4007
BLM Stipulations for Wildlife Habitat for Special Status Species
WY BFO_NSO_SSRN4032
BLM Stipulations for Raptor Nest (Special Status Species)
WY BFO_TLS_NSSRN4030
BLM Stipulations for Raptor Nests (Non-Special Status Species)
WY BFO_TLS_SSRN4031
BLM Stipulations for Raptor Nests (Special Status Species)
WY STD LEASE NOTICE NO. 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00017680

WY-2026-03-6885
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 20 N., R. 82 W., Sixth Principal
Sec. 4 LOTS 2 thru 4;
Sec. 4 S1/2;
Sec. 6 LOTS 1 thru 6;
Sec. 6 E1/2SW1/4,SE1/4.
Carbon County
1026.34 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee

Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_OT
BLM Stipulations for Overland Trail (protecting historic and visual values)
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY Std Lease Stipulation No. 2
BLM Stipulations for Endangered Species Act Section 7 Consultation Stipulation
WY Std Special Lease Notice
BLM Lease Notice for Big Game Migration
WY STD LEASE NOTICE NO. 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 1
BLM Stipulations for Historic Properties
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD NOTICE TO LESSEE
BLM Lease Notice for Attachment to Each Lease. Mineral Leasing Act requirements with respect to coal leasing
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
WY SW_TLS_PHMAWCA
BLM Stipulations for Greater Sage-Grouse Winter Concentration Areas
EOI# WY00002559

WY-2026-03-2191
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 21 N., R. 82 W., Sixth Principal
Sec. 28 ALL;
Sec. 32 ALL;
Sec. 34 ALL.
Carbon County
1920 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW

BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_NSO_PHMAL
BLM Stipulations for Greater Sage-Grouse leks. Within 0.6-mile radius of occupied leks inside Priority Habitat Management Areas
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
EOI# WY00019905

WY-2026-03-2193
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 21 N., R. 82 W., Sixth Principal
Sec. 30 LOTS 1 thru 4;
Sec. 30 E1/2, E1/2NW1/4, E1/2SW1/4.
Carbon County
648.8 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
EOI# WY00019905

WY-2026-03-7453
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 21 N., R. 84 W., Sixth Principal
Sec. 4 LOTS 1 thru 4;
Sec. 4 S1/2NE1/4, S1/2NW1/4, S1/2;
Sec. 8 LOTS 1 thru 8;
Sec. 8 W1/2NE1/4, W1/2, W1/2SE1/4;
Sec. 10 ALL;
Sec. 14 ALL.
Carbon County
2545.07 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1

BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
EOI# WY00020022

WY-2026-03-2194
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 22 N., R. 85 W., Sixth Principal
Sec. 14 ALL;
Sec. 22 ALL;
Sec. 24 ALL.
Carbon County
1920 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BER
BLM Stipulations for Bald Eagle Roosting Sites
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
EOI# WY00020082

WY-2026-03-2189 Split Estate
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 12 N., R. 89 W., Sixth Principal
Sec. 18 LOTS 4;
Sec. 19 LOTS 1, 2.

T. 12 N., R. 90 W., Sixth Principal
Sec. 8 SE1/4;
Sec. 9 NE1/4SW1/4, S1/2SW1/4, NW1/4SE1/4, S1/2SE1/4;
Sec. 13 S1/2SW1/4, SW1/4SE1/4;
Sec. 15 LOTS 1 thru 3;
Sec. 15 SW1/4NE1/4, W1/2NW1/4, NW1/4SW1/4;
Sec. 17 NE1/4NE1/4;
Sec. 24 LOTS 1 thru 4.
Carbon County
888.53 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
EOI# WY00019890

WY-2026-03-2184
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 18 N., R. 90 W., Sixth Principal
Sec. 4 LOTS 1 thru 4;
Sec. 4 S1/2NE1/4, S1/2NW1/4, S1/2;
Sec. 6 LOTS 1, 2, 6, 7;
Sec. 6 S1/2NE1/4, E1/2SW1/4, SE1/4;
Sec. 8 LOTS 1 thru 4;
Sec. 8 NE1/4, W1/2;
Sec. 18 LOTS 1 thru 4;
Sec. 18 E1/2, E1/2NW1/4, E1/2SW1/4.
Carbon County
2390.85 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to

Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00019749, WY00019812, WY00019750, WY00019751

WY-2026-03-7451
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 14 N., R. 91 W., Sixth Principal
Sec. 1 LOTS 5, 9 thru 11;
Sec. 3 LOTS 5 thru 8;
Sec. 3 S1/2NE1/4, S1/2NW1/4, S1/2;
Sec. 4 LOTS 5 thru 8;
Sec. 4 S1/2NE1/4, S1/2NW1/4, S1/2.
Carbon County
1427.67 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_NSO_HTRAILS
BLM Stipulations for Historic Trails w/in 1/4 mile of contributing segments
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD SPECIAL LEASE NOTICE II
BLM Lease Notice for Big Game Migration
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_NSO_PHMAL
BLM Stipulations for Greater Sage-Grouse leks. Within 0.6-mile radius of occupied leks inside Priority Habitat Management Areas
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)

EOI# WY00019832, WY00019728, WY00019729

WY-2026-03-7446
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 14 N., R. 91 W., Sixth Principal
Sec. 8 ALL;
Sec. 9 ALL;
Sec. 10 ALL.
Carbon County
1920 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
RFO_CSU_Historic Cherokee Trail
BLM Stipulations for Visual Values of Cherokee Trail
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_BON
BLM Stipulations for Burrowing Owl Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD SPECIAL LEASE NOTICE II
BLM Lease Notice for Big Game Migration
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00019730, WY00019731, WY00019732

WY-2026-03-7447
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 14 N., R. 91 W., Sixth Principal
Sec. 11 NW1/4SE1/4;
Sec. 13 LOTS 1 thru 4;
Sec. 13 W1/2NE1/4, E1/2NW1/4, E1/2SW1/4, W1/2SE1/4;
Sec. 14 ALL;
Sec. 15 ALL.
Carbon County
1790.56 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_RN

BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD SPECIAL LEASE NOTICE II
BLM Lease Notice for Big Game Migration
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
EOI# WY00019801, WY00019802, WY00019733, WY00019734

WY-2026-03-7448
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 14 N., R. 91 W., Sixth Principal
Sec. 21 ALL;
Sec. 22 ALL;
Sec. 23 ALL.
Carbon County
1920 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD SPECIAL LEASE NOTICE II
BLM Lease Notice for Big Game Migration
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00019735, WY00019736, WY00019737

WY-2026-03-7450
WY, Rawlins Field Office, Bureau of Land Management, PD

T. 14 N., R. 91 W., Sixth Principal
Sec. 25 LOTS 1 thru 4;
Sec. 25 W1/2NE1/4, W1/2, W1/2SE1/4;
Sec. 32 NE1/4NE1/4, W1/2, W1/2SE1/4;
Sec. 33 SE1/4SW1/4, SW1/4SE1/4;
Sec. 34 ALL;
Sec. 35 ALL.
Carbon County
2434.4 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_NSO_HTRAILS
BLM Stipulations for Historic Trails w/in 1/4 mile of contributing segments
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD SPECIAL LEASE NOTICE II
BLM Lease Notice for Big Game Migration
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
EOI# WY00019738, WY00019786, WY00019811, WY00019742, WY00019743

WY-2026-03-7449
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 14 N., R. 91 W., Sixth Principal
Sec. 26 ALL;
Sec. 27 ALL;
Sec. 28 ALL;
Sec. 29 E1/2, E1/2NW1/4, SW1/4SW1/4.
Carbon County
2360 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_BON

BLM Stipulations for Burrowing Owl Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD SPECIAL LEASE NOTICE II
BLM Lease Notice for Big Game Migration
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00019739, WY00019740, WY00019741, WY00019785

WY-2026-03-2183
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 15 N., R. 91 W., Sixth Principal
Sec. 10 NW1/4;
Sec. 15 E1/2;
Sec. 18 E1/2.
Carbon County
800 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_BON
BLM Stipulations for Burrowing Owl Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD SPECIAL LEASE NOTICE II
BLM Lease Notice for Big Game Migration
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00019803, WY00019813, WY00019831

WY-2026-03-7452
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 15 N., R. 91 W., Sixth Principal
Sec. 14 ALL;
Sec. 23 ALL;
Sec. 26 ALL;
Sec. 32 ALL.

Carbon County
2560 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD SPECIAL LEASE NOTICE II
BLM Lease Notice for Big Game Migration
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
EOI# WY00019744, WY00019745, WY00019747, WY00019748

WY-2026-03-2181
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 15 N., R. 91 W., Sixth Principal
Sec. 25 LOTS 1 thru 4;
Sec. 25 W1/2NE1/4, W1/2, W1/2SE1/4;
Sec. 27 E1/2, SW1/4;
Sec. 29 NW1/4NE1/4, NE1/4NW1/4.
Carbon County
1181.12 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_BON
BLM Stipulations for Burrowing Owl Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN

BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD SPECIAL LEASE NOTICE II
BLM Lease Notice for Big Game Migration
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
EOI# WY00019746, WY00019804, WY00019805

WY-2026-03-2180
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 15 N., R. 91 W., Sixth Principal
Sec. 33 W1/2NE1/4, W1/2, SE1/4;
Sec. 34 E1/2NE1/4, E1/2SE1/4;
Sec. 35 ALL.
Carbon County
1360 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_NSO_HTRAILS
BLM Stipulations for Historic Trails w/in 1/4 mile of contributing segments
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD SPECIAL LEASE NOTICE II
BLM Lease Notice for Big Game Migration
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00019806, WY00019807, WY00019787

WY-2026-03-2186
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 16 N., R. 91 W., Sixth Principal
Sec. 22 S1/2SE1/4.
Carbon County
80 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_JO
BLM Stipulations for JO Ranch (historic and visual values within setting)
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_CSU_SHUVC
BLM Stipulations for Unique Vegetation Complex within the Sand Hills ACEC
WY RFO_NSO_HTRAILS
BLM Stipulations for Historic Trails w/in 1/4 mile of contributing segments
WY RFO_TLS_BON
BLM Stipulations for Burrowing Owl Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD SPECIAL LEASE NOTICE II
BLM Lease Notice for Big Game Migration
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00019808

WY-2026-03-2187
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 17 N., R. 91 W., Sixth Principal
Sec. 18 LOTS 1 thru 3;
Sec. 18 E1/2, E1/2NW1/4, E1/2SW1/4.
Carbon County
603.29 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests

WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD SPECIAL LEASE NOTICE II
BLM Lease Notice for Big Game Migration
EOI# WY00019814

WY-2026-03-2185
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 18 N., R. 91 W., Sixth Principal
Sec. 10 N1/2, N1/2SW1/4, N1/2SE1/4, SE1/4SE1/4.
Carbon County
520 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
EOI# WY00019833

WY-2026-03-2236
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 22 N., R. 92 W., Sixth Principal
Sec. 2 LOTS 1 thru 3;
Sec. 2 S1/2NE1/4, SE1/4NW1/4, E1/2SW1/4, SE1/4;
Sec. 10 ALL.
Sweetwater County
1118.76 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_CLWHMA
BLM Stipulations for Chain Lakes Wildlife Habitat Management Area
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests

WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020120

WY-2026-03-2243 Split Estate
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 22 N., R. 92 W., Sixth Principal
Sec. 12 N1/2, N1/2SW1/4, SE1/4SW1/4, SE1/4;
Sec. 14 ALL;
Sec. 28 W1/2NE1/4, NW1/4, W1/2SW1/4, SE1/4SW1/4.
Sweetwater County
1600 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
EOI# WY00020121

WY-2026-03-7459
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 22 N., R. 92 W., Sixth Principal
Sec. 18 LOTS 3, 4;
Sec. 18 E1/2SW1/4, W1/2SE1/4, SE1/4SE1/4;
Sec. 20 E1/2, S1/2NW1/4, SW1/4;
Sec. 30 LOTS 1 thru 4;
Sec. 30 E1/2, E1/2NW1/4, E1/2SW1/4.
Sweetwater County
1507.51 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1

BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020115

WY-2026-03-2246
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 22 N., R. 92 W., Sixth Principal
Sec. 32 ALL;
Sec. 34 ALL.
Sweetwater County
1280 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
EOI# WY00020121

WY-2026-03-2203
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 19 N., R. 93 W., Sixth Principal

Sec. 18 LOTS 1 thru 4;
Sec. 18 E1/2NW1/4,
E1/2SW1/4.
Carbon County
305.18 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00020109

WY-2026-03-2226
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 22 N., R. 93 W., Sixth Principal
Sec. 24 LOTS 1 thru 16.
Sweetwater County
641.91 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020116

WY-2026-03-7460
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 23 N., R. 93 W., Sixth Principal
Sec. 12 LOTS 1 thru 16;
Sec. 28 LOTS 1 thru 16;
Sec. 34 LOTS 1 thru 16.
Sweetwater County
1908.69 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1

BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_CLWHMA
BLM Stipulations for Chain Lakes Wildlife Habitat Management Area
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_CSU_PHMA
BLM Stipulations for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) - Core Only
WY SW_NSO_GHMAL
BLM Stipulations for Greater Sage-Grouse Leks. Within 0.25-mile radius of occupied leks outside Priority Habitat Management Areas
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
WY SW_TLS_PHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Inside Priority Habitat Management Areas (Core only)
EOI# WY00020120, WY00020116

WY-2026-03-2204
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 16 N., R. 94 W., Sixth Principal
Sec. 18 LOTS 1 thru 4;
Sec. 18 E1/2, E1/2NW1/4, E1/2SW1/4.
Sweetwater County
605.24 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020109

WY-2026-03-2205
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 19 N., R. 94 W., Sixth Principal
Sec. 32 W1/2NW1/4, W1/2SW1/4.
Sweetwater County
160 Acres

12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020109

WY-2026-03-2206
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 20 N., R. 94 W., Sixth Principal
Sec. 34 LOTS 11 thru 14.
Sweetwater County
158.43 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00020109

WY-2026-03-2241
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 23 N., R. 94 W., Sixth Principal
Sec. 2 LOTS 13, 14, 19, 20;
Sec. 6 LOTS 8 thru 14;
Sec. 12 LOTS 1 thru 16;
Sec. 22 LOTS 1 thru 16.
Sweetwater County
1691.92 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral

Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00020120

WY-2026-03-7461
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 23 N., R. 94 W., Sixth Principal
Sec. 14 LOTS 1 thru 16;
Sec. 24 LOTS 1 thru 16;
Sec. 26 LOTS 1 thru 16.
Sweetwater County
1911.69 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00020116

WY-2026-03-2207
WY, Rock Springs Field Office, Bureau of Land Management, PD
T. 16 N., R. 95 W., Sixth Principal
Sec. 2 LOTS 1 thru 8;
Sec. 2 S1/2;
Sec. 4 LOTS 1 thru 8;
Sec. 4 S1/2;
Sec. 6 LOTS 1 thru 12;
Sec. 6 E1/2SW1/4, SE1/4.
Sweetwater County
2276.58 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
RSFO_TLS_Big Game Winter Range
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_CSU_AR

BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020109

WY-2026-03-2210
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 16 N., R. 95 W., Sixth Principal
Sec. 12 ALL;
Sec. 14 E1/2;
Sec. 24 ALL.
Sweetwater County
1600 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BON
BLM Stipulations for Burrowing Owl Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_NSO_GHMAL
BLM Stipulations for Greater Sage-Grouse Leks. Within 0.25-mile radius of occupied leks outside Priority Habitat Management Areas
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020109, WY00020110

WY-2026-03-7454
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 17 N., R. 95 W., Sixth Principal
Sec. 2 LOTS 5 thru 20;
Sec. 10 LOTS 1 thru 16;
Sec. 14 LOTS 1 thru 16;
Sec. 26 LOTS 1 thru 16.
Sweetwater County
2535.89 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020109, WY00020110

BLM Stipulations for Raptor Nests
WY RFO_NSO_HTRAILS
BLM Stipulations for Historic Trails w/in 1/4 mile of contributing segments
WY RFO_TLS_BON
BLM Stipulations for Burrowing Owl Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00020110

WY-2026-03-2213
WY, Rock Springs Field Office, Bureau of Land Management, PD
T. 17 N., R. 95 W., Sixth Principal
Sec. 28 LOTS 1 thru 16;
Sec. 30 LOTS 5 thru 20;
Sec. 32 LOTS 1 thru 16;
Sec. 34 LOTS 1 thru 8.
Sweetwater County
2228.72 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
RSFO_NSO_Raptor Nesting Habitat
BLM Stipulations for Protecting Raptor Nesting Habitat
RSFO_TLS_Big Game Winter Range
BLM Stipulations for Big Game Crucial Winter Range
RSFO_TLS_Nesting Raptors
BLM Stipulations for Nesting Raptors
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_NSO_HTRAILS
BLM Stipulations for Historic Trails w/in 1/4 mile of contributing segments
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY RSFO_CSU_TRAILS
BLM Stipulations for Historic Trails (protecting cultural and scenic values)
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD NOTICE TO LESSEE
BLM Lease Notice for Attachment to Each Lease. Mineral Leasing Act requirements with respect to coal leasing
EOI# WY00020110, WY00020111

WY-2026-03-2218
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 18 N., R. 95 W., Sixth Principal
Sec. 24 ALL;
Sec. 26 ALL;
Sec. 32 ALL;
Sec. 34 ALL.
Sweetwater County
2560 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BON
BLM Stipulations for Burrowing Owl Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00020111

WY-2026-03-2222 Split Estate
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 19 N., R. 95 W., Sixth Principal
Sec. 4 LOTS 1 thru 4;
Sec. 4 SW1/4NE1/4, S1/2NW1/4, S1/2;
Sec. 6 LOTS 1 thru 7;
Sec. 6 S1/2NE1/4, SE1/4NW1/4, E1/2SW1/4, SE1/4;
Sec. 8 ALL;
Sec. 10 W1/2.
Sweetwater County
2231.31 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3

BLM Stipulations for Multiple Mineral Development
EOI# WY00020116, WY00020117, WY00020111

WY-2026-03-2221
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 19 N., R. 95 W., Sixth Principal
Sec. 18 LOTS 1 thru 4;
Sec. 18 E1/2, E1/2NW1/4, E1/2SW1/4;
Sec. 20 ALL;
Sec. 28 ALL.
Sweetwater County
1948.17 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00020112

WY-2026-03-7458
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 19 N., R. 95 W., Sixth Principal
Sec. 26 W1/2NE1/4, W1/2SE1/4;
Sec. 30 LOTS 1 thru 4;
Sec. 30 E1/2, E1/2NW1/4, E1/2SW1/4;
Sec. 34 N1/2NE1/4, SE1/4NW1/4.
Sweetwater County
940.88 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BON
BLM Stipulations for Burrowing Owl Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3

BLM Stipulations for Multiple Mineral Development
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020112

WY-2026-03-2227 Split Estate
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 20 N., R. 95 W., Sixth Principal
Sec. 30 LOTS 1 thru 4;
Sec. 30 E1/2, E1/2NW1/4, E1/2SW1/4;
Sec. 32 LOTS 1, 2, 7 thru 10, 14, 15.
Sweetwater County
984.1 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_HTRAILS
BLM Stipulations for Historic Trails
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00020117, WY00020112

WY-2026-03-7462
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 23 N., R. 95 W., Sixth Principal
Sec. 1 LOTS 1 thru 4;
Sec. 1 S1/2NE1/4, S1/2NW1/4;
Sec. 2 LOTS 1 thru 4;
Sec. 2 S1/2NE1/4, S1/2NW1/4, S1/2;
Sec. 6 LOTS 1 thru 7;
Sec. 6 S1/2NE1/4, SE1/4NW1/4, E1/2SW1/4, SE1/4.
Sweetwater County
1609.84 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3

BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00020120

WY-2026-03-2228
WY, Rock Springs Field Office, Bureau of Land Management, PD
T. 17 N., R. 96 W., Sixth Principal
Sec. 2 LOTS 1 thru 4;
Sec. 2 S1/2NE1/4, S1/2NW1/4, S1/2;
Sec. 10 ALL;
Sec. 12 ALL.
Sweetwater County
1919.87 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD NOTICE TO LESSEE
BLM Lease Notice for Attachment to Each Lease. Mineral Leasing Act requirements with respect to coal leasing
EOI# WY00020112

WY-2026-03-2212
WY, Rock Springs Field Office, Bureau of Land Management, PD
T. 17 N., R. 96 W., Sixth Principal
Sec. 4 LOTS 1 thru 4;
Sec. 4 S1/2NE1/4, S1/2NW1/4, S1/2;
Sec. 24 ALL;
Sec. 26 ALL.
Sweetwater County
1917.18 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
RSFO_NSO_Raptor Nesting Habitat
BLM Stipulations for Protecting Raptor Nesting Habitat
RSFO_TLS_Big Game Winter Range
BLM Stipulations for Big Game Crucial Winter Range
RSFO_TLS_Nesting Raptors
BLM Stipulations for Nesting Raptors
WY RSFO_CSU_TRAILS
BLM Stipulations for Historic Trails (protecting cultural and scenic values)
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD NOTICE TO LESSEE
BLM Lease Notice for Attachment to Each Lease. Mineral Leasing Act requirements with respect to coal leasing
EOI# WY00020122, WY00020113

WY-2026-03-7455
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 18 N., R. 96 W., Sixth Principal
Sec. 22 ALL;
Sec. 24 ALL;
Sec. 26 ALL;
Sec. 34 ALL.
Sweetwater County
2560 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_NSO_GHMAL
BLM Stipulations for Greater Sage-Grouse Leks. Within 0.25-mile radius of occupied leks outside Priority Habitat Management Areas
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020113

WY-2026-03-2214
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 20 N., R. 96 W., Sixth Principal
Sec. 8 LOTS 2 thru 16;
Sec. 10 LOTS 1 thru 16.
Sweetwater County
1261.69 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BON
BLM Stipulations for Burrowing Owl Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
EOI# WY00020113

WY-2026-03-7456
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 20 N., R. 96 W., Sixth Principal
Sec. 18 LOTS 5 thru 20;
Sec. 26 N1/2.
Sweetwater County
968.94 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020114

WY-2026-03-2220
WY, Rock Springs Field Office, Bureau of Land Management, PD
T. 20 N., R. 97 W., Sixth Principal
Sec. 2 LOTS 5 thru 8;
Sec. 2 S1/2;
Sec. 4 LOTS 5 thru 8;
Sec. 4 S1/2;
Sec. 6 LOTS 7 thru 10;
Sec. 6 S1/2;
Sec. 12 LOTS 1 thru 4;
Sec. 12 W1/2.
Sweetwater County
1762.64 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
RSFO_NSO_Raptor Nesting Habitat
BLM Stipulations for Protecting Raptor Nesting Habitat
RSFO_TLS_Nesting Raptors
BLM Stipulations for Nesting Raptors
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3

BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD NOTICE TO LESSEE
BLM Lease Notice for Attachment to Each Lease. Mineral Leasing Act requirements with respect to coal leasing
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020114

WY-2026-03-2223
WY, Rock Springs Field Office, Bureau of Land Management, PD
T. 20 N., R. 97 W., Sixth Principal
Sec. 8 ALL;
Sec. 10 ALL.
Sweetwater County
1280 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
RSFO_NSO_Raptor Nesting Habitat
BLM Stipulations for Protecting Raptor Nesting Habitat
RSFO_TLS_Nesting Raptors
BLM Stipulations for Nesting Raptors
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD NOTICE TO LESSEE
BLM Lease Notice for Attachment to Each Lease. Mineral Leasing Act requirements with respect to coal leasing
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020114

WY-2026-03-2238
WY, Rock Springs Field Office, Bureau of Land Management, PD
T. 20 N., R. 97 W., Sixth Principal
Sec. 14 ALL;
Sec. 18 ALL;
Sec. 20 ALL;
Sec. 22 ALL.
Sweetwater County
2560 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
RSFO_NSO_Raptor Nesting Habitat
BLM Stipulations for Protecting Raptor Nesting Habitat
RSFO_TLS_Nesting Raptors
BLM Stipulations for Nesting Raptors
WY RFO_CSU_AR

BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD NOTICE TO LESSEE
BLM Lease Notice for Attachment to Each Lease. Mineral Leasing Act requirements with respect to coal leasing
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020118

WY-2026-03-2242
WY, Rawlins Field Office, Bureau of Land Management, PD
T. 20 N., R. 97 W., Sixth Principal
Sec. 24 LOTS 1 thru 4;
Sec. 24 W1/2;
Sec. 26 ALL;
Sec. 28 ALL.
Sweetwater County
1746.84 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_CSU_RN
BLM Stipulations for Raptor Nests
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY RFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY SW_NSO_GHMAL
BLM Stipulations for Greater Sage-Grouse Leks. Within 0.25-mile radius of occupied leks outside Priority Habitat Management Areas
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020118

WY-2026-03-2230
WY, Rock Springs Field Office, Bureau of Land Management, PD
T. 20 N., R. 97 W., Sixth Principal
Sec. 30 ALL;
Sec. 32 ALL;
Sec. 34 NE1/4NE1/4, S1/2.
Sweetwater County
1640 Acres

12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RFO_CSU_AR
BLM Stipulations for Amphibians and Reptiles
WY RFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RFO_TLS_MPN
BLM Stipulations for Mountain Plover Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD NOTICE TO LESSEE
BLM Lease Notice for Attachment to Each Lease. Mineral Leasing Act requirements with respect to coal leasing
WY SW_NSO_GHMAL
BLM Stipulations for Greater Sage-Grouse Leks. Within 0.25-mile radius of occupied leks outside Priority Habitat Management Areas
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020119

WY-2026-03-2231
WY, Rock Springs Field Office, Bureau of Land Management, PD
T. 21 N., R. 97 W., Sixth Principal
Sec. 20 ALL;
Sec. 32 E1/2.
Sweetwater County
960 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
RSFO_NSO_Nesting Habitat
BLM Stipulations for Nesting Habitat
RSFO_TLS_Nesting Raptors
BLM Stipulations for Nesting Raptors
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD NOTICE TO LESSEE
BLM Lease Notice for Attachment to Each Lease. Mineral Leasing Act requirements with respect to coal leasing
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020119

WY-2026-03-2239
WY, Rock Springs Field Office, Bureau of Land Management, PD
T. 20 N., R. 98 W., Sixth Principal

Sec. 2 S1/2;
Sec. 12 ALL;
Sec. 14 E1/2, SW1/4;
Sec. 24 ALL.
Sweetwater County
2080 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
RSFO_NSO_Raptor Nesting Habitat
BLM Stipulations for Protecting Raptor Nesting Habitat
WY RSFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD NOTICE TO LESSEE
BLM Lease Notice for Attachment to Each Lease. Mineral Leasing Act requirements with respect to coal leasing
WY SW_TLS_GHMAL
BLM Stipulations for Greater Sage-Grouse breeding, nesting, etc. Within 2 miles of an occupied lek outside Priority Habitat Management Areas
EOI# WY00020119

WY-2026-03-1515
WY, Rock Springs Field Office, Bureau of Land Management, PD
T. 12 N., R. 100 W., Sixth Principal
Sec. 3 S1/2NE1/4, S1/2;
Sec. 4 LOTS 1 thru 4;
Sec. 9 ALL;
Sec. 10 ALL.
Sweetwater County
1840.27 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RSFO_NSO_RN
BLM Stipulations for Raptor Nests
WY RSFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY RSFO_TLS_RN
BLM Stipulations for Raptor Nests
WY STD LEASE NOTICE NO. 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD NOTICE TO LESSEE
BLM Lease Notice for Attachment to Each Lease. Mineral Leasing Act requirements with respect to coal leasing
WY SW_TLS_PHMAWCA
BLM Stipulations for Greater Sage-Grouse Winter Concentration Areas
EOI# WY00017729

WY-2026-03-1404
WY, Rock Springs Field Office, Bureau of Land Management, PD
T. 17 N., R. 100 W., Sixth Principal
Sec. 20 ALL;
Sec. 22 W1/2;
Sec. 26 ALL;
Sec. 28 ALL.
Sweetwater County
2240 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
RSFO_TLS_Big Game Winter Range
BLM Stipulations for Big Game Crucial Winter Range
RSFO_TLS_Nesting Raptors
BLM Stipulations for Nesting Raptors
WY RSFO_NSO_RN
BLM Stipulations for Raptor Nests
WY RSFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY STD LEASE NOTICE NO. 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD NOTICE TO LESSEE
BLM Lease Notice for Attachment to Each Lease. Mineral Leasing Act requirements with respect to coal leasing
EOI# WY00017389

WY-2026-03-1407
WY, Rock Springs Field Office, Bureau of Land Management, PD
T. 17 N., R. 100 W., Sixth Principal
Sec. 30 LOTS 5 thru 8;
Sec. 30 E1/2, E1/2NW1/4, E1/2SW1/4;
Sec. 34 LOTS 1 thru 4;
Sec. 34 N1/2, N1/2SW1/4, N1/2SE1/4.
Sweetwater County
1275.96 Acres
12.50% Royalty Rate
Stipulations:
HQ-CR-1
BLM Lease Notice for Cultural Resource Protection
HQ-MLA-1
BLM Lease Notice for Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)
HQ-TES-1
BLM Lease Notice for Threatened and Endangered Species Act
WY RSFO_TLS_BGCW
BLM Stipulations for Big Game Crucial Winter Range
WY STD LEASE NOTICE NO. 1
BLM Lease Notice for Reasonable Measures to Minimize Adverse Impacts to Resources
WY STD LEASE NOTICE NO. 2
BLM Lease Notice for National Historic Trails
WY STD LEASE NOTICE NO. 3
BLM Lease Notice for Greater Sage-Grouse Habitat
WY STD LEASE STIPULATION NO. 3
BLM Stipulations for Multiple Mineral Development
WY STD NOTICE TO LESSEE
BLM Lease Notice for Attachment to Each Lease. Mineral Leasing Act requirements with respect to coal leasing
EOI# WY00017389

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4.12. Parcel Specific Maps: Wildlife and Leasing and Development

The attached maps are used to identify parcel specific interactions with Greater Sage-Grouse, raptors, and Big Game habitat as well as existing oil and gas development on a parcel specific level. Please refer to Chapter 3 for species-specific analysis. The parcel shapefile is available to download to compare to other data sources. Parcel numbers displayed on maps and shapefiles use a prefix of WY-2026-03, which was based on a planned sale date of March 2026.