

United States Department of the Interior  
Bureau of Land Management

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Environmental Assessment  
DOI-BLM-WY-R000-2016-0002-EA

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February 2017

BLM-Wyoming  
February 2017 Competitive Oil & Gas Lease Sale  
Wind River/Bighorn Basin District

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Wind River/Bighorn Basin District, Wyoming



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The BLM's multiple-use mission is to sustain the health and productivity of the public lands for the use and enjoyment of present and future generations. The Bureau accomplishes this by managing such activities as outdoor recreation, livestock grazing, mineral development, and energy production, and by conserving natural, historical, cultural, and other resources on public lands.

DOI-BLM-WY-R000-2016-0002-EA

**Wind River/Bighorn Basin District  
February 2017 Competitive Oil & Gas Lease Sale EA  
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**Attachment 1 – Parcel Descriptions with Stipulations**

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# 1. Introduction

## 1.1 Introduction

This Environmental Assessment (EA) for the Wind River /Bighorn Basin District (WR/BBD) portion of the Bureau of Land Management (BLM) Wyoming State Office (WSO) quarterly competitive oil and gas lease sale has been prepared for the parcels nominated and considered for the February 2, 2017 competitive oil and gas lease sale (February 2017 Sale). Parcels evaluated in this EA are within the BLM's WR/BBD, which includes the Lander Field Office (LFO), the Worland Field Office (WFO), and the Cody Field Office (CyFO). In the February 2017 Sale, there are not any parcels located within the CyFO. The WR/BBD participates in lease sales in February and August of each year.

Pursuant to 40 CFR § 1508.28 and § 1502.21, this EA tiers to and incorporates by reference the information and analysis contained in the Environmental Impact Statements (EIS), Records of Decisions (ROD) and Approved Resource Management Plans (RMP) for the Lander Field Office (LFO 2014), the Worland Field Office (WFO 2015), and the Cody Field Office (CyFO 2015).

The 2013 Lander Proposed Resource Management Plan and Final Environmental Impact Statement for the Lander Field Office Planning Area (RMP FEIS), and the 2015 Bighorn Basin Proposed Resource Management Plan and FEIS for the Worland and Cody Field Offices Planning Areas, formed the basis for the RMPs and RODs. Parcels offered for lease sale including the stipulations are located in LFO Appendix I., WFO Appendix B., and CyFO Appendix B. References:

- Proposed Resource Management Plan and Final Environmental Impact Statement for the Lander Field Office Planning Area, February 22, 2013 (two volumes)
- <http://www.blm.gov/wy/st/en/programs/Planning/rmps/lander/docs/PRMP-FEIS.html>
- Lander Record of Decision and Approved Resource Management Plan for the Lander Field Office Planning Area, June 26, 2014
- Post ROD RMP Maintenance Actions
- <https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=28453>
- Bighorn Basin Proposed Resource Management Plan and Final Environmental Impact Statement, May 28, 2015
- Rocky Mountain Region Record of Decision (ROD) Worland Field Office, September 22, 2015
- Worland Field Office Resource Management Plan, September 22, 2015
- Rocky Mountain Region Record of Decision (ROD) Cody Field Office, September 22, 2015
- Cody Field Office Resource Management Plan, September 22, 2015

- <https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=19107>

Two parcels, WY-1702-315 and WY-1702-316, contain portions that overlap the boundary between the Lander Field Office and the Rawlins Field Office (RFO). The Rawlins Field Office is located in the BLM's High Desert District (HDD), which holds its competitive oil and gas lease sales in May and November of each year. For review and issuance of oil and gas leases which cross the jurisdictional boundaries, reference part III of the 'Memorandum of Understanding between Bureau of Land Management Lander Field Office, Rawlins Field Office, and Rock Springs Field Office, for the Purpose of Determining Responsibility for Oil and Gas Operations Overlapping Field Office Boundaries'.

The portions of the LFO parcels which fall within the jurisdiction of the RFO were reviewed by the HDD and RFO for conformance with the RFO Land Use Plan, are open for leasing, and have appropriate stipulations applied to the parcels.

Therefore, in addition to the WR/BBD LUPs, this EA tiers to and incorporates by reference the information found in the RFO Plan documents:

BLM 2008. Rawlins Field Office Proposed Resource Management Plan and Final Environmental Impact Statement, U.S. Department of the Interior, Bureau of Land Management, Wyoming.  
[http://www.blm.gov/wy/st/en/programs/Planning/rmps/rawlins/feis\\_prmp.html](http://www.blm.gov/wy/st/en/programs/Planning/rmps/rawlins/feis_prmp.html)

BLM 2008. Rawlins Field Office Approved Resource Management Plan and Record of Decision, U.S. Department of the Interior, Bureau of Land Management, Wyoming.  
[http://www.blm.gov/wy/st/en/programs/Planning/rmps/rawlins/rod\\_armp.html](http://www.blm.gov/wy/st/en/programs/Planning/rmps/rawlins/rod_armp.html)

BLM 2015. Rawlins Field Office, RMP Amendments.  
<http://www.blm.gov/wy/st/en/programs/Planning/rmps/rawlins/amend-maint.html>

BLM 2015. Approved Resource Management Plan Amendment and Record of Decision for Greater Sage-Grouse for Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs Field Offices. U.S. Department of the Interior, Bureau of Land Management, Wyoming.  
<https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=18704>

The portions of parcels WY-1702-315 and WY-1702-316 in RFO were nominated for the HDD May 2016 competitive oil and gas lease sale as parcels WYW-1605-004 and WYW-1605-005, respectively. After careful review and screening, the parcels were deferred at the discretion of the BLM, and not analyzed further in detail in WY-040-EA15-130. Incorporated by reference is WY-040-EA15-130, including Appendix A Parcel Summary, Appendix B Rawlins Field Office Parcel Descriptions with Stipulations, Appendix C Combined Wilderness Review Checklist, and Appendix D Hydraulic Fracturing White Paper.

The mineral estate for the parcels shown in Attachment 1 was designated through the RMPs as being open to oil and gas leasing with appropriate stipulations to be applied. The FEIS for each Field Office analyzed the impacts of oil and gas development on lands open to leasing including impacts to other resource values.

This EA serves to verify conformance with the approved Land Use Plans and disclose the affected environment, the anticipated impacts, and proposed mitigation of impacts. The EA provides evidence for determining whether to prepare an environmental impact statement (EIS) or to support a “Finding of No Significant Impact” (FONSI). An EIS would be prepared for the project if the decision maker determines that this project has significant impacts not already disclosed and analyzed in other NEPA documents, such as RMP EISs, based upon the analysis in the EA. A FONSI documents the reasons why implementation of the selected alternative would not result in “significant” environmental impacts (effects). The RMP EISs have already evaluated potentially significant impacts arising from the BLM’s land use planning decisions. See 43 CFR § 46.140(c), therefore, the BLM anticipates a “finding of no new significant impacts” (FONNSI). When a FONNSI statement is reached, a Decision Record (DR) may be signed approving the selected alternative, which could be the proposed action, another alternative, or a combination thereof.

During the preparation of the RMPs, the BLM deferred leasing any parcels that would have limited the choice of reasonable alternatives in the RMP RODs. Parcels deferred from previous lease sales that are open for leasing in the approved RMPs may now be reviewed in this and future lease sales.

Deleted from further consideration for this lease sale are one whole parcel and one partial parcel in the Lander Field Office. Federal regulations at 43 CFR § 3100.0-3 and the Lander RMP ROD (2014) identified 210.00 acres in the February 2017 Sale which are closed to oil and gas leasing and development:

- Parcel WY-1702-325 is within the incorporated area of Shoshoni, and has been deleted from further review. Reference: 43 CFR § 3100.0-3 (2) Exceptions (iii) Incorporated cities, towns and villages. This would result in the deletion of 40.00 acres.
- Parcel WY-1702-326, in part, is in an area closed to oil and gas leasing by the Lander RMP (2014). Reference: Chapter 2, page 41, Record #1049: “For the protection of water quality and aquatic habitat, the area adjacent to Boysen State Park and Highway 20 (9,486 acres) is closed to oil and gas leasing (Map 11).” As the parcel is subject to partial deletion, the remaining nominated portion of the parcel is available for review and application of stipulations, and will be addressed in and considered as a whole parcel nomination in this EA. This would result in the deletion of 170.00 acres.

After careful review of the parcels, the BLM has determined that it was appropriate to defer three parcels nominated for inclusion in the February 2017 oil and gas lease sale (parcels -317, -327, and -328, comprised of 1,038.84 acres). These deferrals were made consistent with the BLM's sage-grouse conservation plans and strategy, which direct the BLM to prioritize oil and gas

leasing and development in a manner that minimizes resource conflicts in order to protect important habitat and reduce development time and costs.

In total, 14 (fourteen) parcels containing 14,005.620 acres located within the field offices in the WR/BBD and High Desert District (HDD) were nominated through “Expressions of Interest” for the February 2017 Competitive Oil and Gas Lease Sale, of which are 13 (thirteen) are available for leasing through the applicable RMPs. For the reasons identified above, the BLM exercised its discretion to defer three (3) entire parcels containing 1,038.840 acres and delete another entire parcel and a portion of a parcel (210.00 acres). As result of these deferrals and deletions, this EA analyzes ten (10) parcels containing approximately 12,756.78 acres, of which a portion (approximately 466 acres) is located within the HDD.

Of the 12,756.78 acres of federal mineral estate, approximately 980.240 surface acres are fee surface, and approximately 11,776.540 surface acres managed by the BLM. This EA will further reference the lease sale acreage as the total federal mineral estate acreage of 12,756.78 acres.

No parcels were nominated in the Cody Field Office. One (1) parcel was nominated, and then deferred, in the Worland Field Office. 13 (thirteen) parcels were nominated in the Lander Field Office, with one deletion and two (2) deferrals, bringing ten (10) parcels forward.

Of the ten parcels brought forward, five are located in total or in part in one of the three Lander Designated Development Areas: “The Approved RMP designates three Designated Development Areas for development incorporating almost all lands with moderate to high oil and gas potential. ....Potential for future mineral development is primarily limited to lands in the Designated Development Areas which do not conflict with important cultural resources, viewshed, or greater sage-grouse habitat.”

- Table 1-1 summarizes the number of parcels nominated through EOI, the number of parcels deleted or deferred, and the number of parcels that are analyzed further in this EA.
- Table 1-2 identifies the deleted parcels.
- Table 1-3 identifies the deferred parcels.
- Table 1-4 summarizes the approximate acreage overlapping LFO and RFO.
- Table 1-5 summarizes the parcels located in the Designated Development Areas.
- Table 1-6 summarizes the surface ownership.

**Table 1-1 Parcel and Acreage Summary**

Office	EOI Parcels	Deleted Parcels	Deferred Parcels	Analyzed Parcels	EOI Acres	Acres Removed	Analyzed Acres
Cody	0	0	0	0	0.000	0.000	0.000
Worland	1	0	1	0	344.000	344.000	0.000
Lander	13	1	2	10	13,661.620	904.840	12,756.780
<b>WR/BBD Total</b>	14	1	3	<b>10</b>	14,005.620	1,248.840	<b>12,756.780</b>

**Table 1-2 Parcel and Acreage Deleted Summary**

<b>Parcel Number</b>	<b>Office</b>	<b>Acres Deleted</b>
WY-1702-325	LFO	40.000
WY-1702-326 (in part)	LFO	170.000
<b>Total Acres</b>		<b>210.000</b>

**Table 1-3 Parcel and Acreage Deferred Summary**

<b>Parcel Number</b>	<b>Office</b>	<b>Acres Deferred</b>
WY-1702-317	WFO	344.000
WY-1702-327	LFO	654.840
WY-1702-328	LFO	40.000
<b>Total Acres</b>		<b>1,038.840</b>

**Table 1-4 Parcels Overlapping Jurisdictional Boundaries**

<b>Parcel Number</b>	<b>LFO Approx.</b>	<b>RFO Approx.</b>	<b>Total Acres</b>
WY-1702-315	380.000	305.920	685.920
WY-1702-316	220.000	160.000	380.000
<b>Total Acres</b>	<b>600.00</b>	<b>465.920</b>	<b>1,065.920</b>

**Table 1-5 Parcels in LFO Designated Development Areas**

<b>Parcel Number</b>	<b>Acres Inside DDA</b>	<b>Acres Outside DDA</b>	<b>Total Acres</b>
WY-1702-318	850.320	0.00	850.320
WY-1702-319	160.000	0.00	160.000
WY-1702-320	1481.490	240.00	1,721.490
WY-1702-321	927.840	1599.320	2,527.160
WY-1702-322	1,591.410	0.00	1,591.410
<b>TOTAL</b>	<b>5011.060</b>	<b>1839.320</b>	<b>6,850.380</b>

**Table 1-6 Parcels by Surface Ownership or Management:**

<b>Parcel Number</b>	<b>Parcel Acres</b>	<b>Fee Surface Acres</b>	<b>BLM Surface Acres</b>
WY-1702-315	685.920		685.920
WY-1702-316	380.000		380.000
WY-1702-318	850.320		850.320
WY-1702-319	160.000		160.000
WY-1702-320	1,721.490	80.000	1,641.490
WY-1702-321	2,527.160	240.030	2,287.130
WY-1702-322	1,591.410		1,591.410
WY-1702-323	2,361.320	380.210	1,981.110
WY-1702-324	1,760.000		1,760.000
WY-1702-326	719.160	280.000	439.160
<b>Total by Surface</b>		<b>980.240</b>	<b>11,776.540</b>
<b>Total by Mineral Estate</b>	<b>12,756.780</b>		

## 1.2 Background

The Mineral Leasing Act of 1920, as amended [30 U.S.C. § 181 et seq.], and the Mineral Leasing Act for Acquired Lands of 1947, as amended, give the BLM responsibility for oil and gas leasing on about 564 million acres of BLM, national forest, and other federal lands, as well as State and private surface lands where mineral rights have been retained by the federal government. The BLM works to ensure that mineral resources are developed in an environmentally responsible manner.

As required by 43 CFR § 3120.1-2, the BLM WSO conducts a quarterly competitive oil and gas lease sales to sell available oil and gas leases. Interested parties file Expressions of Interest (EOIs) to nominate parcels for leasing by the BLM. Complete information on the competitive lease sale notices & results process is available on line at:

[http://www.blm.gov/wy/st/en/programs/energy/Oil\\_and\\_Gas/Leasing.html](http://www.blm.gov/wy/st/en/programs/energy/Oil_and_Gas/Leasing.html)

In the process of preparing a lease sale, the BLM WSO sends a draft parcel list to each District Office administering the nominated parcels. District and field office staff review the parcels to:

- verify the legal descriptions of the parcels and verify the parcels are in areas open to leasing;
- remove from further analysis any parcel in an area which is not available for leasing;
- ensure conformance with the approved RMPs by applying appropriate stipulations and lease notices to each parcel;
- determine if new information has become available since the approval of the RMP, which might change any analysis;

- conduct consultations, including consultation with the Wyoming Game and Fish Department (WGFD) and, as necessary, other federal agencies, state and local agencies, community stakeholders, and others.

Staffs conduct field visits of the nominated parcels as necessary to validate existing data or gather new information in order to make an informed leasing recommendation. Additional information obtained after the publication of the Nominated Competitive Lease Sale may result in withdrawal of certain parcels prior to the day of the lease sale. The BLM State Director retains the authority to withdrawal parcels prior to sale.

### **1.3 Purpose and Need**

It is the policy of the BLM as derived from various laws, including the Mineral Leasing Act of 1920, as amended and the Federal Land Policy and Management Act of 1976 (FLPMA) to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs. Continued sale and issuance of lease parcels would allow for continued production of oil and gas from public lands and reserves.

The need is established by the Federal Onshore Oil & Gas Leasing Reform Act of 1987 (FOOGLRA), the Federal Land Policy Management Act, and Mineral Leasing Act of 1920, as amended, to respond to Expressions of Interest.

### **1.4 Conformance with BLM Land Use Plans**

The Lander, Worland, and Cody RMPs, plus the Rawlins RMP, identified the parcels nominated for the lease sale as available for leasing. All parcels for the Competitive Oil and Gas Lease Sale are in conformance with the existing land use plans as required by 43 CFR 1610.5. The RMPs identify leasing stipulations for application to the parcels. As authorized in 43 CFR § 3101.1-3, all parcels are subject to three standard Lease Notices, one unnumbered Lease Stipulation, and three standard Lease Stipulations. As identified in the WFO and CFO RMPs, all leases are subject to Lease Notice 1041.

### **1.5 Relationship to Statutes, Regulations, or Other Plans**

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

- Federal Land Policy and Management Act of 1976, as amended [43 U.S. Code § 1701 et seq.]
- Mineral Leasing Act of 1920, as amended [30 U.S.C. § 181 et seq.]
- Federal Onshore Oil & Gas Leasing Reform Act of 1987 [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.]
- Public Rangelands Improvement Act of 1978 [U.S.C. § 1901]
- Endangered Species Act [16 U.S.C. § 1531 et seq.]
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- 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 [16 U.S.C. § 470 et seq.]
- 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.]
- U.S. Fish and Wildlife Service, 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.]

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties. Compliance with Section 106 of the NHPA is a non-discretionary action that all federal agencies must perform. The RMPs considered known important cultural sites in identifying stipulations.

The implementing regulations at 36 CFR § 800 allow for a phased approach to compliance with the NHPA. Since it is impossible to determine the type and extent of surface disturbance associated with oil and gas development at the leasing stage, BLM completes its compliance responsibilities when a proponent submits an Application for Permit to Drill (APD) or other application for surface-disturbing activities on the federal lease. Due to this approach, BLM may not be aware of all cultural resources that are located in proposed lease parcels. In order to address any lack of data at this stage, every fluid mineral lease issued by BLM includes the special lease stipulation, which reads:

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

Cultural resource specialists reviewed each parcel to determine if it contains known sites that are difficult or impossible to mitigate. Reviews included BLM and State Historic Preservation Officer (SHPO) record and file searches for known sites in or near each parcel. When BLM receives an APD, a site-specific cultural records review is completed to determine if there is a need for cultural inventory for areas affected by surface-disturbing activities. Cultural resource inventory is required prior to new surface disturbance. All sites that are determined to be historic properties (sites that are listed on or are eligible for listing on the National Register of Historic Places) are avoided or mitigated. If avoidance or mitigation is not possible, proposals may be modified or denied. A determination of a significant adverse effect could result in the need to prepare an EIS in order to authorize the proposal.

If a decision maker determines a resource is difficult or impossible to mitigate and wishes to apply lease stipulations or exclude the site from leasing, the RMP must be updated or amended prior to leasing.

In accordance with H-1624-1 – Planning for Fluid Mineral Resources Rel. 1-1749, 1/28/2013: The Federal Government retains certain rights when issuing an oil and gas lease. While the BLM may not unilaterally add a new stipulation to an existing lease that it has already issued, the BLM can subject development of existing leases to reasonable conditions, as necessary, through the application of Conditions of Approval at the time of permitting. The new constraints must be consistent with the applicable land use plan and not in conflict with rights granted to the holder under the lease. The Interior Board of Land Appeals has made clear that, when making a decision regarding discrete surface-disturbing oil and gas development activities following site-specific environmental review, the BLM has the authority to impose reasonable protective measures not otherwise provided for in lease stipulations, to minimize adverse impacts on other resource values. See 30 U.S.C. §226(g); 43 CFR 3101.1-2. See Yates Petroleum Corp., 176 IBLA 144 (2008); National Wildlife Federation, 169 IBLA 146, 164 (2006).

## **1.6 Identification of Issues and Scoping**

**Scoping:** A listing of parcels to be offered at the auction will be posted by the BLM WSO in the public room at least 90 days before the auction is held. A press release is submitted to the local newspapers for publication and other media outlets announcing the availability of the EA and Sale Notice, which is posted on the BLM leasing website for public review and comment. If the BLM owns the mineral estate within split estate lands, the BLM notifies the surface owner (as identified by the party submitting the EOI) of the lease nomination and a second notification that the EA is available for review and comment.

**Issues:** The Council on Environmental Quality (CEQ) regulations state: “NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail” (40 CFR § 1500.1(b)). 40 CFR § 1500.4(g) directs that the scoping process should be used “not only to identify significant environmental issues deserving of study but also to deemphasize insignificant issues narrowing the scope of the EIS process accordingly.” Significant issues directly influence the initiation, development, and technical design of the proposal; are disclosed in the analysis; and were used to develop alternatives to the proposed

action. Issues are significant because of the extent of their geographic distribution, the duration of their effects, or the intensity of interest or resource conflict (BLM 2008).

Non-significant issues are identified as those:

- 1) outside the scope of the proposed action;
- 2) already decided by law, regulation, or other higher level decision;
- 3) unrelated to the decision to be made; or
- 4) conjectural and not supported by scientific or factual evidence.

CEQ NEPA regulations explain this delineation in 40 CFR § 1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (40 CFR § 1506.3)..."

## **2. Description of Alternatives, Including Proposed Action**

### **2.1 Introduction**

Chapter 2 provides a description of each alternative to be analyzed in detail, a brief description of alternatives that were considered but not analyzed in detail, and a brief summary of the environmental effects of the proposed action and alternatives.

### **2.2 No Action Alternative**

The No Action Alternative would mean that the Expressions of Interest to lease, the parcel nominations, would be denied or rejected at this time, and the parcels would not be offered for lease at the February 2017 sale.

### **2.3 Proposed Action Alternative**

The Proposed Action would offer for lease ten parcels nominated through an EOI in the WR/BBD, covering 12,756.780 acres, with stipulations required by the respective RMP. Attachment 1 to this EA identifies the parcels proposed for leasing with applicable lease stipulations.

In conformance with regulations in 43 CFR § 3120.2-1, sold oil and gas leases would be issued for a ten-year period and would continue for as long thereafter as oil and gas is produced in paying quantities. If a lessee fails to produce oil and gas, does not make annual rental payments, does not comply with the terms and conditions of the lease, or relinquishes the lease, the lease would terminate.

### **2.4 Alternatives Considered and Eliminated from Further Analysis**

#### **Offering Subject to Standard Lease Terms and Conditions**

Offering all nominated parcels with only the lease terms and conditions on the lease form was considered as a means to reduce impediments 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 FLMPA's Section 102(8) mandate to manage the public lands to protect resource values. Therefore, this alternative was not analyzed in detail.

No other alternatives to the proposed action were identified that would meet the purpose and need of the proposed action.

### **3. Affected Environment and Environmental Effects**

#### **3.1 Introduction**

This chapter characterizes the environment and environmental effects, resources, and uses that have the potential to be affected by the proposed action, followed by a comparative analysis of the direct, indirect and cumulative impacts of the alternatives. Aspects of the affected environment described in this section focus on relevant major resources and issues to determine if a significant impact may occur. Only those aspects of the affected environment that are potentially impacted are described in detail.

CEQ defines cumulative effects as:

*The impact on the environment which results from the incremental impact of the action when added or other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7)*

Absent a definitive development proposal, it is not possible to conduct a more specific impact and/or cumulative effects analysis. The BLM cannot determine at the leasing stage whether or not a nominated parcel will actually be leased, or if leased, whether or not the lease would be explored or developed or at what intensity development may occur. Additional NEPA documentation would be prepared at the time an APD(s) or field development proposal is submitted, including cumulative impacts from past and reasonably foreseeable future actions.

There are approximately 847 active, producible, serviceable federal wells in the LFO and approximately 2,598 active, producible, or service federal wells combined in the WFO and CyFO.

#### **3.2 General Analysis Assumptions and Data Limitations**

Direct effects of leasing are the creation of valid existing rights, and the revenue generated by the lease sale receipts. The residual effects of leasing would only occur if or when the leases were developed. Such development requires additional analysis and decision making although the BLM's subsequent decisions could not conflict with the valid rights afforded by the lease. The level of development that might occur as an outcome leasing is unknown. A more precise description of environmental effects would be possible if the exact level of development were known. The BLM determined that any estimation of development at this time is too speculative to be analyzed as part of this EA. The BLM determined that the RMP resource protections provide adequate consideration of resource values and the potential for adverse impacts to be evaluated at the leasing stage.

Existing data are used to determine resource presence on each parcel. Resource presence may change after this analysis and prior to development. Site specific surveys and data gathering would occur prior to lease development, and conditions of approval may be added as necessary to protect resources.

Both the LFO FEIS and BB FEIS, and the RFO FEIS and Amendments, analyzed in detail the resources in the Districts. The following descriptions and subsequent analysis include information that has changed since the FEIS were written, new circumstances that have arisen, or new data that are available.

### **3.3 General Setting**

#### Lander Field Office (LFO)

The LFO planning area encompasses 6.6 million acres in central Wyoming and includes most of Fremont County, the southwest corner of Natrona County, and small portions of Carbon, Sweetwater and Hot Springs counties. Of the 6.6 million acres, 2.4 million acres are public lands managed by the BLM and approximately 2.7 million acres of federal mineral estate.

Parcel WY-1702-315 is located in Carbon County, in an area where the field office jurisdictional boundary is determined by topography and follows grazing allotment fence lines. Parcel WY-1702-316 is located in Carbon County, in an area where U.S. Highway 287 defines the jurisdictional boundary between the two field offices.

Approximately 2.2 million acres of the planning area are within the Wind River Indian Reservation (WRIR). The BLM has a fiduciary trust responsibility for the management of minerals on the WRIR. The BLM does not make land management decisions for the WRIR, and duties associated with trust responsibilities are performed independent of the provisions of the Lander RMP.

#### Worland Field Office (WFO)

The WFO encompasses 3.4 million acres. This area includes Big Horn, Hot Springs, Washakie, and Park counties. The WFO manages over 2 million acres of public land and 2.7 million acres of federal mineral estate.

#### Cody Field Office (CyFO)

The CyFO encompasses 2.2 million acres of the Big Horn Basin in north central Wyoming, includes portions of Park and Big Horn counties, and is bordered by the Shoshone and Bighorn National Forests. CyFO manages 1.1 million acres of public land and 1.5 million acres of federal mineral estate within this area.

### **3.4 Resources Considered and Eliminated From Further Analysis**

The BLM has determined that the recent analysis of the following resources in the FEIS was thorough and adequate and that no new circumstances or data has been identified that would require additional analysis. The BLM will revise these sections if additional information is provided that was not included in the RMP FEIS. Parcels offered for sale are subject to the stipulations shown in Attachment 1.

### 3.4.1 HDD Evaluation of Overlapping Parcels:

The portions of parcels WY-1702-315 and WY-1702-316 which were nominated in RFO for the HDD May 2016 competitive oil and gas lease sale as parcels WYW-1605-004 and WYW-1605-005, respectively, were evaluated and summarized in WY-040-EA15-130 Table 3-1 Affected Environment, and incorporated by reference into the Affected Environment of this document (DOI-BLM-WY-R000-2016-0002-EA, Table 3-1,). Stipulations applied for the portions falling within the RFO jurisdiction are in accordance with Appendix B of the HPD May 2016 EA. Therefore, further analysis of the portions of these parcels which fall in the RFO is not warranted.

**Table 3-1 Parcels Overlapping Jurisdictional Boundaries, RFO**

HDD May 2016 Parcel #	WY-1605-004	WY-1605-005
Field Office	Rawlins	Rawlins
Split Estate	No	No
VRM Class	III & IV	III
Riparian Areas	Yes	Yes
Perennial Streams	No	No
Slopes Greater than 25%	Yes	Yes
Soils	Sandy, Shallow Loamy	Saline Upland, Loamy, Shallow Loamy, Shale, Sandy, Shallow Sandy
Grazing Allotment	Stewart Creek & Little Camp Creek	Little Camp Creek, Ferris Mountain, & Muddy Creek Pasture
Vegetation	Sagebrush dominated communities with a variety of forbs and grasses.	Sagebrush dominated communities with a variety of forbs and grasses.
Sodium/ Coal Leasing Area	No	No
Major Watershed (Platte/ Colorado/Great Divide Basin/Bear)	Great Divide Closed Basin & North Platte	North Platte
Special Management Areas	No	No
Potential for Dwellings	No	No
Cultural Sites/ NHT	No	No
Paleo. PFYC Class 4 or 5 (Yes/ No)	No	No
Sage-Grouse Core Area (Yes/ No)	Yes	Yes
Sage-Grouse/ Sharp-tailed grouse Nesting Habitat (Yes/No)	Yes	Yes
Sage-Grouse Leks/Sharp-tailed Dancing Ground	Yes	Yes
Sage-Grouse/Sharp-tailed grouse winter concentration areas (Yes/No)	No	No
Other Special Status Species (T&E, Candidate, Sensitive Species)	Wyoming pocket gopher, Greater Sage-Grouse, Mountain Plover, White-tailed prairie dog, Beaver Rim Phlox, Ferruginous Hawk	Wyoming pocket gopher, Greater Sage-Grouse, White-tailed prairie dog Ferruginous Hawk, Beaver Rim Phlox

<b>HDD May 2016 Parcel #</b>	<b>WY-1605-004</b>	<b>WY-1605-005</b>
Colorado or Bonneville Cutthroat Trout (CRCT/ BCT)	No	No
Big Game Crucial Winter Range (CWR)/ Parturition	CRW	CRW
Burrowing owl (BO)/ Raptor Nesting	Yes	Yes
Bald Eagle Roost	No	No
Big Game Migration Route	No	No

### **3.4.2 RMP Special Designations:**

Two parcels in LFO were nominated, one in whole and one in part, in areas unavailable for leasing, and were deleted from further consideration for this lease sale, as referenced in the Introduction 1.1 to this EA.

Reference:

43 CFR § 3100.0-3 (2) Exceptions (iii) Incorporated cities, towns and villages.

LFO FEIS Section 4.2.4, ROD Chapter 2.1.4, Decision Record #1049

BB FEIS Section 2.5.2, 2.5.7, and 4.2.5; ROD specific resources Decisions found throughout; and CyFO Decisions 7009, 7088 - 7091.

### **3.4.3 Air Quality**

#### **3.4.3.1 Air Resources**

Air quality, air quality related values (AQRVs), such as visibility and atmospheric deposition, and climate change are the components of air resources which the BLM must consider and analyze to address the potential effects of authorized activities on air resources as part of the planning and decision making process.

The LFO RMP FIES 4.1.1 and 4.9, and the BB RMP FEIS 4.1.1 contain Air Resources Management Plans (ARMP) which evaluated air quality issues, impacts, and potential mitigations. The LFO FEIS evaluated air protections that were in the Proposed Plan which subsequently were incorporated in the ROD in Decisions 1001 – 1008 (see Appendix D of the Lander Air Resources Management Plan). The BB FEIS also evaluated air protections that were in the Proposed Plan which subsequently were incorporated in the WFO RMP Decisions 1001 – 1006, and CyFO RMP Decisions 1001 – 1006 (see Appendix M of the Bighorn Basin Air Resources Management Plan).

There are no direct impacts to air quality or climate change through the administrative action of leasing. Indirect effects from leasing may occur to air quality or climate change if development were to occur. At the time of a site-specific application, such as an APD, air quality or climate

change will be evaluated to conform with the State of Wyoming Department of Environmental Quality (WYDEQ) and BLM air quality standards. As new information is gathered, it will be incorporated into BLM decisions and may require conditions of approval to mitigate adverse impacts to air quality or climate change.

Since the signing of the three RODs, two National Ambient Air Quality Standards (NAAQS) have changed. The 24 hour PM<sub>2.5</sub> standard which was 15 µg/m<sup>3</sup> is now 12, and the ozone standard which was 75 ppb is now 70.

### **3.4.3.2 Air Quality**

Regional air quality is influenced by the interaction of meteorology, climate, the magnitude and spatial distribution of local and regional air pollutant sources, and the chemical properties of emitted air pollutants.

Pollutant concentration can be defined as the mass of pollutants present in a volume of air and is reported in units of micrograms per cubic meter (µg/m<sup>3</sup>), parts per million (ppm), or parts per billion (ppb). The monitoring and enforcement of air-quality standards is administered by the Wyoming Department of Environmental Quality-Air Quality Division (WYDEQ). Wyoming Ambient Air Quality Standards (WAAQS) and National Ambient Air Quality Standards (NAAQS) identify maximum limits for concentrations of criteria air pollutants at all locations to which the public has access. The WAAQS and NAAQS are legally enforceable standards, and the state of Wyoming has used monitoring and modeling to determine compliance with WAAQS and NAAQS. Concentrations above the WAAQS and NAAQS represent a risk to human health that, by law, require public safeguards be implemented. State standards must be at least as protective of human health as federal standards, and may be more restrictive than federal standards, as allowed by the Clean Air Act (CAA). Currently, the WYDEQ-AQD does not regulate greenhouse gas emissions other than for permitted major stationary sources.

### **3.4.3.3 Criteria Air Pollutants**

Criteria air pollutants are those for which national concentration standards have been established. If the air quality in a geographic area meets the NAAQS, it is designated an attainment area; areas that do not meet the NAAQS are designated nonattainment areas and must develop comprehensive state plans to reduce pollutant concentrations to a safe level. Attainment/nonattainment status is determined separately for each criteria pollutant. Five of the six criteria pollutants for which the EPA has established NAAQs are:

- Carbon monoxide (CO): CO is an odorless, colorless gas formed during combustion of any carbon-based fuel, such as during the operation of engines, fireplaces, and furnaces. Because carbon monoxide data are generally collected only in urban areas where automobile traffic levels are high, recent data are often unavailable for rural areas.
- Nitrogen dioxide (NO<sub>2</sub>): NO<sub>2</sub> is a highly reactive compound formed at high temperatures during fossil fuel combustion. During combustion, nitrogen monoxide (NO) is released into the air which reacts with oxygen in the atmosphere to form NO<sub>2</sub>. NO plus NO<sub>2</sub> forms a mixture of nitrogen gases, collectively called oxides of nitrogen (NO<sub>x</sub>). NO<sub>x</sub> emissions can

convert to ammonium nitrate particles and nitric acid, which can cause visibility impairment and atmospheric deposition. NOx can contribute to “brown cloud” conditions and ozone formation, and can convert to ammonium (NH<sub>4</sub>), nitrate particles (NO<sub>3</sub>), and nitric acid (HNO<sub>3</sub>). Internal combustion engines are a major source of NOx emissions.

- **Ozone:** Ozone is a gaseous pollutant that is not emitted directly into the atmosphere but is formed in the atmosphere from complex photochemical reactions involving NOx and reactive volatile organic compounds (VOCs). Common sources of VOCs include automotive and heavy equipment emissions, paints and varnishes, oil and gas operations, and wildfires. Ozone is a strong oxidizing chemical that can burn the lungs and eyes and damage plants. Ozone is a severe respiratory irritant at concentrations in excess of the federal standards.
- **Particulate matter (PM):** PM is small particles suspended in the air that settle to the ground slowly and may be re-suspended if disturbed. Ambient air particulate matter standards are based on the size of the particle. The two types of particulate matter are:
  - PM<sub>10</sub> (particles with diameters less than 10 micrometers): small enough to be inhaled and capable of causing adverse health effects.
  - PM<sub>2.5</sub> (particles with diameters less than 2.5 micrometers): small enough to be drawn deeply into the lungs and cause serious health problems. These particles are a primary cause of visibility impairment.
- **Sulfur dioxide (SO<sub>2</sub>) and sulfates (SO<sub>4</sub>):** SO<sub>2</sub> and SO<sub>4</sub> form during combustion from trace levels of sulfur in coal or diesel fuel. SO<sub>2</sub> also participates in chemical reactions and can form sulfates and sulfuric acid in the atmosphere.

The Wyoming DEQ has also established WAAQS, which are state-specific air quality standards for criteria pollutants. The standards and relevant averaging periods are summarized in Table 3-1 Summary of Ambient Air Quality Standards for Criteria Pollutants.

**Table 3-2 Summary of Ambient Air Quality Standards for Criteria Pollutants**

Pollutant (Units)	Averaging Period	NAAQS	WAAQS
Ozone (ppb)	8-hour <sup>1</sup>	70	75
NO <sub>2</sub> (ppb)	1-hour <sup>2</sup>	100	100
	Annual <sup>3</sup>	53	53
SO <sub>2</sub> (ppb)	1-hour <sup>4</sup>	75	75
CO (ppb)	1-hour <sup>5</sup>	35,000	35,000
	8-hour <sup>5</sup>	9,000	9,000
PM <sub>10</sub> (µg/m <sup>3</sup> )	24-hour <sup>6</sup>	150	150
	Annual <sup>3</sup>	--	50
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	24-hour <sup>7</sup>	35	35
	Annual <sup>8</sup>	12	12

µg/m<sup>3</sup> micrograms per cubic meter

CO carbon monoxide

NAAQS National Ambient Air Quality Standards

NO<sub>2</sub> nitrogen dioxide

PM<sub>10</sub> particulate matter less than 10 microns in diameter

PM<sub>2.5</sub> particulate matter less than 2.5 microns in diameter

ppb parts per billion

SO<sub>2</sub> sulfur dioxide

WAAQS Wyoming Ambient Air Quality Standards

1 The 3-year average of the fourth-highest daily maximum 8-hour average ozone concentration must not exceed this standard.

2 The 3-year average of the 98th percentile of the daily maximum 1-hour average NO<sub>2</sub> concentration is not to exceed this standard.

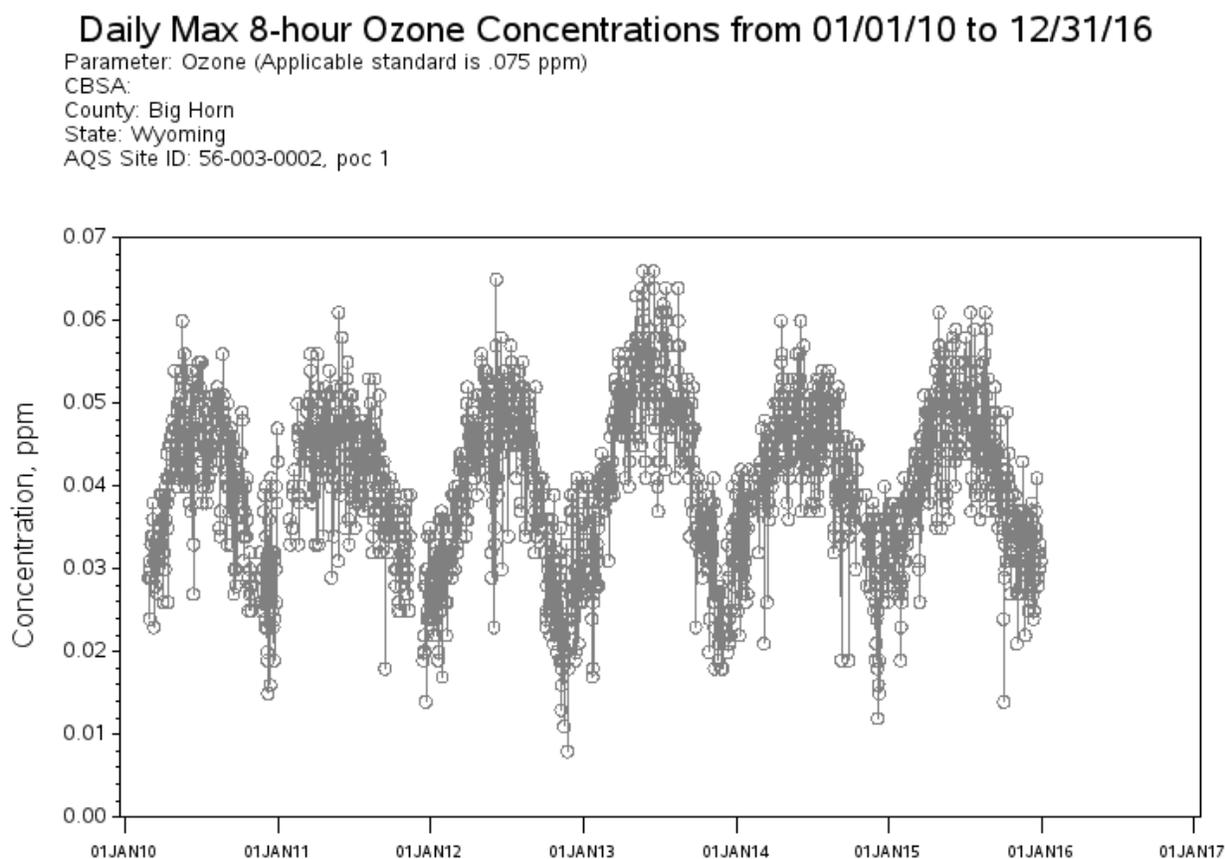
Pollutant (Units)	Averaging Period	NAAQS	WAAQS
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- 3 Not to be exceeded.
- 4 The 3-year average of the 99th percentile of the daily maximum 1-hour average SO<sub>2</sub> concentration must not exceed this standard.
- 5 Not to be exceeded more than once per year.
- 6 Not to be exceeded more than once per year on average over 3 years.
- 7 The 3-year average of the 98th percentile 24-hour average PM<sub>2.5</sub> concentration is not to exceed this standard.
- 8 The 3-year average of the annual average PM<sub>2.5</sub> concentration is not to exceed this standard.

### 3.4.3.4 Ozone

Ozone levels in the area meet the WAAQS and the NAAQS. The BLM-Wyoming Air Resource Monitoring System (WARMS) contains the “Basin” site (the site is located just east of U.S. 16 (State Road 789), approximately 4 miles northwest of the town of Manderson, Wyoming, and 7 miles south of Basin, Wyoming). Figure 3-1 shows ozone data from the “Basin” station from 2010-2016.

**Figure 3-1 2010-2016 “Basin” Wyoming Daily Maximum 8-hour ozone**



Source: U.S. EPA AirData <<http://www.epa.gov/airdata>>  
 Generated: June 8, 2016

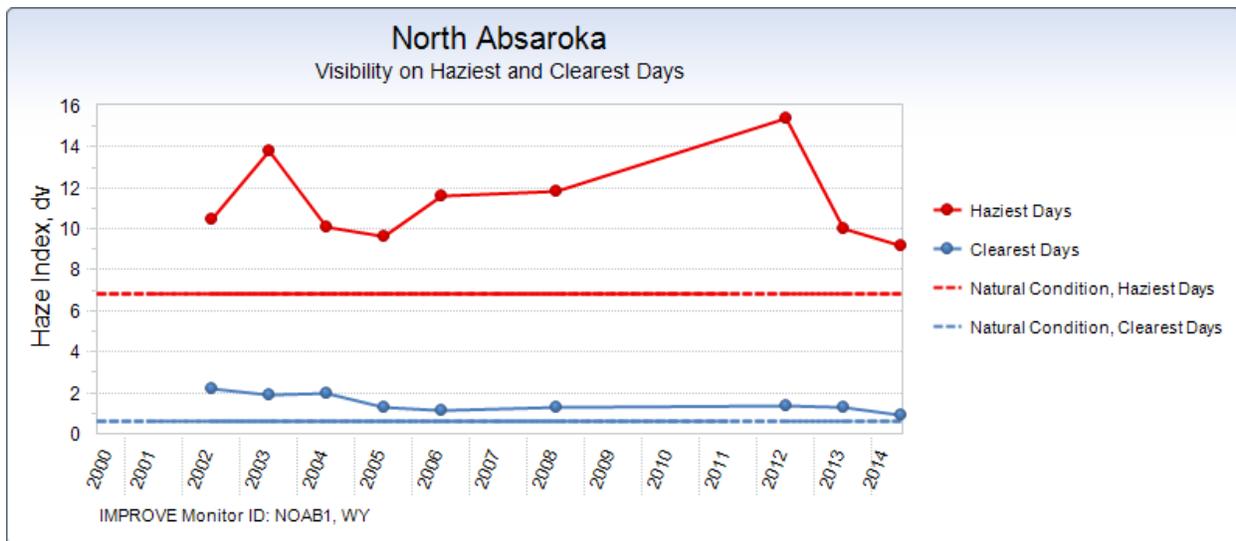
Reference: <http://www.epa.gov/airdata>

### 3.4.3.5 Visibility

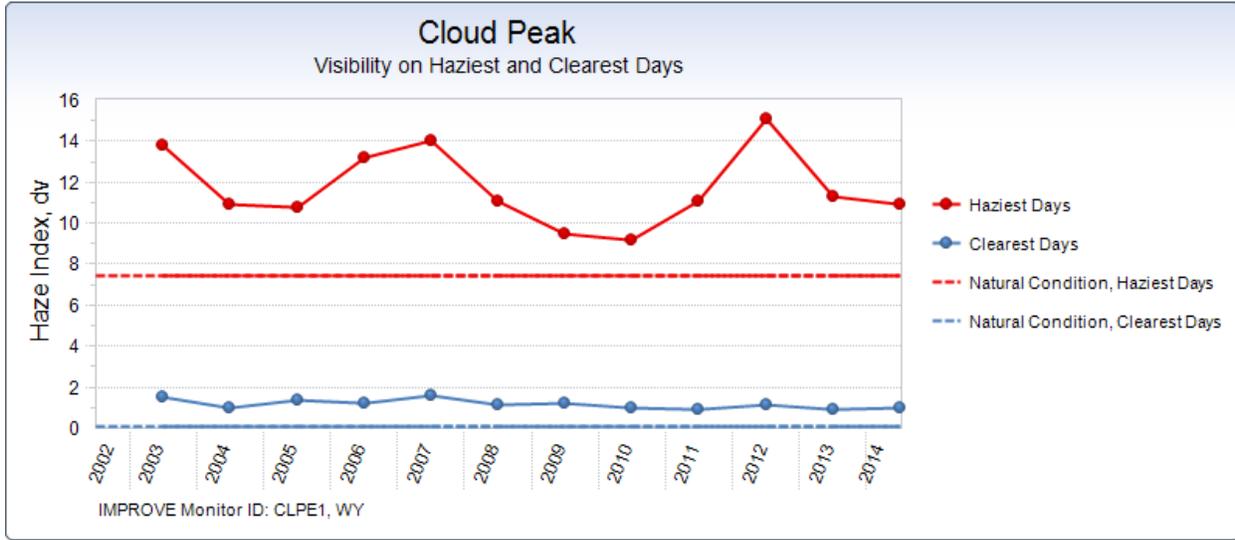
The Clean Air Act includes “as a National Goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I federal areas in which impairment results from manmade air pollution.” The CAA gives federal managers the affirmative responsibility, but no regulatory authority, to protect air quality-related values, including visibility, from degradation. A wide variety of pollutants can impact visibility, including PM, NO<sub>2</sub>, NO<sub>3</sub>, and SO<sub>4</sub>. Fine particles suspended in the atmosphere decrease visibility by blocking, reflecting, or absorbing light. Regional haze occurs when pollutants from widespread emission sources become mixed in the atmosphere and travel long distances.

Visibility is quantified in terms of the deciview (dv), which is defined as a change in light extinction, with one dv representing the minimal perceptible change in visibility to the human eye, and in terms of the Standard Visible Range (SVR), which is defined as the greatest distance that a standard object can be seen by the unaided eye. Figures 3-2 and 3-3 show annual visibility in deciviews from 2002 to 2014 for the North Absaroka and from 2003 to 2014 for the Cloud Peak Interagency Monitoring of Protected Visual Environments (IMPROVE) sites.

**Figure 3-2 North Absaroka annual IMPROVE visibility (2002-2014).**



**Figure 3-3 Cloud Peak annual IMPROVE visibility (2003-2014).**



Source: Federal Land Manager Environmental Database 2016

Reference: <http://views.cira.colostate.edu/fed/AgrvMenu.aspx>

**3.4.3.6 Basin, Wyoming Clean Air Status and Trends Data (CASTNET)**

CASTNET is a long-term, rural monitoring network used to assess the environmental results due to emission reduction programs and pollutant impacts to sensitive ecosystems and vegetation. CASTNET measures ambient concentrations of sulfur and nitrogen species as well as rural ozone concentrations. Results from CASTNET are used to report on geographic patterns and temporal trends in acidic pollutants, deposition and regional ozone concentrations. CASTNET is the only network in the US that provides a consistent, long-term data record of acidic dry deposition fluxes.

During 2013, the BLM upgraded the Basin, WY site to become part of CASTNET. Ammonia data collection started in 2015. Annual concentration data from the Basin site is listed in Table 3-2.

**Table 3-3 Basin, WY Annual CASTNET concentrations (µg/m3) for 2013 and 2014.**

Year	Sulfur Dioxide	Particulate Sulfate	Particulate Nitric Acid	Total Nitrate	Particulate Ammonium
2013	0.988	0.714	0.412	1.081	0.416
2014	0.941	0.678	0.354	0.87	0.369

### **3.4.4 Climate Change**

#### **3.4.4.1 Overview**

Throughout northern Wyoming, a number of resources could be affected by alterations in future weather and land-use conditions resulting from possible changes in the overall climate of the region. Meteorological data collected throughout the world during the last 50 years show strong indications of a warming planet. Other environmental data collected from oceans, wetlands, forests, and the polar regions (associated with ice pack extent, thickness, and melting) corroborate the global warming trend. It is well known that certain gases in the atmosphere allow short-wave radiation from sunlight (visible light, ultraviolet, near infrared) through the atmosphere. These gases include CO<sub>2</sub>, methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF<sub>6</sub>), VOCs, water vapor, and other trace gases. When the sun's radiation strikes Earth's surface, heat is generated in the form of infrared radiation. These same gases act to absorb longer wave infrared radiation, resulting in a warming of the atmosphere. This phenomenon is known as the "greenhouse effect," because these gases, referred to as greenhouse gases (GHGs), act to trap heat in the atmosphere in a similar manner as a greenhouse.

Throughout Earth's history, the proportions of the major constituents of the atmosphere (oxygen and nitrogen, which make up 99 percent of the atmosphere) have changed somewhat due to natural and geogenic processes. The concentrations of minor constituents such as CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, and water vapor have also varied somewhat throughout history. Since the advent of the Industrial Revolution in the 1700s, fossil fuels (coal, oil, and natural gas) have been used for heat and power generation throughout the world. This has resulted in increases in the concentrations of GHGs, compared to pre-industrial concentrations, as estimated using long-term historical records of ice-core samples. During the last 50 years, the rate of this increase in GHG concentrations, especially CO<sub>2</sub>, has shown a dramatic upward trend, likely due to the increased burning of fossil fuels brought on by larger populations demanding more energy throughout the world, especially in Asia and other newly developing countries. The increases in CO<sub>2</sub> are due to the use of fossil fuels and certain changes in land use. The major human activities that cause increases in CH<sub>4</sub> are coal mining and releases of natural gas from oil and gas operations, and the major human activities that cause increases in both CH<sub>4</sub> and N<sub>2</sub>O include animal manure management, agricultural soil management, sewage treatment, and combustion of fossil fuels in stationary and mobile sources (IPCC, 2014).

#### **3.4.4.2 Indicators**

In the air quality analysis area, most GHG emissions, primarily in the form of CO<sub>2</sub>, result from the combustion of fossil fuels for oil and gas drilling and production operations and transportation. Energy demand, which is the main driver for natural gas development, is influenced by regional and national population growth, economic development, and seasonal weather conditions. CH<sub>4</sub> emissions also result from the development of fossil fuel resources, landfills, and agricultural and livestock activities.

### **3.4.4.3 Current Conditions**

Throughout the Mountain West, including northern Wyoming, numerous types of activities and actions result in GHG emissions, with the largest contributor being the combustion of fossil fuels in power plants; on-road and off-road vehicles; drilling engines, pumps, and compressors used in oil and natural gas development; and construction equipment. In addition to direct GHG emissions from these activities, indirect GHG emissions and other factors potentially contributing to climate change include electricity generated outside the analysis area, land-use changes (e.g., converting forested areas to agricultural use), and soil erosion.

### **3.4.4.4 Trends**

According to climate change researchers, the effects of climate change are expected to vary by region, season, and time of day. Computer model forecasts indicate that increases in temperature will not be evenly or equally distributed, but are likely to be accentuated at higher latitudes. Warming during winter is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures. Within a given region, increasing temperatures also could affect the amount of water vapor in the atmosphere, the timing and amount of precipitation, the intensity of storm systems, snow melt, and soil moisture. All of these factors can affect climate, day-to-day weather conditions, plant physiology, and air quality.

Based on research compiled for the International Panel on Climate Change Fifth Assessment Report, (IPCC, 2014) potential effects of climate change on resources in the affected environment are likely to be varied. Within North America, the report specifically forecasts that: warming in western mountains is projected to cause decreased snowpack, more winter flooding and reduced summer flows, exacerbating competition for over-allocated water resources; in the early decades of the century, moderate climate change is projected to increase aggregate yields of rain-fed agriculture by 5 to 20 percent, but with important variability among regions; major challenges are projected for crops that are near the warm end of their suitable range or which depend on highly utilized water resources; cities that currently experience heat waves are expected to be further challenged by an increased number, intensity and duration of heat waves during the course of the century, with potential for adverse health impacts; and coastal communities and habitats will be increasingly stressed by climate change impacts interacting with development and pollution.

Specific modeling and/or assessments of the potential effects for the State of Wyoming currently do not exist; however, there are downscaled models that have been applied for the area such as a Rapid Ecoregional Assessment (REA) and the 2014 National Climate Assessment (GCRP, 2014).

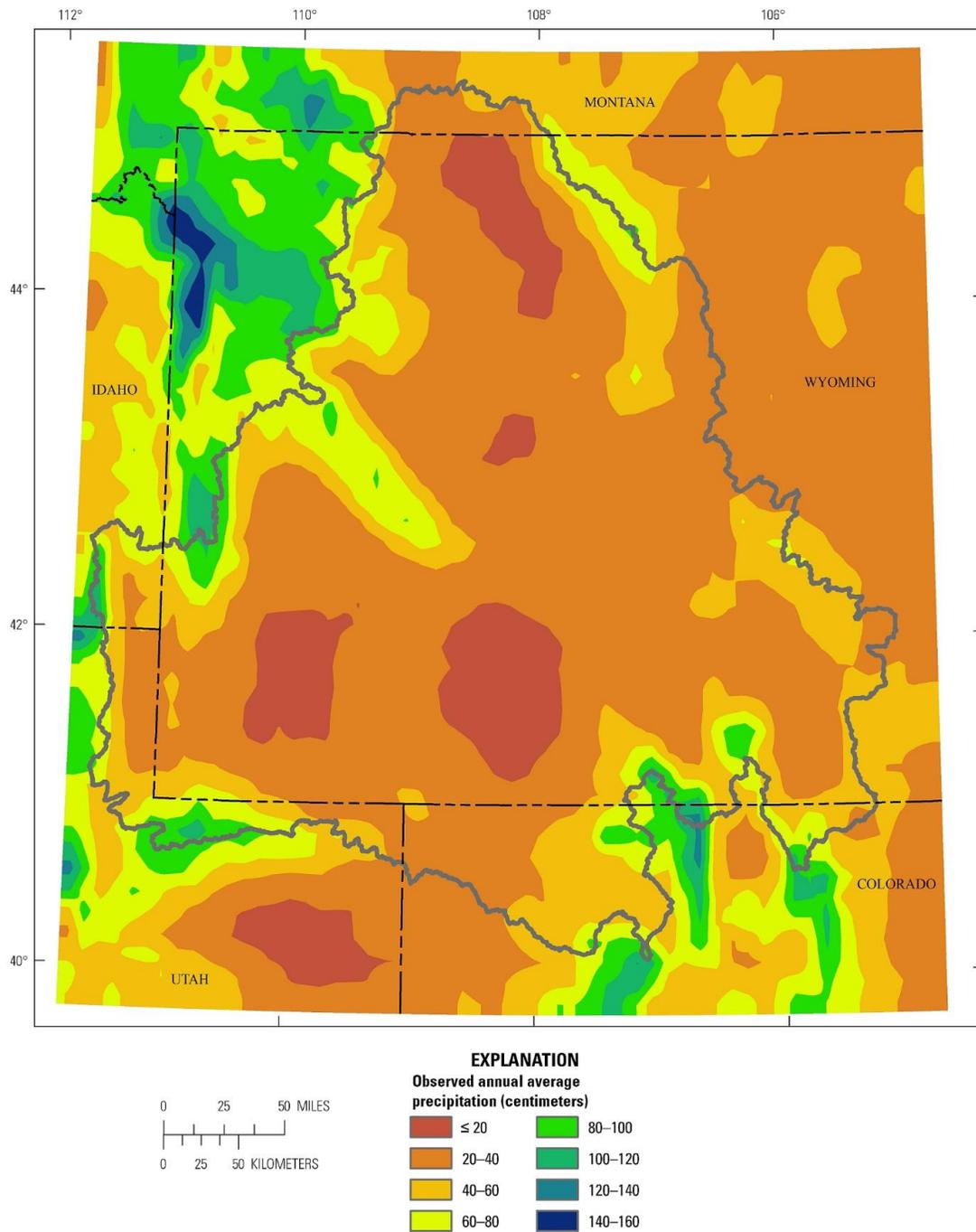
Recently, the USGS completed the Wyoming Basin Rapid Ecoregional Assessment (USGS, 2015) and presented the results of the climate change analysis for this ecoregion. The analysis provided estimates of expected changes in environmental factors (e.g., precipitation, temperature, etc.) based on information derived from multiple global change models (GCM).

The analysis used data for a current or baseline period (1961 to 1990) and provided a series of expected patterns for specific future time periods (e.g., 2046 – 2060).

The general precipitation pattern is presented on

4. The general annual average precipitation pattern for the Wyoming Basin ecoregion shows increasing precipitation from the northwest to the southeast, with the Grand Teton and Yellowstone areas receiving the most rainfall and the mid-basin areas (including the Bighorn Basin and parts of Southeast Wyoming) receiving the least.

**Figure 3-4 Current (1961-1990) Total Annual Precipitation (millimeters)**



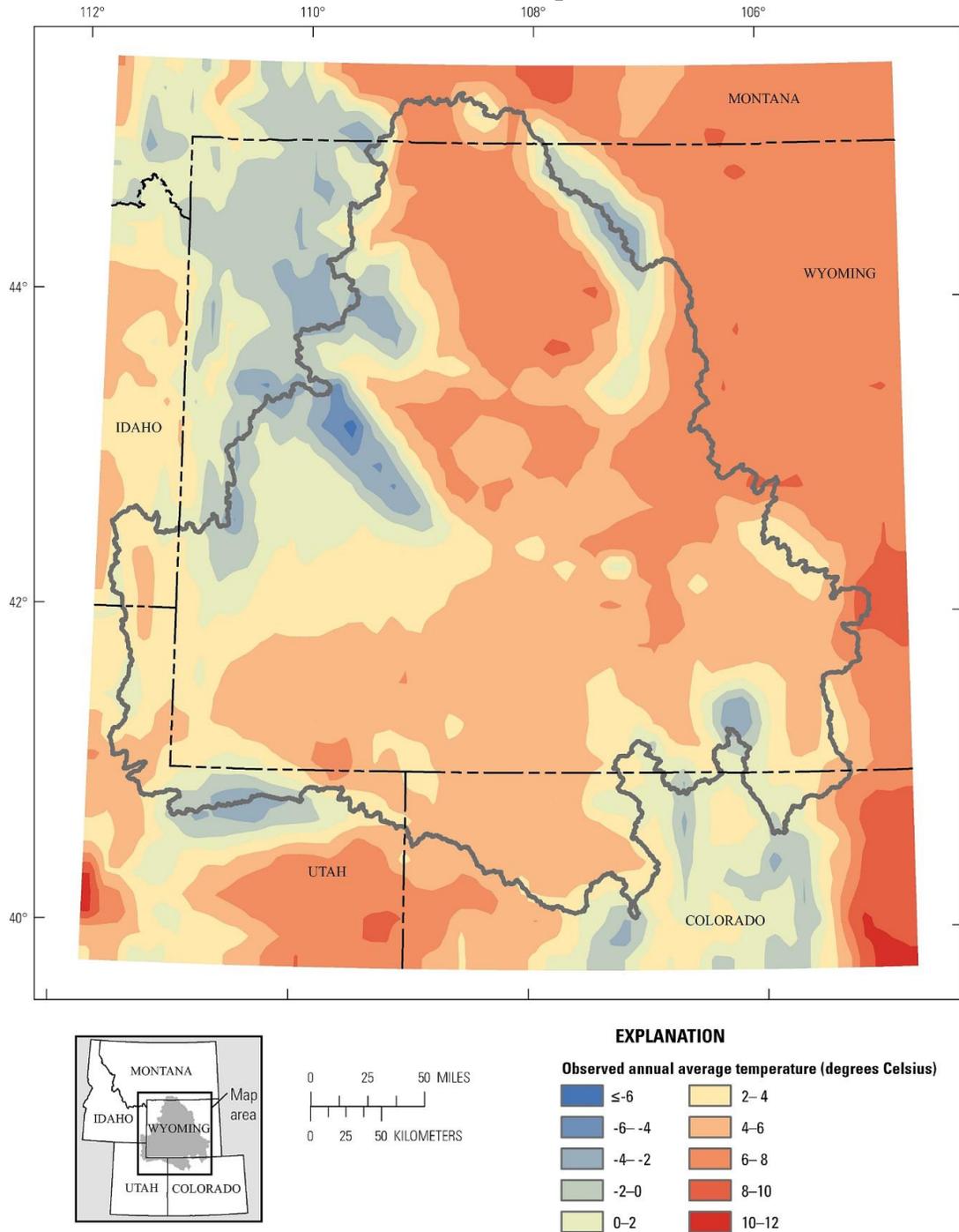
Source: USGS, 2015

The mean annual temperature for existing climate pattern in the Wyoming Basin is presented on

5. The historical data indicate that the Bighorn Basin area of the Wyoming Basin is generally warmer than the rest of the ecoregion.



**Figure 3-5 Current (1961-1990) Mean Annual Temperature (°C)**



Source: USGS, 2015

The REA for the Wyoming Basin shows that all GCMs expect increased warming by 2030 and further warming by 2060. There was disagreement on the expected changes in precipitation amongst the models but the analysis did indicate an overall expectation for the future of wetter winters and drier summers.

All of North America is likely to experience an increase in average temperature during the next 100 years, and annual mean warming is likely to exceed global mean warming in most areas (IPCC, 2014). Temperatures are projected to increase substantially by the end of this century (GCRP, 2009). Summer temperatures are expected to increase between approximately 7°F and 10+°F by 2080 to 2099. Overall, temperature in the region is projected to increase between 2.5°F to more than 13°F compared to the 1960 to 1979 baseline, depending on future GHG emissions (GCRP, 2009). This range of temperature increase reflects the current uncertainty in climate change modeling and represents the likely range of model projections, although lower or higher outcomes are possible.

Increasing temperatures are likely to contribute to increased evaporation, drought frequencies, and declining water quantity. The warming of lakes and rivers will adversely affect the thermal structure and water quality of hydrological systems, which will add additional stress to water resources in the region (IPCC, 2014). The area depends on temperature-sensitive springtime snowpack to meet demand for water from municipal, industrial, agricultural, recreational uses and BLM-authorized activities. The U.S. Geological Survey (USGS) notes that mountain ecosystems in the western U.S. are particularly sensitive to climate change, especially in the higher elevations, where much of the snowpack occurs, which have experienced three times the global average temperature increase over the past century. Higher temperatures are causing more winter precipitation to fall as rain rather than snow, which contributes to earlier snowmelt. Additional declines in snowmelt associated with climate change are projected, which would reduce the amount of water available during summer (GCRP, 2009). Rapid spring snowmelt due to sudden and unseasonal temperature increases can also lead to greater erosive events and unstable soil conditions.

Increases in average summer temperatures and earlier spring snowmelt are expected to increase the risk of wildfires by increasing summer moisture deficits (GCRP, 2009). Studies have shown that earlier snowmelts can lead to a longer dry season, which increases the incidence of catastrophic fire (Westerling et al., 2006). Together with historic changes in land use, climate change is anticipated to increase the occurrence of wildfire throughout the western U.S. The latest GCRP assessment (GCRP, 2014) predicts that temperatures and precipitation over the region will continue to increase, especially if GHG emissions remain high. In addition, the assessment predicts that the frequency of extreme weather events such as heat waves, droughts, and heavy rainfall will also increase and may affect water resources, forests and wilderness areas, agricultural and ranching activities, and human health.

There is evidence that recent warming is impacting terrestrial and aquatic biological systems, with higher temperatures leading to earlier timing of spring events such as leaf-unfolding, bird migration, and egg-laying (IPCC, 2014). The range of many plant and animal species has shifted poleward and to higher elevation, as the climate of these species' traditional habitat changes. As future changes in climate are projected to be even greater than those in the recent past, there will likely be even larger range shifts in the coming decades (Lawler et al., 2009). Warming temperatures are also linked to earlier "greening" of vegetation in the spring and longer thermal growing seasons (IPCC, 2014). In aquatic habitats, increases in algal abundance in high-altitude lakes have been linked to warmer temperatures, while range changes and earlier fish migrations

in rivers have also been observed. Climate change is likely to combine with other human-induced stress to further increase the vulnerability of ecosystems to other pests, invasive species, and loss of native species. Climate change is likely to affect breeding patterns, water and food supply, and habitat availability to some degree. Sensitive species, such as the Greater Sage-Grouse, which are already stressed by declining habitat, increased development and other factors, could experience additional pressures as a result of climate change.

More frequent flooding events, erosion, wildfires and hotter temperatures all pose increased threats to cultural and paleontological sites and artifacts. Heat from wildfires, suppression activities and equipment, as well as greater ambient daytime heat can damage sensitive cultural resources. Similarly, flooding and erosion can wash away artifacts and damage cultural and paleontological sites. However, these same events may also uncover and lead to discoveries of new cultural and paleontological localities.

Climate change also poses challenges for many resource uses on BLM-administered land. Increased temperatures, drought and evaporation may reduce seasonal water supplies for livestock and could impact forage availability. However, in non-drought years, longer growing seasons resulting from thermal increases may increase forage availability throughout the year. Shifts in wildlife habitat due to climate change may influence hunting and fishing activities, and early snowmelt may impact winter and water-based recreational activities. Drought and resulting stress on vegetation is likely to increase the frequency and intensity of mountain bark beetle and other insect infestations, which further increases the risk of fire and reduces the potential for sale of forest products on BLM-administered lands.

A variety of activities currently generate GHGs. Fuels combustion, industrial processes and any number of other activities on public lands result in direct emissions of GHGs. Direct emissions include those related to current and ongoing oil and gas and other minerals development, fire events, motorized vehicle use (e.g., off-highway vehicles), livestock grazing, facilities development, and other fugitive emissions. Indirect GHG emissions include the demand for electricity generated outside the area. Contributions to climate change also result from land use changes (conversion of land to less reflective surfaces that absorb heat, such as concrete or pavement), and soil erosion (which can reduce snow's solar reflectivity and contribute to faster snowmelt).

Climate change science and projections of climate change is a continually growing and emerging science. Additional and recent information on climate change and regional projections of climate change can be found through the U.S. Global Change Research Program (<http://www.globalchange.gov/>) and the Intergovernmental Panel on Climate Change (<http://www.ipcc.ch/>).

Several federal initiatives have been launched to improve the ability to understand, predict, and adapt to the challenges of climate change. The Secretary of the Interior signed Secretarial Order 3289 on February 22, 2010, establishing a Department-wide, scientific-based approach to increase understanding of climate change and to coordinate an effective response to impacts on managed resources. The order reiterated the importance of analyzing potential climate change impacts when undertaking long-range planning issues, and also established several initiatives

including the development of eight Regional Climate Science Centers (DOI, 2010). Regional Climate Science Centers would provide scientific information and tools that land and resource managers can apply to monitor and adapt to climate changes at regional and local scales. The North Central Climate Science Center was established in 2011.

Given the broad spatial influence of climate change which requires response at the landscape-level, the U.S. Department of the Interior (DOI) also established Landscape Conservation Cooperatives which are management-science partnerships that help to inform management actions addressing climate change across landscapes. These Cooperatives are formed and directed by land, water, wildlife and cultural resource managers and interested public and private organizations, designed to increase the scope of climate change response beyond federal lands.

Other federal initiatives are being implemented to mitigate climate change. The Carbon Storage Project was implemented to develop carbon sequestration methodologies for geological (i.e., underground) and biological (e.g., forests and rangelands) carbon storage. The project is a collaboration of federal agency and external stakeholders to enhance carbon storage in geologic formations and in plants and soils in an environmentally responsible manner. The Carbon Footprint Project is a project to develop a unified GHG emission reduction program for the DOI, including setting a baseline and reduction goal for the Department's GHG emissions and energy use. More information about DOI's efforts to respond to climate change is available at: [www.doi.gov/whatwedo/climate/index.cfm](http://www.doi.gov/whatwedo/climate/index.cfm).

In addition to DOI's efforts to address this issue, the EPA has undertaken a number of regulatory initiatives in recent years to reduce GHG emissions. For over 20 years, the EPA has developed approaches and strategies for reducing GHG emissions from natural gas operations through its Natural Gas Star Program (EPA, 2014). This program has provided recommendations for capturing or reducing fugitive emissions of VOCs, including hazardous air pollutants (HAP), as well as GHG's such as methane. In 2009, a finding was made under the Clean Air Act identifying the key constituent gases that threaten public health and welfare and contribute to climate change. An initiative was developed for mobile sources by setting engine and fuel standards to cut GHGs and fuel use for new motor vehicles, and the implementation of a renewable fuel standard aimed at decreasing oil imports and reducing GHGs. Another initiative addresses stationary sources to limit GHGs for power plants and other large industrial facilities. The EPA also initiated a national GHG emissions reporting program for large emitters. In 2012, EPA finalized regulations to reduce pollution from the oil and natural gas industry which is expected to result in substantial reductions in VOC emissions, air toxics, and CH<sub>4</sub>, an important GHG (EPA, 2012). Most recently, EPA extended the rule to mandate control requirements for hydraulically fractured oil wells (EPA, 2015). In addition to requiring reduced emission completions (or "green completions") of oil wells, the rules also mandate that developers find and repair leaks, limit emissions from new and modified pneumatic pumps, and limit emissions from several types of equipment used at natural gas transmission compressor stations and at gas storage facilities, including compressors and pneumatic controllers. These actions, initiatives, and regulations will impact activities, especially those related to oil and natural gas development, in an overall effort to balance growth in resource development with continued reductions in key GHG emissions.

Intergovernmental Panel on Climate Change (IPCC). 2014. "Climate Change 2014: Synthesis Report. Of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change" [Core Writing Team, Pachauri, R.K and Meyer, L.. (eds.)]. Intergovernmental Panel on Climate Change, Geneva, Switzerland, 139 pp.

### **3.4.5 Lands with Wilderness Characteristics**

No parcels were nominated in areas with lands with wilderness characteristics.

Reference:

LFO FEIS Section 3.1.6 and Decisions 1051-1054;  
BB FEIS section 3.6.6, WFO Decisions 6194 – 6197, and CyFO Decisions 6122 – 6125.  
HDD WY-040-EA15-130 3.2.3.2 and Appendix C Combined Wilderness Review Checklist

### **3.4.6 Master Leasing Plan Analysis Areas**

No parcels were nominated within Master Leasing Plan Analysis Areas (MLP).

In accordance with WO IM 2010-117, Oil and Gas Leasing Reform, Master Leasing Plan (MLP) analysis was conducted in the WR/BBD RMPs as a as a tool to facilitate resource protection while allowing for oil and gas development. The analysis resulted in MLP determinations for each field office.

Reference:

LFO RMP FEIS Section 4.2.4; RMP Decisions 2024 - 2035: The Beaver Rim area was determined to be suitable for an MLP because of its high value resources, and location adjoining two designated development areas. The LFO has initiated an implementation plan for the Beaver Rim MLP.

BB FEIS Section 4.2.5; WFO RMP Decisions 2033 - 2042: Three MLPs were defined in the WFO: Absaroka Front MLP, Fifteen Mile MLP, and Big Horn Front MLP. The Absaroka Front MLP and Big Horn Front MLP are in both the WFO and CyFO.

BB FEIS Section 4.2.5; CyFO RMP Decisions 2034 - 2040: Two MLPs were defined in the CyFO: Absaroka Front MLP and Big Horn Front MLP. The MLPs are in both the CyFO and WFO.

RFO has no Master Leasing Plan areas identified.

### **3.4.7 Recreation**

No parcels were nominated which will affect any designated recreational distinctions, such as Special Recreation Management Areas (SRMA), Extensive Recreation Management Areas (ERMA), Recreation Management Zones (RMZ), Recreation Area Management Plans (RAMP),

or developed recreation sites. (Oil & gas leasing within developed recreation sites, which are identified in the RMPs, are open to leasing with a variety of oil and gas prescriptions.)

Reference:

The LFO RMP FEIS Section 4.6.6; Decisions 6076 – 6140. Also reference Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The BB RMP FEIS Section 4.6.5 WFO Decisions 6049 – 6193, and CyFO Decisions 6055 – 6121. Also reference for both WFO and CyFO Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities; and Appendix J. Recreation Management

### **3.4.8 Livestock Grazing Management**

At the leasing stage, there are no identified impacts to livestock grazing.

Reference:

LFO FEIS Section 3.6.7 and 4.6.5, and Decisions 6050 - 6075;

BB FEIS Section 3.6.7 and 4.6.7, WFO Decisions 6198 - 6214, and CyFO Decisions 6126 – 6142.

### **3.4.9 Historic Resources, Including Trails**

No parcels were nominated in areas that are identified as being within trails areas, or areas identified for the protection of historic resources including protected trails, or National Trails Management Corridor.

Reference:

The LFO RMP FEIS Section 4.7.1 Congressionally Designated Trails – Cultural and Historic, and Section 4.7.2 Congressionally Designated Trails – Recreation and Visual. Decisions 7001 – 7029.

The BB RMP FEIS Section 4.7.4 National Historic Trails and Other Historic. WFO RMP Decisions 7042 – 7045, and CyFO RMP Decisions 7092 – 7099.

Standard Lease Notice 2.

### **3.4.10 Wilderness and Wilderness Study Areas**

Wilderness Study Areas (WSAs) are managed to maintain their suitability as wilderness, and are closed to oil and gas leasing. No parcels were nominated within Wilderness Study Areas.

Reference:

LFO FEIS Section 3.7.2 and Decisions 7030 – 7038;

BB FEIS Section 3.7.6, WFO Decisions 7047 – 7059, and CyFO Decisions 7101 – 7110.

### **3.4.11 Wild and Scenic Rivers**

There are no designated Wild and Scenic Rivers in the District. No parcels were nominated which include waterways that have been found eligible for Wild and Scenic Rivers designation.

Reference:

LFO FEIS Section 3.7.3 and Decisions 7039 - 7054;

BB FEIS Section 3.7.5, WFO Decision 7046, and CyFO Decision 7100.

### **3.4.12 Areas of Critical Environmental Concern (ACEC)**

No parcels were nominated within Areas of Critical Environmental Concern (ACEC).

ACECs are managed on a case-by-case basis. In LFO, the East Fork ACEC, as part of Dubois management, is closed to oil and gas leasing; all other LFO ACECs are open to oil and gas leasing with a no surface occupancy stipulation. In WFO and CyFO, ACECs may be closed to oil and gas leasing, or open to oil and gas leasing with protection measures.

Reference:

The LFO RMP FEIS Section 4.7.5. and RMP Decisions 7055 - 7134

The BB RMP FEIS Section 4.7.1. and WFO RMP Decisions 7001 – 7037, and CyFO RMP Decisions 7001 – 7087.

### **3.4.13 Socioeconomics, Environmental Justice, and Public Health and Safety**

The Approved RMPs balance the need for development of renewable and non-renewable energy resources with resource protections. The decisions in the RMPs will facilitate development and provide for socioeconomic benefits to the planning areas and the State of Wyoming.

Executive Order 12898 requires federal agencies to assess projects to ensure there is no disproportionately high or adverse environmental, health, or safety impacts on minority and low income populations. A review of the parcels offered for lease indicates there are no impacts on minority or low-income populations.

Oil and gas development, as well as other industrial use such as mining has occurred in the WR/BBD for many decades. Due to the industrial safety programs, standards, and state and federal regulations, offering these parcels is not expected to increase health or safety risks to humans, wildlife, or livestock. There are no identified hazardous or solid waste sites on the parcels addressed in this EA.

Leasing of the parcels analyzed in this EA would present no new or unusual health or safety issues not covered by existing state and federal laws and regulation.

Reference:

LFO FEIS Section 4.8, and Decisions 8001 - 8015;

BB FEIS Section 4.8, WFO Decisions 8001 - 8017, and CyFO Decisions 8001 – 8017.

### **3.4.14 Split Estate**

Private surface overlaying federal minerals is commonly referred to as Split Estate, of which the dominate estate is minerals. As required by BLM leasing policy, notification letters are sent to private surface owners of split estate parcels at the time of lease nomination, and for EA review and opportunity to comment. If development should be proposed after leasing, the operator is responsible for complying with the requirements of Onshore Oil and Gas Order No. 1, including the requirement to make a good-faith effort to reach a Surface Access Agreement with the private surface owner. The BLM will generally offer the surface owner the same level of surface protection that the BLM provides on federal surface. Parcels offered for sale are subject to the stipulations shown in Attachment 1, which includes protections on split estate lands under Standard Lease Notice 1.

The LFO RMP FEIS discusses split estate lands throughout the document, and in Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The BB RMP FEIS discusses split estate lands throughout the document, and Appendix G Federal Oil and Gas Operations on Split-Estate Lands for both the WFO and CyFO RMPs have full discussions of split estate laws, regulations, and BLM policy and procedures. Also reference Appendix F. Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

For more information about split estate lands, references and web links are available at the end of this document.

## **3.5 No Action Alternative**

### **3.5.1 Common to all Resources**

Under the No-Action Alternative, lease parcels would not be offered at this time. Due to demand for oil and gas, it would be expected that these parcels would be re-nominated in the future, consistent with appropriate land use planning decisions, and might be offered for sale with additional stipulations. There is no way to accurately predict what level of restrictions future leasing might require, but it can be assumed that a substantial portion of the development that would occur under the No-Action Alternative would still be permitted under future leases. Future nominations for leases would be screened for conformance with the Land Use Plan in effect at the time, and the appropriate environmental review would be conducted to determine associated impacts. Effects from leases issued from any future sales would be analyzed in the appropriate environmental documents for those sales.

### **3.6 Proposed Action**

#### **3.6.1 Common to all Resources**

The parcels nominated for the lease sale in the Proposed Action, in conformance with the Land Use Plans, have been identified as available for leasing in each RMP. Under this alternative, application of stipulations to nominated parcels for resource protections is directed by these RMPs. Should the ten parcels, totaling 12,756.780 acres, be offered and sold, leases would be issued. At the development stage, additional site specific mitigation could be imposed if warranted. Under this alternative, revenue is generated through the sale of the lease parcel and subsequent rental.

### **3.7 Resources Brought Forward for Analysis**

No direct impacts to resources are associated with the administrative action of leasing. During parcel reviews, the following resources have been identified as being present in the nominated lease parcel areas, are brought forward for further analysis, and stipulations or protective measures have been applied to the lease parcels as defined in Attachment 1.

#### **3.7.1 Paleontology & Geology**

The Proposed Action Alternative would offer ten parcels, totaling 12,756.780 acres, for lease sale for potential oil and gas development.

There are no direct impacts to paleontological or geological resources through the administrative action of leasing. Indirect effects from leasing may occur to paleontological or geological resources if development were to occur, such as damage or destruction of surficial and buried paleontological resources. At the time of a site-specific application, such as an APD, paleontological or geological resources will be identified and conditions of approval to mitigate adverse impacts to paleontological or geological resources may be imposed at that time, which may include prework paleontological resource surveys prior to approval of surface disturbing activities and/or paleontological monitoring during construction of roads, well pads, and other proposed activities.

Incorporated by reference are the specific management goals, plans, and monitoring actions that are addressed in the RMPs:

The LFO RMP FEIS Section 4.5.2 analyzed adverse and beneficial impacts to paleontological resources from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated the current condition of paleontological resources in the analysis areas and analyzed likely future paleontological resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated paleontological protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions 5053 – 5064. Also reference Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The BB RMP FEIS Section 4.5.2 analyzed adverse and beneficial impacts to geological and paleontological resources from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated the current condition of paleontological protections in the Proposed Plan, which subsequently were incorporated into the ROD WFO Decisions 5026 – 5045, and CyFO Decisions 5024 – 5043. Also reference Appendix F. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The Proposed Action Alternative would make approximately 12,800 acres of federal mineral estate available for lease sale. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting paleontological resources.

Parcels offered for sale are subject to the stipulations shown in Attachment 1, which may include restrictions on surface use or occupancy within designated “very high” or “high” potential fossil yield classification areas for the protection of fossil resources.

### **3.7.2 Soils**

The Proposed Action Alternative would offer ten parcels, totaling 12,756.780 acres, for lease sale for potential oil and gas development.

There are no direct impacts to soil resources through the administrative action of leasing. Indirect effects from leasing may occur to soil resources if development were to occur. At the time of a site-specific application, such as an APD, soil types will be identified and conditions of approval to mitigate adverse impacts to the soil may be imposed at that time.

The LFO FEIS Section 4.1.3 analyzed adverse and beneficial impacts to soils from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated soil protections that were in the Proposed Plan which subsequently were incorporated, including reclamation, in the ROD in Decisions 1009 – 1025. Additional soil protections occur throughout the ROD when the soil protection is secondary to another resource such as the designation right-of-way exclusion and avoidance area in Decision 6016 that limits the area available for new surface disturbance for rights-of-ways. This limitation secondarily benefits soils or reduces adverse impacts to soils through co-location. Also reference Appendix B.

Reclamation Standards, Appendix E. Required Design Features and Best Management Practices, and Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The Bighorn Basin FEIS Section 4.1.3 analyzed adverse and beneficial impacts to soils from a variety of of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated soil protections that were in the Proposed Plan which subsequently were incorporated, including reclamation, in WFO RMP Decisions 1007 – 1023, and CyFO RMP Decisions 1007 – 1023. Additional soil protections occur throughout the ROD when the soil protection is secondary to another resource. Also reference Appendix F. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The Proposed Action Alternative would make approximately 12,800 acres of federal mineral estate available for lease sale. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action Alternative would allow mineral development to occur while protecting soil resources.

Parcels offered for lease sale are subject to the stipulations shown in Attachment 1, which includes restrictions on slope and limited reclamation potential soils, and Standard Lease Notice 1.

### **3.7.3 Water**

The Proposed Action Alternative would offer ten parcels, totaling 12,756.780 acres, for lease sale for potential oil and gas development.

At the time of a site-specific application, such as an APD, surface and subsurface water resources will be identified, evaluated, and conditions of approval to mitigate adverse impacts to the water related resources may be imposed at that time. Parcels offered for sale are subject to the stipulations shown in Attachment 1.

The LFO FEIS Section 4.1.3 analyzed adverse and beneficial impacts to surface water and groundwater (water) from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated water protections that were in the Proposed Plan which subsequently were incorporated, including protections for watershed health, in the ROD in Decisions 1009 – 1025. Additional water protections occur throughout the ROD when the water protection is secondary to another resource, such as application of timing limitations to surface-disturbing activities within water channels that will adversely affect spawning, egg incubation, and fry areas in fish-bearing streams in Decision 4053. Also reference Appendix B. Reclamation Standards, Appendix E. Required Design Features and Best Management Practices, and Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The BB RMP FEIS 4.1.4 analyzed adverse and beneficial impacts to surface water and groundwater (water) from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated water protections that were in the Proposed Plan

which subsequently were incorporated, including protections for watershed health, in the in the WFO RMP Decisions 1024 – 1042, and CyFO Decisions 1024 – 1042.

Additional water protections occur throughout the ROD when the water protection is secondary to another resource, such as management of fisheries habitat to improve and enhance its value through the implementation of management practices such as vegetation manipulation and planting, installing sediment and erosion control structures, fencing, and acquiring, developing, and maintaining water sources, in WFO Decision 4055 and CyFO Decision 4056. This management for fish habitat secondarily benefits water resources or reduces adverse impacts to water resources. Also reference Appendix F. Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The Proposed Action Alternative would make approximately 12,800 acres of federal mineral estate available for lease sale. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action Alternative would allow for mineral development to occur while protecting water resources.

No parcels were nominated which affect sole source aquifers or public water supply areas in the WR/BBD. Parcels offered for lease sale are subject to the stipulations shown in Attachment 1, for the protection of perennial surface waters, riparian-wetland areas, and playas; and Standard Lease Notice 1.

### **3.7.4 Vegetation, Including Invasive Species and T&E Species**

The Proposed Action Alternative would offer ten parcels, totaling 12,756.780 acres, for lease sale for potential oil and gas development.

There are no direct impacts to vegetation resources through the administrative action of leasing. Indirect effects from leasing may occur to vegetation if development were to occur. At the time of a site-specific application, such as an APD, vegetation, including invasive species and T&E species, will be identified and conditions of approval to mitigate adverse impacts to vegetation, including invasive species and T&E species, may be imposed at that time.

The LFO RMP FEIS analyzed adverse and beneficial impacts to vegetation resources from various types of BLM authorized activities and cumulative impacts from other activities in the Proposed Resource Management Plan. The FEIS describes the current condition of vegetation resources and analyzed the likely future of conditions under the Proposed Resource Management Plan. The FEIS also evaluated vegetation protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions.

LFO RMP FEIS Sections:

- 4.4.1 Vegetation: Forests, Woodlands, and Aspen Communities
- 4.4.2 Vegetation: Grassland and Shrubland Communities
- 4.4.3 Invasive Species and Pest Management
- 4.4.4 Riparian-Wetland Resources

LFO RMP Decisions Table 2.1. 4000 Biological Resources, Vegetation  
Decisions 4001 – 4007 Vegetation: General

Decisions 4008 – 4012 Vegetation: Forests, Woodlands, and Aspen Communities  
Decisions 4013 – 4017 Vegetation: Grassland and Shrubland Communities  
Decisions 4018 – 4027 Invasive Species and Pest Management  
Decisions 4028 – 4032 Riparian-Wetland Resources

The BB RMP FEIS analyzed adverse and beneficial impacts to vegetation resources from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS describes the current condition of vegetation resources in the analysis areas and analyzed likely future of vegetation resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated vegetation protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions for WFO and CyFO.

BB RMP FEIS Sections:

4.4.1 Vegetation: Forests, Woodlands, and Forest Products  
4.4.2 Vegetation: Grassland and Shrubland Communities  
4.4.3 Riparian-Wetland Resources  
4.4.4 Invasive Species and Pest Management

WFO RMP Decisions Table 3.8. 4000 Biological Resources, Vegetation

Decisions 4001 – 4026 Vegetation: Forests, Woodlands, and Forest Products  
Decisions 4027 – 4030 Vegetation: Grassland and Shrubland Communities  
Decisions 4031 – 4036 Riparian-Wetland Resources  
Decisions 4037 – 4049 Invasive Species and Pest Management

CyFO RMP Decisions Table 3.8. 4000 Biological Resources, Vegetation

Decisions 4001 – 4027 Vegetation: Forests, Woodlands, and Forest Products  
Decisions 4028 – 4031 Vegetation: Grassland and Shrubland Communities  
Decisions 4032 – 4037 Riparian-Wetland Resources  
Decisions 4038 – 4049 Invasive Species and Pest Management

The Proposed Action Alternative would make approximately 12,800 acres of federal mineral estate available for lease sale. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting protecting or mitigating vegetation, including invasive species and T&E species, resources.

Parcels offered for sale are subject to the stipulations shown in Attachment 1, which includes the protection of perennial surface waters, riparian-wetland areas, playas, water, and disturbance within 500 feet perennial surface water. Further protections are implemented through Lease Stipulation No. 2.

### **3.7.5 Wildlife & Fish**

The Proposed Action Alternative would offer ten parcels, totaling 12,756.780 acres, for lease sale for potential oil and gas development.

There are no direct impacts to wildlife, fish, or wild horse habitat resources through the administrative action of leasing. The BLM manages a variety of habitats that possess the biological and physical attributes important in the life-cycles of many wildlife species. The

diversity of habitats and landscapes provide important areas for breeding, birthing, foraging, wintering, and migration. Indirect effects from leasing may occur to the habitat if development were to occur. At the time of a site-specific application, such as an APD, wildlife, fish, or wild horse resources will be identified and conditions of approval to mitigate adverse impacts may be imposed at that time.

The LFO RMP FEIS Section 4.4 analyzed adverse and beneficial impacts to wildlife, fish, or wild horses from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS describes the current condition of biological resources in the analysis areas and analyzed likely future resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions.

LFO RMP FEIS Sections:

- 4.4.5 Fish & Wildlife Resources: Fish
- 4.4.6 Fish & Wildlife Resources: Wildlife
- 4.4.7 Special Status Species – Plants
- 4.4.8 Special Status Species – Fish
- 4.4.9 Special Status Species – Wildlife
- 4.4.10 Wild Horses

LFO RMP Decisions Table 2.14. 4000 Biological Resources, Fish and Wildlife

- Decisions 4033 – 4048 Fish & Wildlife Resources: General
- Decisions 4049 – 4055 Fish & Wildlife Resources: Fish
- Decisions 4056 – 4060 Fish & Wildlife Resources: Wildlife
- Decisions 4061 – 4070 Fish & Wildlife Resources: Big Game
- Decisions 4071 – 4060 Fish & Wildlife Resources: Raptors

LFO RMP Decisions Table 2.15. 4000 Biological Resources, Special Status Species

- Decisions 4072 – 4080 Special Status Species – General
- Decisions 4081 – 4086 Special Status Species – Plants
- Decisions 4087 Special Status Species – Fish
- Decisions 4088 – 4120 Special Status Species – Wildlife

LFO RMP Decisions Table 2.16. 4000 Biological Resources, Wild Horses

- Decisions 4121 – 4132 Wild Horses

LFO ROD:

Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities

Appendix J. Species Mentioned in the Lander Field Office Resource Management Plan and Environmental Impact Statement

Appendix I. Wild Horse Management in the Lander Planning Area

The BB RMP FEIS Section 4.4 analyzed adverse and beneficial impacts to wildlife, fish, or wild horses from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS describes the current condition of biological resources in the analysis areas and analyzed likely future resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions.

BB RMP FEIS Sections:

- 4.4.5 Fish & Wildlife Resources: Fish
- 4.4.6 Fish & Wildlife Resources: Wildlife
- 4.4.7 Special Status Species – Plants
- 4.4.8 Special Status Species – Fish
- 4.4.9 Special Status Species – Wildlife
- 4.4.10 Wild Horses

WFO RMP Decisions Table 3.12. 4000 Biological Resources, Fish and Wildlife Resources

- Decisions 4050 Fish & Wildlife Resources: General
- Decisions 4051 – 4057 Fish & Wildlife Resources: Fish
- Decisions 4058 – 4082 Fish & Wildlife Resources: Wildlife

WFO RMP Decisions Table 3.13. 4000 Biological Resources, Special Status Species

- Decisions 4083 – 4086 Special Status Species – General
- Decisions 4087 – 4115 Special Status Species – Greater Sage-Grouse
- Decisions 4016 – 4118 Special Status Species – Raptors
- Decisions 4119 – 4120 Special Status Species – Migratory Birds
- Decisions 4121 – 4124 Special Status Species – Mammals
- Decisions 4125 - 4130 Special Status Species – Fish
- Decisions 4131 - 4132 Special Status Species – Amphibians and Reptiles
- Decisions 4133 – 4138 Special Status Species – Plants

WFO RMP Decisions Table 3.14. 4000 Biological Resources, Wild Horses

- Decisions 4139 – 4150 Wild Horses

WFO ROD:

Appendix F. Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities

Appendix K. Biological Opinion

Appendix N. Seasonal Raptor Stipulations for All Surface-Disturbing and Disruptive Activities

CyFO RMP Decisions Table 3.12. 4000 Biological Resources, Fish and Wildlife Resources

- Decisions 4050 – 4051 Fish & Wildlife Resources: General
- Decisions 4052 – 4058 Fish & Wildlife Resources: Fish
- Decisions 4059 – 4083 Fish & Wildlife Resources: Wildlife

CyFO RMP Decisions Table 3.13. 4000 Biological Resources, Special Status Species

- Decisions 4084 – 4087 Special Status Species – All
- Decisions 4088 – 4116 Special Status Species – Greater Sage-Grouse
- Decisions 4017 – 4119 Special Status Species – Raptors
- Decisions 4120 – 4121 Special Status Species – Migratory Birds
- Decisions 4122– 4128 Special Status Species – Mammals
- Decisions 4129 - 4134 Special Status Species – Fish
- Decisions 4135 - 4136 Special Status Species – Amphibians and Reptiles
- Decisions 4137 – 4142 Special Status Species – Plants

CyFO RMP Decisions Table 3.14. 4000 Biological Resources, Wild Horses

- Decisions 4143 – 4155 Wild Horses

CyFO ROD:

Appendix F. Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities

The Proposed Action Alternative would make approximately 12,800 acres of federal mineral estate available for lease sale. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting wildlife, and special status wildlife, birds, or mammals resources and habitat.

Parcels offered for sale are subject to the stipulations shown in Attachment 1, with protections for wildlife, special status wildlife, birds, or mammals. The lease sale includes some LFO parcels that are open to oil and gas leasing subject to an NSO stipulation for the protection of habitat.

### 3.7.6 Greater Sage-Grouse

The Proposed Action Alternative would offer ten parcels, totaling 12,756.780 acres, for lease sale for potential oil and gas development. Table 3-3 summarizes the areas in core or priority habitat management areas (PHMAs), and the area of general habitat management areas (GHMAs) or non-core.

**Table 3-4 Sage-Grouse Habitat Area Summary**

Office	Analyzed Parcels	Analyzed Acres	Acres in PHMA/ Core	% in PHMA/ Core	Acres in GHMA/ Non-Core	% in GHMA/ Non-Core
Cody	0	0.000	0.000	0.00%	0.000	0.00%
Worland	0	0.000	0.000	0.00%	0.000	0.00%
Lander	10	12,756.780	457.020	3.58%	12,469.760	96.42%
<b>WR/BBD Total</b>	<b>10</b>	<b>12,756.780</b>	<b>457.020</b>	<b>3.58%</b>	<b>12,469.760</b>	<b>96.42%</b>

The greater sage-grouse is a BLM sensitive species that is ubiquitous in the WR/BBD. There are no direct impacts to sage-grouse or their habitat through the administrative action of leasing. Indirect effects from leasing may occur to sage-grouse habitat if development were to occur at the time of a site-specific application, such as an APD, the area will be evaluated for sage-grouse and further conditions of approval to mitigate adverse impacts to sage-grouse habitat may be imposed at that time.

The FEIS' discuss in detail the management concerns regarding greater sage-grouse throughout the documents.

LFO RMP FEIS Sections 4.4.9 and 3.2.4 describe the current conditions in the analysis areas and analyzed likely future potential effects of development in relation to sage-grouse habitat, and what protections might need to be implemented. The FEIS also evaluated protective measures that were incorporated in the RMP Decisions found in Table 2.1. 4000 Biological Resources, Special Status Species, Decisions 4102 – 4120. Also reference LFO ROD Appendix M. Greater Sage-Grouse Conservation Objectives Final Report Consistency Review, and Appendix M.1. Conservation Objectives.

The BB RMP FEIS Sections 4.4.9 and 3.2.5 describe the current conditions in the analysis areas and analyzed likely future potential effects of development in relation to sage-grouse habitat, and what protections might need to be implemented. The FEIS also evaluated protective measures that were incorporated in the RMP Decisions found in Table 3.13. 4000 Biological Resources, Special Status Species, Greater Sage-Grouse, WFO Decisions 4087 – 4115, and CyFO Decisions 4088 – 4116. For both WFO and CyFO, also reference Chapter 2 Approved Resource Management Plan for Greater Sage-Grouse Habitat, and Appendix D. Greater Sage-Grouse Habitat Management Strategy.

The portions of parcels WY-1702-315 and WY-1702-3 which fall in the jurisdiction of the RFO were analyzed in the HDD May 2016 EA in accordance with the 2015 Approved Resource Management Plan Amendment and Record of Decision for Greater Sage-Grouse for the Rawlins Field Office, which is specific to development in relation to sage-grouse habitat, and what protections might need to be implemented.

The LUPs in BLM Wyoming direct the priority for leasing of fluid mineral resources to be outside of sage-grouse habitat areas. If leasing occurs in sage-grouse habitat areas, all leasing is consistent with stipulations developed during land use planning, which may include No Surface Occupancy (NSO) and timing limitations for surface disturbing activities.

The Proposed Action Alternative would make approximately 12,800 acres of federal mineral estate available for lease sale within sage-grouse habitat areas. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting sage-grouse habitats.

The leases in core or priority habitat will be offered subject to the appropriate sage-grouse protective stipulations. These include seasonal timing limitations protecting breeding and nesting areas and other prescriptions within PHMAs. Outside of Designated Development Areas, these seasonal limitations are applied to operations and maintenance activities as well as drilling. Required design features and best management practices are applied to limit the adverse impacts of oil and gas development on greater sage-grouse.

Parcels offered for sale are subject to the stipulations shown in Attachment 1, for protection of sage-grouse habitat, and all leases have the added protection of Standard Lease Notice 3. The disturbance density & cap stipulation, LFO 4109, WFO 4109, and CyFO 4110, notifies the potential bidder, in part, ‘This lease does not guarantee the lessee the right to occupy the surface of the lease for the purpose of producing oil and natural gas within Greater Sage-Grouse designated PHMA (Core only).’

### **3.7.7 Cultural Resources**

The Proposed Action Alternative would offer ten parcels, totaling 12,756.780 acres, for lease sale for potential oil and gas development.

As provided for in the Wyoming State Protocol Appendix B.2., issuance of leases is exempt from Class III cultural resource inventory; the sale of a lease will have no effect on known or unknown cultural properties. Indirect effects from leasing may occur to cultural resources if development were to occur. A Class III cultural resource inventory would be required at the time of a site specific proposal, such as an APD. Tribal consultation is conducted on a case-by-case basis. Avoidance or mitigation measures would be developed once the site-specific cultural inventory is completed.

The LFO RMP FEIS Section 4.5.1 analyzed adverse and beneficial impacts to cultural resources from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS describes the current condition of cultural resources in the analysis areas and analyzed likely future cultural resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated cultural resource protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions 5001 – 5052. Also reference Appendix C., Exception, Modification, and Waiver Criteria, Avoidance Criteria, and Special Management for Designated Corridors, Part C.4.2. Cultural Resources, and Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The BB RMP FEIS Section 4.5.1 analyzed adverse and beneficial impacts to cultural resources from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS describes the current condition of cultural resources in the analysis areas and analyzed likely future cultural resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated cultural resource protections that were in the Proposed Plan which subsequently were incorporated in the WFO RMP Decisions 5001 – 2025, and CyFO Decisions 5001 – 5023. Also reference for both WFO and CyFO Appendix B., Oil and Gas Lease Notices and Lease Stipulations, including Exception, Modification, and Waiver Criteria; and Appendix F. Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities

The Proposed Action Alternative would make approximately 12,800 acres of federal mineral estate available for lease sale. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting cultural resources.

To reduce potential impacts to known cultural sites, management actions in the RMPs apply avoidance of surface-disturbing activities, and protect the foreground of important cultural sites where setting is an important aspect of the integrity of the site. Parcels offered for sale are subject to the stipulations shown in Attachment 1, and common to all leases Special Lease Stipulation and Lease Stipulation No. 1.

### **3.7.8 Visual Resource Management (VRM)**

The Proposed Action Alternative would offer ten parcels, totaling 12,756.780 acres, for lease sale for potential oil and gas development.

There are no direct impacts to VRM resources through the administrative action of leasing. Surface occupancy or use is restricted within designated VRM Class I and II areas for the protection of VRM Class I and II areas. Indirect effects from leasing may occur to VRM if development were to occur. At the time of a site-specific application, such as an APD, VRM resources impacts will be identified and conditions of approval to mitigate adverse impacts to VRM resources may be imposed at that time.

The LFO RMP FEIS Section 4.5.3 analyzed adverse and beneficial impacts to VRM from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated the current condition of VRM, and identified protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions 5065 – 5070.

The BB RMP FEIS Section 4.5.3 analyzed adverse and beneficial impacts to VRM from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated VRM protections that were in the Proposed Plan which subsequently were incorporated in the in the ROD WFO Decisions 5046 – 5054, and CyFO Decisions 5044 – 5052.

The Proposed Action Alternative would make approximately 12,800 acres of federal mineral estate available for lease sale. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting VRM and recreational resources.

Parcels offered for sale are subject to the stipulations shown in Attachment 1, which include protection of VRM Class I and II areas.

## 4. Consultation and Coordination

- Parcels located within Bureau of Reclamation (BOR) lands are reviewed by BOR.
- Where federal minerals have been nominated for leasing underlying private surface, the private land owners have been notified, consistent with Washington Office Instruction Memorandum 2009-184.
- Tribal consultation is conducted as directed in BLM Handbook H-8120-1.
- The BLM coordinates with the Wyoming Game and Fish Department.
- A BLM interdisciplinary team reviewed all parcels in accordance with Washington Office Instruction Memorandum 2010-117. Table 4-1 lists the members of the BLM interdisciplinary team.

**Table 4-1 Interdisciplinary Team**

<b>Name</b>	<b>Title</b>	<b>BLM Office</b>	<b>Responsible for:</b>
Chad Krause	Assistant Field Manager	CyFO	CyFO Oversight
Gretchen Hurley	Geologist	CyFO	Geology and Paleontological Resources
Destin Harrell	Wildlife Biologist	CyFO	Wildlife/T&E
Kierson Crume	Archeologist	CyFO	Cultural
Paul Rau	Outdoor Recreation Planner	CyFO	Recreation/VRM//Wilderness
Bradley Johnson	Planning & Environmental Coordinator	CyFO	Review
Debra Larsen	Land Law Examiner	LFO	LFO Oversight: Core Team Lead
Tim Vosburgh	Wildlife Biologist	LFO	Wildlife, T&E and Sensitive Species
Craig Bromley	Archaeologist	LFO	Cultural and Paleontological Resources
Jared Oakleaf	Outdoor Recreation Planner	LFO	Recreation/VRM/Wilderness
Kristin Yannone	Planning & Environmental Coordinator	LFO	Review
Darci Stafford	Natural Resource Specialist	WFO	Site Visits
Ted Igleheart	Wildlife Biologist	WFO	Wildlife/T&E
Tim Stephens	Wildlife Biologist	WFO	Wildlife/T&E
Marit Bovee	Archaeologist	WFO	Cultural and Paleontological Resources
Adam Babcock	Outdoor Recreation Planner	WFO	Recreation/VRM/Wilderness
Jared Dalebout	Hydrologist	WFO	Water Resources
Karen Hepp	Range Management Specialist	WFO	T&E Plants
Holly Elliott	Planning & Environmental Coordinator	WFO	Review & WFO Oversight: Core Team Lead
Thomas Foertsch	District Resource Advisor	HDD	Overlapping Parcels: Reviewer
Ryan McCammon	Physical Scientist: Air Quality	WSO	Air Quality & Climate Change
Charis Tuers	Physical Scientist: Air Quality	WSO	Air Quality & Climate Change
Rita Allen	District Resource Advisor	WR/BBD	All: Preparer
Travis Bargsten	Natural Resource Specialist	WSO	Reviewer

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