



United States Department of the Interior



BUREAU OF LAND MANAGEMENT
Dillon Field Office
1005 Selway Drive
Dillon, Montana 59725-9731
www.blm.gov/mt

In Reply Refer To:

1600/3100 (MTB050)

May 19, 2014

Dear Reader:

The Bureau of Land Management (BLM) Dillon Field Office has prepared an environmental assessment (EA) to analyze the potential effects from offering 26 nominated lease parcels for competitive oil and gas leasing in a sale tentatively scheduled to occur on October 21, 2014.

The EA with an unsigned Finding of No Significant Impact (FONSI) is available for a 30-day public comment period. Written comments must be postmarked by June 20, 2014, to be considered. Comments may be submitted using one of the following methods:

Email: BLM_MT_Great_Fall_Lease_EA@blm.gov

Mail: Great Falls Oil and Gas Field Office
Attention: Tessa Wallace
1101 15th Street North
Great Falls, MT 59401

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Upon review and consideration of public comments, the EA will be updated as needed. Based on our analysis, parcels recommended for leasing in our assessment would be included as part of a competitive oil and gas lease sale tentatively scheduled to occur on October 21, 2014.

Prior to issuance of any leases, the Decision Record and FONSI will be finalized and posted for public review on our BLM website. Please refer to the Montana/Dakotas BLM website at <http://blm.gov/qtld>. Current and updated information about our EAs, Lease Sale Notices, and corresponding information pertaining to this sale can be found at the link referenced above.

If you have any questions or would like more information about lease sale notices or the issuance of the EA, Decision Record and FONSI, please contact me at 406-683-8000.

Sincerely,

Cornelia H. Hudson
Field Manager
Dillon Field Office

United States Department of the Interior
Bureau of Land Management

Environmental Assessment DOI-BLM-MT-B050-2014-013-EA
March 25, 2014

Project Title: Oil and Gas Lease Parcel Sale
October 21, 2014

Location: Dillon Field Office
Please see Appendix A for the complete list of nominated parcels.



Dillon Field Office Oil and Gas Lease Sale EA
DOI-BLM-MT-B050-2014-013-EA

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Dillon Field Office Oil and Gas Lease Sale EA

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1.0 PURPOSE AND NEED

1.1 Introduction

It is the policy of the Bureau of Land Management (BLM) to make mineral resources available for use and to encourage development of mineral resources to meet national, regional, and local needs. This policy is based on various laws, including the Mineral Leasing Act of 1920 and the Federal Land Policy and Management Act of 1976. The Federal Onshore Oil and Gas Leasing Reform Act of 1987 Sec. 5102(a)(b)(1)(A) directs the BLM to conduct quarterly oil and gas lease sales in each state whenever eligible lands are available for leasing. The Montana State Office conducts mineral estate lease auctions for lands managed by the federal government, whether the surface is managed by the Department of the Interior (BLM or Bureau of Reclamation), United States Forest Service, or other departments and agencies. In some cases the BLM holds subsurface mineral rights on split estate lands where the surface estate is owned by another party, other than the federal government. Federal mineral leases can be sold on such lands as well. The Montana State Office has historically conducted five lease sales per year.

Members of the public file Expressions of Interest (EOI) to nominate parcels for leasing by the BLM. From these EOIs, the Montana State Office provides draft parcel lists to the appropriate field offices for review. BLM field offices then review legal descriptions of nominated parcels to determine: if they are in areas open to leasing; if new information has come to light which might change previous analyses conducted during the land use planning process; if there are special resource conditions of which potential bidders should be made aware; and which stipulations should be identified and included as part of a lease. Ultimately, all of the lands in proposed lease sales are nominated by private individuals, companies, or the BLM, and therefore represent areas of high interest.

This environmental assessment (EA) has been prepared to disclose and analyze the potential environmental consequences from leasing 9 of the 26 nominated lease parcels which are located north, northwest and south of Dillon, Montana, in the Beaverhead and Big Hole Watersheds in Townships T4S, R 7 and 8W, T5S, R9W, T6S, R10W, T7S, R9W and T9S, R9W. The subject parcels are located within the Bureau of Land Management's (BLM) Dillon Field Office (DFO) and are proposed to be included as part of a competitive oil and gas lease sale tentatively scheduled to occur in October 2014.

The analysis area includes the 26 nominated parcels in Beaverhead and Madison counties (Map 1).

1.2 Purpose and Need for the Proposed Action

The purpose of offering parcels for competitive oil and gas leasing is to provide opportunities for private individuals or companies to explore for and develop federal oil and gas resources in north, northwest and south of Dillon, Montana after receipt of necessary approvals and to sell the oil and gas in public markets.

This action is needed to help meet the energy needs of the people of the United States. By conducting lease sales, the BLM provides for the potential increase of energy reserves for the U.S., a steady source of income, and at the same time meets the requirement identified in the Energy Policy Act, Sec. 362(2), Federal Oil and Gas Leasing Reform Act of 1987, and the Mineral Leasing Act of 1920, Sec. 17. Oil and gas companies filed Expression of Interest (EOI) to nominate parcels by the BLM Montana. The BLM needs to respond to the EOIs by determining whether or not to recommend these particular oil and gas lease for sale and, if so, with any stipulations attached.

The decision to be made is whether to sell and issue oil and gas leases on the lease parcels identified, and, if so, identify stipulations that would be included with specific lease parcels at the time of lease sale.

1.3 Conformance with Land Use Plan(s)

This EA is tiered to the decisions, information and analysis contained in the Dillon Resource Management Plan (RMP) approved in February 2006. The Dillon RMP is the governing land use plan for the Dillon Field Office. A more complete description of activities and impacts related to oil and gas leasing, development, and production can be found in the Dillon RMP (BLM 2006:43-46, Appendices K to M) and in the Proposed Dillon Resource Management Plan/Final EIS (BLM 2005:319-320, 326-327) and the Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development-The Gold Book, and online at http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices.html.

Analysis of leasing 9 of the 26 parcels is documented in this EA, and was conducted by Dillon Field Office resource specialists who relied on professional knowledge of the areas involved, review of current databases and file information, and site visits to ensure that appropriate stipulations were recommended for a specific parcel. This preliminary analysis also identified the need to defer entire or partial parcels from leasing pending further environmental review.

At the time of this review it is unknown whether a particular parcel will be sold and a lease issued. It is unknown when, where, or if future well sites, roads, and facilities might be proposed. Assessment of potential activities and impacts was based on potential well densities discerned from the Reasonably Foreseeable Development (RFD) Scenario developed for the Dillon Field Office. Detailed site-specific analysis and mitigation of activities associated with

any particular lease would occur when a lease holder submits an application for permit to drill (APD).

Offering the parcels for sale and issuing leases would not be in conflict with any local, county, or state laws or plans.

1.4 Public Scoping and Identification of Issues

Public scoping for this project was conducted through a 15-day scoping period advertised on the BLM Montana State Office website and posted on the Dillon Field Office website National Environmental Policy Act (NEPA) notification log. Scoping was initiated March 25, 2014; comments were received through April 9, 2014. Comments received pertained to general questions related to the leasing process, split estate, interpretation of leasing stipulations, and effects on wildlife.

The BLM focuses its analysis on issues that are truly significant to the action in question, rather than amassing needless detail” (40 CFR 1500.1(b)). Issues have a relationship with the proposed action; are within the scope of analysis; and are amenable to scientific analysis.

The issues carried forward through analysis in this EA are associated with air resources, greenhouse gas emission and climate change, economic resources, socioeconomics, cultural resources, paleontological resources, water resources, recreation and visual resources, Block Mountain ACEC, wildlife habitat, Special Status and Sensitive Species, vegetation, livestock grazing management, invasive, non-invasive species and noxious weeds,

Issues considered but eliminated from detailed analysis:

The BLM considered other issues, listed below, but decided not to analyze those in further detail. The aspects of the existing environment that the BLM determined to not be present or not potentially impacted by this project include: Westslope cutthroat trout, National Historic/Scenic Trails, Wilderness or Wilderness Study Areas – there are no known populations or habitats supporting Westslope cutthroat trout within the analysis area. None of the lease parcels falls within designated National Historic or Scenic Trails, Wilderness areas or Wilderness Study Areas. Therefore, no further analysis will occur for these resources.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Alternative A - No Action

The No Action Alternative would exclude all 26 parcels within the Dillon Field Office from the lease sale. Surface management would remain the same and ongoing oil and gas development would continue on surrounding federal, private, and state leases.

2.2 Alternative B - BLM Preferred Alternative

Under the BLM Preferred Alternative, 9 (7117.78 acres) of the 26 lease parcels would be offered with RMP lease stipulations and/or lease notices as necessary (Appendix B) for competitive oil and gas lease sale and lease issuance.

A total of 17 lease parcels containing 14198.22 acres of federal minerals would be deferred. These parcels have been found to contain general and priority Greater sage-grouse habitat. Greater sage-grouse conservation areas are being considered in the Dillon Field Office's ongoing planning efforts. Currently the Dillon Field Office is in the preliminary stages of amending the RMP to include new conservation measures for the Greater sage-grouse.

The parcels being analyzed in this document are MTM 105431-G4, MTM 105431-GT, MTM 105431-FX, MTM 105431-FY, MTM 105431-GA, MTM 105431-GB, MTM 105431-GN, MTM 105431-GC and MTM 79010-M8. From this point forward in this document the parcels will be referred to by the last two identifiers in the parcel name: G4, GT, FX, FY, GA, GB, GN, GC and M8 respectively.

2.2.1 Additional Considerations for Alternative B

In the instance of the parcels which are split estate, the BLM provided courtesy notification to private landowners that their lands are considered in this NEPA analysis and would be considered for inclusion in an upcoming lease sale. If any activity were to occur on such split estate parcels, the lessee and/or operator would be responsible for adhering to BLM requirements as well as reaching an agreement with the private surface landowners regarding access, surface disturbance and reclamation. Standard lease terms, stipulations, conditions, and operating procedures would apply to these parcels.

Standard operating procedures, best management practices and required conditions of approval (COA) and the application of lease stipulations change over time to meet overall RMP objectives. The COA's would be attached to permits for oil and gas lease operations to address site-specific concerns or new information not previously identified in the land use planning process. In some cases new lease stipulations may need to be developed and these types of changes may require an RMP amendment. There is no relief from meeting RMP objectives if local conditions were to become drier and hotter during the life of the RMP. In this situation, management practices might need to be modified to continue meeting overall RMP management

objectives. An example of a climate related modification is the imposition of additional conditions of approval to reduce surface disturbance and implement more aggressive dust treatment measures. Both actions reduce fugitive dust, which would otherwise be exacerbated by the increasingly arid conditions that could be associated with climate change.

Oil and gas leases would be issued for a 10-year period and would continue for as long thereafter as oil or 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, ownership of the minerals leased would revert back to the federal government, and the lease could be resold.

Drilling of wells on a lease would not be permitted until the lease owner or operator secures approval of a drilling permit and a surface use plan specified at 43 CFR 3162.

2.3 Alternatives Considered, but Eliminated from further Analysis

The Proposed Action Alternative would be to offer 26 parcels of federal minerals for oil and gas leasing, covering 21316 acres administered by the Dillon Field Office, in conformance with the existing land use planning decisions. The parcels are located in Beaverhead and Madison County(s), Montana. Parcel number, size, and detailed locations and associated stipulations are listed in Appendix A. Maps 1-9 indicate the detailed location of each parcel.

An alternative that included leasing all 17 deferred nominations that are located within or immediately adjacent to sage grouse core (or priority) habitat and general habitat was considered. There are several issues surrounding this potential alternative that complicate leasing (or offering to lease) these parcels at this time. Four key factors, as described below, were considered to reach this conclusion: 1) Quality of the affected habitat, 2) Recent research, funded in part by this Agency, 3) Ongoing conservation efforts by other Federal Agencies, and 4) Impending release of an amended Resource Management Plan with specific measures to address all of the above. All deferred parcels may be reconsidered once the Dillon RMP is amended. The total acreage of deferred parcels is 14198.22 acres.

2.3.1 Quality of the Affected Habitat

The 17 parcels are within, or immediately adjacent to, Greater Sage - Grouse Core Areas as designated by the State of Montana's Fish, Wildlife and Parks. As defined by the State of Montana Sage-Grouse Core Areas are:

Definition: Sage-grouse core areas are habitats associated with 1) Montana's highest densities of sage-grouse (25% quartile), based on male counts and/or 2) sage-grouse lek complexes and associated habitat important to sage-grouse distribution.

These Core Areas are also considered Preliminary Priority Habitat (PPH) as defined in BLM Instruction Memorandum (IM) No. 2012-043 “Greater Sage-Grouse Interim Management Policies and Procedures.” Most of the areas adjacent to PPH are considered Preliminary General Habitat (PGH), also defined in IM No. 2012-043.

As such, these areas represent some of the most important habitat areas for future conservation of Greater sage-grouse within the State of Montana.

2.3.2 Recent Research

Oil and gas development may, or may not be compatible with Sage-Grouse habitat depending upon the type and level of development proposed and the specific characteristics of the habitat to be affected. It has been shown that oil and gas development has negatively impacted sage-grouse in the past. Based on recent research, the current oil and gas stipulations for sage-grouse are considered ineffective to ensure that sage-grouse can persist within fully developed areas. With regard to existing restrictive stipulations applied by the BLM, (Walker et al. 2007a) research has demonstrated that the 0.4-km (0.25 miles) NSO lease stipulation is insufficient to conserve breeding sage-grouse populations in fully developed gas fields because this buffer distance leaves 98 percent of the landscape within 3.2 km (2 miles) open to full-scale development. Full-field development of 98 percent of the landscape within 3.2 km (2 miles) of leks in a typical landscape in the Powder River Basin reduced the average probability of lek persistence from 87 percent to 5 percent (Walker et al. 2007a).

Other studies also have assessed the efficacy of existing BLM stipulations for sage-grouse. Impacts to leks from energy development are most severe near the lek, and remained discernible out to distances more than 6 km (3.6 miles) (Holloran 2005, Walker et al. 2007a), and have resulted in the extirpation of leks within gas fields (Holloran 2005, Walker et al. 2007a). Holloran (2005) shows that lek counts decreased with distance to the nearest active drilling rig, producing well, or main haul road, and that development influences counts of displaying males to a distance of between 4.7 and 6.2 km (2.9 and 3.9 miles). All well-supported models in Walker et al. (2007a) indicate a strong effect of energy development, estimated as proportion of development within either 0.8 km (0.5 miles) or 3.2 km (2 miles), on lek persistence. Buffer sizes of 0.25 mi., 0.5 mi., 0.6 mi. and 1.0 mi. result in an estimated lek persistence of 5 percent, 11 percent, 14 percent, and 30 percent. Lek persistence in the absence of oil and gas field development averages approximately 85 percent. Models with development at 6.4 km (4 miles) had considerably less support, but the regression coefficient indicated that impacts were still apparent out to 6.4 km (4 miles) (Walker et al. 2007a). Tack (2010) found impacts of energy development on lek abundances (numbers of males per lek) out to 7.6 miles.

The previously used 2 mile timing stipulation only applies between March 1 to June 15, and development can occur within the 2 miles of the lek outside of those dates. Not all lease parcels

would be expected to see full field development as noted in the range of RFD, although effects would most likely mirror these studies to some degree proportionate to the amount of development that occurs outside of the stipulated timeframe.

Noise has been shown to affect sage-grouse and associated sagebrush obligates. Sage-grouse are known to select highly visible leks with good acoustic properties. Effects to sage-grouse would be a decrease in numbers of males on leks and activity levels and lower nest initiation near oil and gas development. Sage-grouse numbers on leks within 1.6 km (1 mile) of coal bed natural gas compressor stations in Campbell County, Wyoming were shown to be consistently lower than on leks not affected by this disturbance (Braun et al. 2002). Holloran (2005), Holloran et. al (2005a, 2005b), Holloran and Anderson (2005) reported that lek activity by sage-grouse decreased downwind of drilling activities, suggesting that noise had measurable “negative” impacts on sage-grouse. The actual level of noise (measured in decibels) that would not affect Greater Sage-Grouse breeding and nesting activities is presently unknown.

2.3.3 Ongoing conservation efforts by other Agencies

The Natural Resources Conservation Service (NRCS) has undertaken a large cooperative project within the 11 western states of which Greater Sage Grouse occupy. Through the Sage Grouse Special Initiative, NRCS provides financial and technical assistance to agricultural producers to initiate conservation practices beneficial to sage grouse and their habitat. To date (fiscal years 2013 and 2014) Montana NRCS has invested \$373,000 in Core area 10 (Beaverhead County) to improve habitat and address threats to sage grouse on 19,000 acres of privately owned ground. Similar efforts have been accomplished on 8,600 acres of private ground in Core Area 10 (Madison County), with an investment of \$174,000. Effectiveness monitoring of the conservation practices is an integral part of the NRCS program. Leasing and subsequent oil and gas development in core sage grouse habitat at this time could jeopardize the substantial investment that the federal government has made, and at the least, has the potential to affect any results of the effectiveness monitoring.

2.3.4 Dillon Resource Management Plan

The Dillon Field Office, located within the BLM’s Western Montana District, is in the process of amending its RMP to include analysis of Greater sage-grouse habitat and conservation. The process began during the fall of 2011, and the amended RMP has not yet been released for public review.

Since 2006 there have been substantial improvements in oil and gas development technology, as well as our understanding of Sage-Grouse life history requirements and development related disturbance impacts (see item 2 above). The amended RMP will provide stipulations relative to oil and gas development and Sage Grouse habitat based upon our current understanding, including those areas where no development may be the appropriate management response.

Based on these considerations and careful review, 17 parcels have been eliminated from detailed analysis in this EA and deferred to a later date.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter describes the affected existing environment (i.e., the physical, biological, social, and economic values and resources) within the analysis area, which includes the 9 nominated parcels in Beaverhead and Madison counties that could be affected by implementation of the alternatives described in Chapter 2.

The existing environment is described by the different resources found throughout the analysis area. Within each resource description, lease parcels containing the resource will be listed and analyzed further in Chapter 4.

Unless otherwise stated, resource analysis in this chapter, and Chapter 4, will be described in approximate acres due to the scaling and precision parameters associated with the Geographic Information System (GIS), in addition to being referenced to a different land survey.

Only those aspects of the affected environment that are potentially impacted by this project are described in detail. The following aspects of the existing environment were determined to be not present or not potentially impacted by this project include: lands with wilderness characteristics, cave and karst resources, wild and scenic rivers; wilderness study areas (WSAs); hazardous wastes or solids. These resources and resource uses will not be discussed further in this EA.

3.2 Air Resources

Air quality and climate are the components of air resources, which include applications, activities, and management of the air resource. Therefore, the BLM must consider and analyze the potential effects of BLM and BLM-authorized activities on air resources as part of the planning and decision making process.

The Environmental Protection Agency (USEPA) has the primary responsibility for regulating air quality, including seven nationally regulated ambient air pollutants. Regulation of air quality is also delegated to some states. Air quality is determined by atmospheric pollutants and chemistry, dispersion meteorology and terrain, and also includes applications of noise, smoke management, and visibility. Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years.

3.2.1 Air Quality

Analysis area air quality is good in rural areas within the Dillon FO. The USEPA air quality index (AQI) is an index used for reporting daily air quality. It tells how clean or polluted an area's air is and whether associated health effects might be a concern. The AQI focuses on the potential health effects a person may experience within a few hours or days after breathing

polluted air. The USEPA calculates the AQI for the five major criteria air pollutants regulated by the Clean Air Act (CAA): ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. For each of these pollutants, USEPA has established national air quality standards to protect public health. An AQI value of 100 generally corresponds to the national air quality standard for the pollutant, which is the level the USEPA has set to protect public health. The following terms help interpret the AQI information:

- **Good** - The AQI value is between 0 and 50. Air quality is considered satisfactory and air pollution poses little or no risk.
- **Moderate** - The AQI is between 51 and 100. Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.
- **Unhealthy for Sensitive Groups** - When AQI values are between 101 and 150, members of “sensitive groups” may experience health effects. These groups are likely to be affected at lower levels than the general public. For example, people with lung disease are at greater risk from exposure to ozone, while people with either lung disease or heart disease are at greater risk from exposure to particle pollution. The general public is not likely to be affected when the AQI is in this range.
- **Unhealthy** – The AQI is between 151 and 200. Everyone may begin to experience some adverse health effects, and members of the sensitive groups may experience more serious effects.
- **Very Unhealthy** – The AQI is between 201 and 300. This index level would trigger a health alert signifying that everyone may experience more serious health effects.

There is no Montana Department of Environmental Quality (MDEQ) ambient air quality monitors located in Beaverhead or Madison counties due to the low population in this area. The nearest MDEQ monitors are located in Butte (Silver Bow County), West Yellowstone (Gallatin County), and Bozeman (Gallatin County). AQI data for these monitors are summarized in Table 1 for a three-year period from 2010 through 2012. The data show that air quality in Gallatin County is good or moderate. In contrast, Butte sometimes experiences days with unhealthy air due primarily to wood-burning during winter temperature inversions and to wildfires. All areas within Beaverhead and Madison County are considered to be attaining the NAAQS and state air quality standards.

Table 1. USEPA Air Data Air Quality Index Report (2010–2012)

County	# Days in Period	# Days Rated Good or No Data		# Days Rated Moderate	# Days Rated Unhealthy for Sensitive Groups	# Days Rated Unhealthy	# Days Rated Very Unhealthy

Gallatin	1,096	866	79%	210	0	0	0
Silver Bow	1,089	795	73%	262	27	5	0

Source: USEPA 2013b.

Although ozone concentrations above the NAAQS have been monitored in some rural areas in other states with oil and gas activity, moderate ozone concentrations have been monitored in Montana throughout oil and gas areas. Based on 2010-2012 data from monitors located in eastern Montana (near Birney, Broadus, and Sidney), ozone concentrations are approximately 75 percent of the ozone NAAQS (MDEQ 2013).

Hazardous air pollutants (HAPs) would also be emitted from oil and gas operations, including well drilling, well completion, and gas and oil production. Recent air quality modeling performed for the Billings Field Office indicates that concentrations of benzene, ethyl benzene, formaldehyde, n-hexane, toluene, and xylene would be no more than 11 percent of applicable health-based standards and that the additional risk of cancer would be less than 0.25 in one million (BLM 2013).

Air resources also include visibility, which can be degraded by regional haze due in part to sulfur, nitrogen and particulate emissions from man-made sources or from natural events such as wildfires. Based on trends identified during 2005-2009, visibility improved slightly throughout the area during the 20 percent clearest days, as shown in Figure A. Visibility also improved slightly on the haziest days at the Yellowstone National Park site, but degraded at the Sula Peak monitor in Ravalli County.

Visibility is a particular concern in areas with scenic views, such as national parks and wilderness areas. The Dillon FO contains several Class 1 areas that have special visibility protection under the Clean Air Act, including the Anaconda-Pintler Wilderness and the Red Rock Lakes Wilderness. Yellowstone National Park and other Class I areas are also located nearby. Distances from the lease sale parcels to Class I areas are greater than 40 miles.

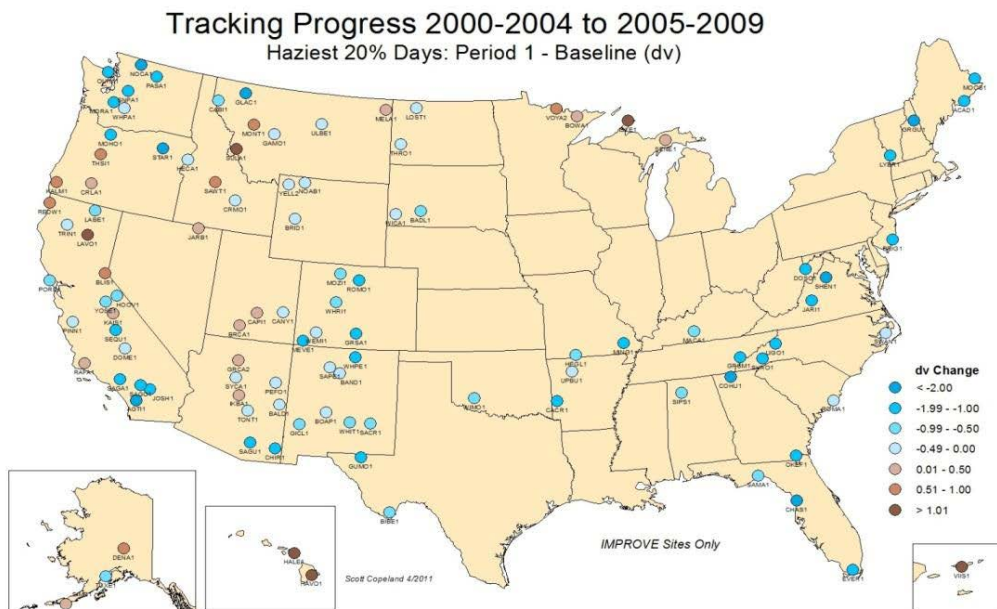
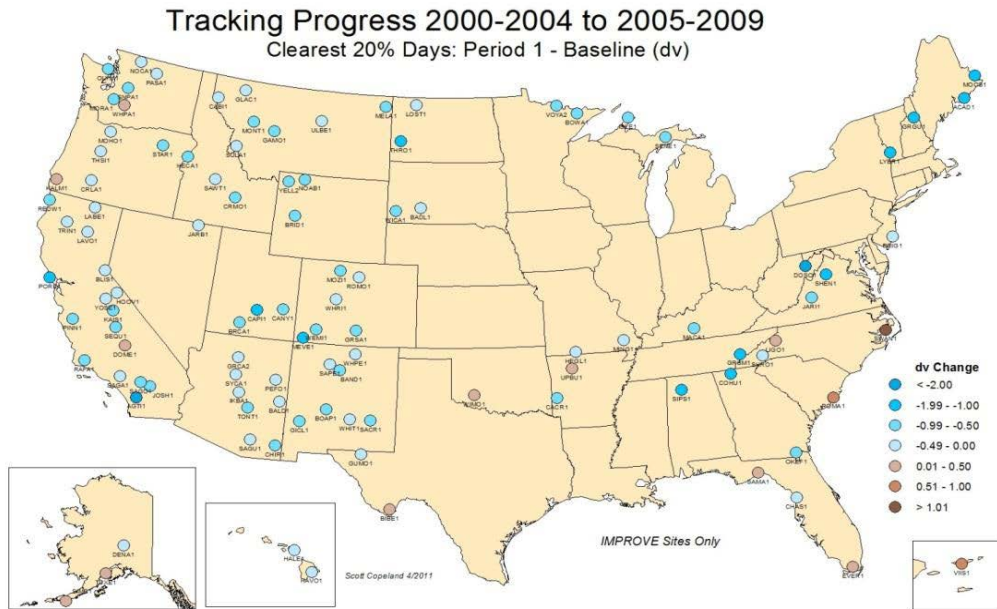


Figure A. Trends in haze index (deciview) on clearest and haziest days, 2005-2009.

Source: IMPROVE 2011.

3.2.2 Climate Change

Climate change is defined by the Intergovernmental Panel on Climate Change (IPCC) as “a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and persist for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use.” (IPCC 2013) Climate change and climate

science are discussed in detail in the Climate Change Supplementary Information Report (SIR) for Montana, North Dakota, and South Dakota, Bureau of Land Management (BLM 2010). This document is incorporated by reference into this EA.

The IPCC states: “Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased.” (IPCC 2013). The global average surface temperature has increased approximately 1.54°F from 1880 to 2012 (IPCC 2013). Warming has occurred on land surfaces, oceans and other water bodies, and in the troposphere (lowest layer of earth’s atmosphere, up to 4-12 miles above the earth). In southwestern Montana, surface air temperatures over the past 114 years have increased by an average of 0.16°F annually (NOAA 2014). Quarterly temperature increases over this period are shown in Figure B. Average temperature increases were 0.33°F for January-March, 0.07°F for April-June, 0.22°F for July-September, and were nearly unchanged for October-December.

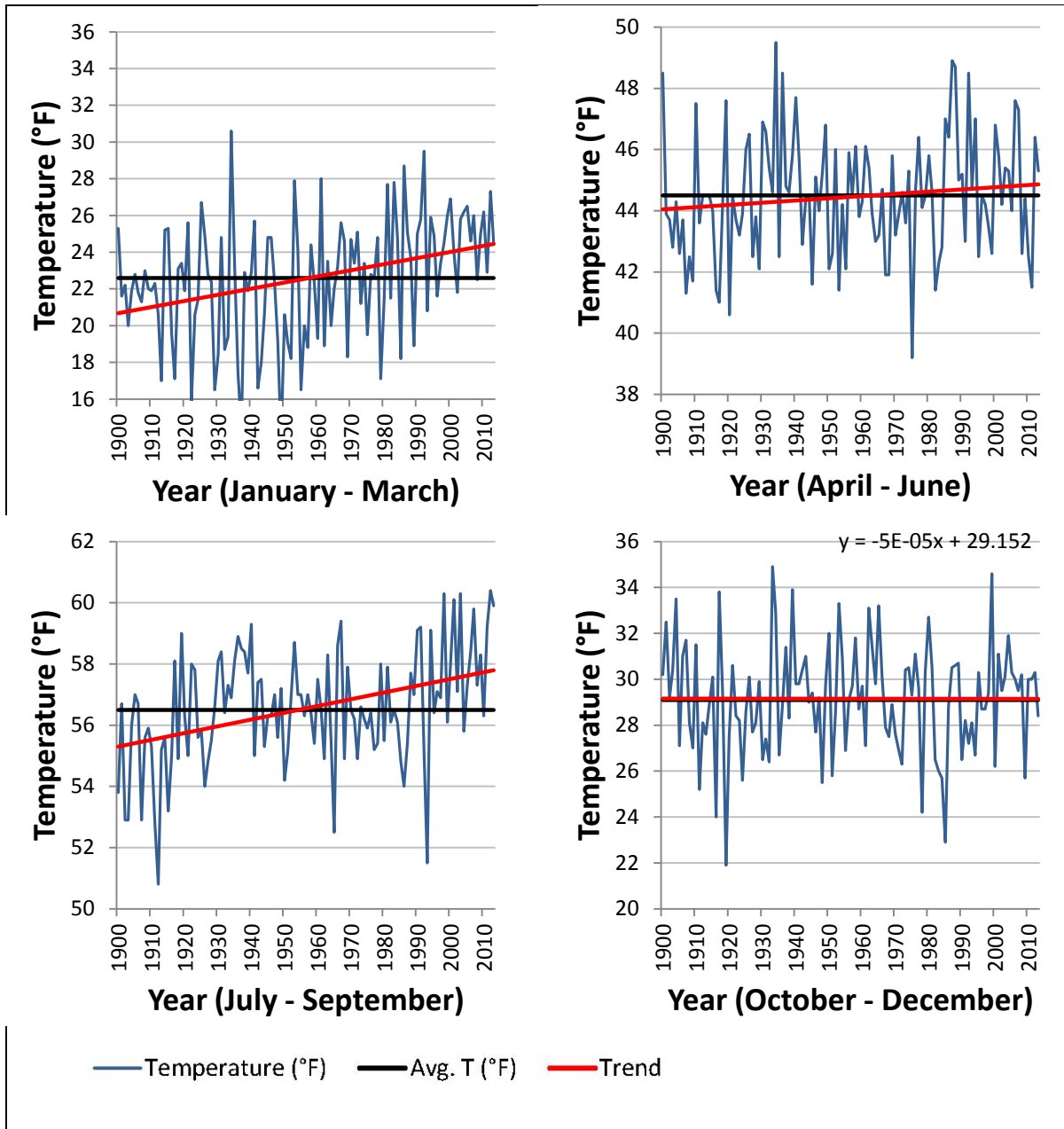


Figure B. Southwestern Montana temperature changes, 1900-2013

Source: Adapted from NOAA 2014.

Long-term precipitation changes have also been observed globally and in southwestern Montana. Total precipitation and shifts in precipitation timing and intensity have been observed. Within southwestern Montana, annual precipitation has changed at an annual rate of -0.13 inches per decade from 1900-2013. Figure C illustrates quarterly precipitation changes. Precipitation decreased during the first, third, and fourth calendar quarters, but increased slightly during the second quarter.

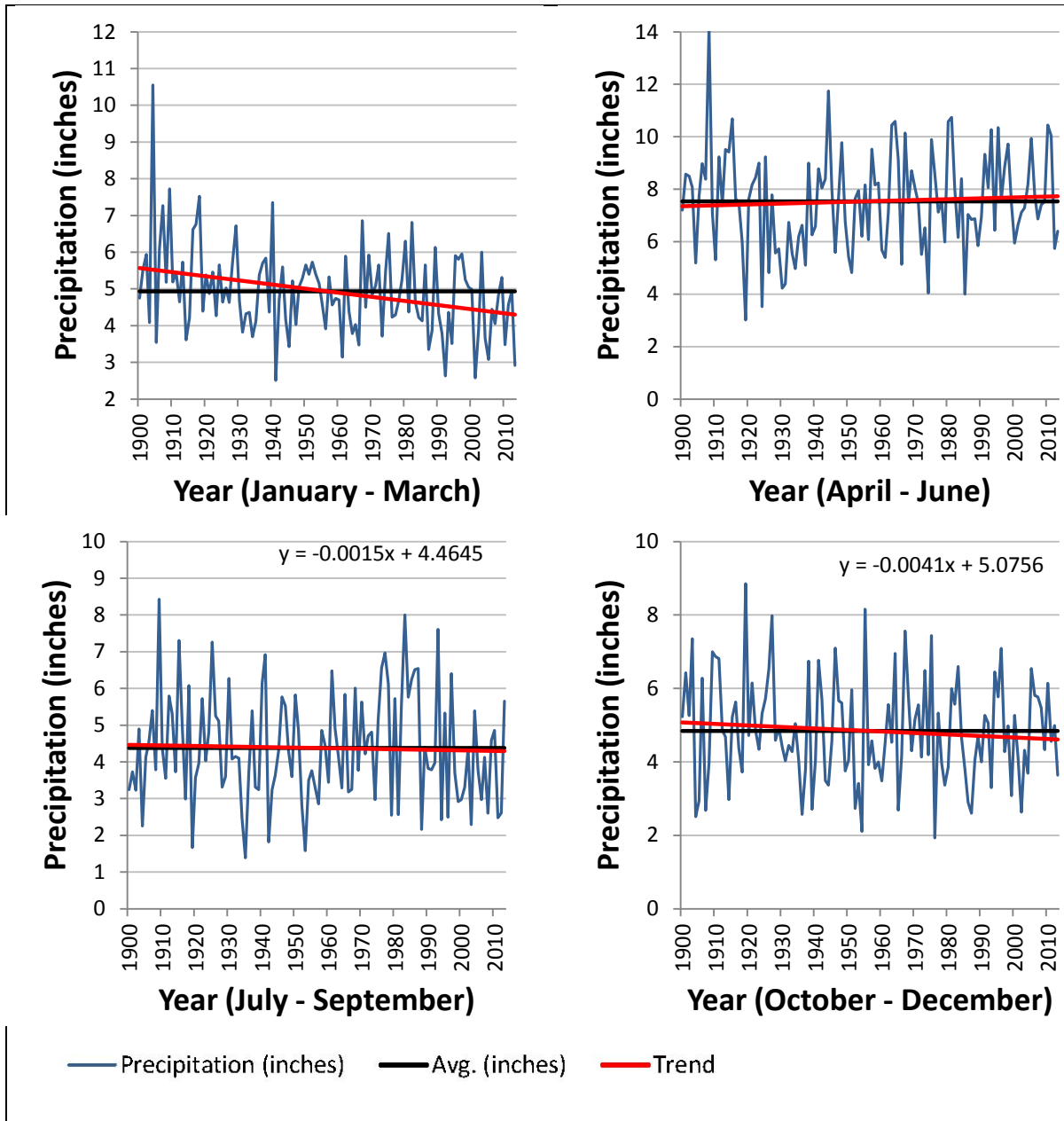


Figure C. Southwestern Montana precipitation changes, 1900-2013

Source: Adapted from NOAA 2014.

As summarized in the Climate Change SIR (BLM 2010), earth has a natural greenhouse effect wherein naturally occurring gases such as water vapor, carbon dioxide (CO₂), methane, and nitrous oxide (N₂O) absorb and retain heat. Without the natural greenhouse effect, earth would be approximately 60°F cooler (BLM 2010). Current ongoing global climate change is linked to the atmospheric buildup of greenhouse gases (GHGs), which may persist for decades or even centuries. Each GHG has a global warming potential that accounts for the intensity of each GHG's heat trapping effect and its longevity in the atmosphere (BLM 2010). The buildup of

GHGs such as CO₂, methane, N₂O, and halocarbons since the start of the industrial revolution has substantially increased atmospheric concentrations of these compounds compared to background levels. At such elevated concentrations, these compounds absorb more energy from the earth's surface and re-emit a larger portion of the earth's heat back to the earth rather than allowing the heat to escape into space than would be the case under more natural conditions of background GHG concentrations.

A number of activities contribute to the phenomenon of climate change, including emissions of GHGs (especially CO₂ and methane) from fossil fuel development and production, large wildfires, combustion of fossil fuels, changes to the natural carbon cycle, and changes to radiative forces and reflectivity (albedo). GHGs have a sustained climatic impact over different temporal scales due to their differences in global warming potential (described above) and lifespans in the atmosphere. For example, CO₂ may last 50 to 200 years in the atmosphere while the estimated atmospheric lifetime of methane is 12 years (BLM 2010).

With regard to statewide GHG emissions, Montana ranks in the lowest decile when compared to all the states (Ramseur 2007). The estimate of Montana's 2005 GHG emissions of 37 million metric tons (MMt) of gross consumption-based carbon dioxide equivalent (CO₂e) account for approximately 0.6 percent of the U.S. GHG emissions (CCS 2007).

Some information and projections of regional impacts are becoming increasingly available. Chapter 3 of the Climate Change SIR describes impacts of climate change in detail at various scales. The following bullet points summarize potential changes that are expected to occur at the regional scale. The U.S. Global Climate Research Program (USGCRP) identifies the Dillon FO as part of the Northwest region (USGCRP 2009).

- The region is expected to experience warmer temperatures with less snowfall.
- Temperatures are expected to increase more in winter than in summer, more at night than in the day, and more in the mountains than at lower elevations.
- Earlier snowmelt means that peak stream flow would be earlier, weeks before the peak needs of ranchers, farmers, recreationalist, and others. In late summer, rivers, lakes, and reservoirs would be drier.
- More frequent, more severe, and possibly longer-lasting droughts are expected to occur.
- Crop and livestock production patters could shift northward; less soil moisture due to increased evaporation may increase irrigation needs.
- Drier conditions would reduce the range and health of ponderosa and lodgepole pine forests, and increase the susceptibility to fire. Grasslands and rangelands could expand into previously forested areas.
- Ecosystems would be stressed and wildlife such as the mountain lion, black bear, long-nose sucker, marten, and bald eagle could be further stressed.

Other impacts could include:

- Increased particulate matter in the air as drier, less vegetated soils experience wind erosion.
- Shifts in vegetative communities which could threaten plant and wildlife species.
- Changes in the timing and quantity of snowmelt which could affect both aquatic species and agricultural needs.

More specific to Montana, additional projected changes associated with climate change described in Section 3.0 of the Climate Change SIR (BLM 2010) include:

- Temperature increases in Montana are predicted to be between 3 to 5°F at mid-21st century. As the mean temperature rises, more heat waves are predicted to occur. In the late 21st century, the number of days per year with temperatures above 100°F is predicted to be between 10 and 45, depending on the level of GHG emissions, with the largest increase in the number days over 100°F occurring in the eastern portion of the state.
- Precipitation increases in winter and spring in Montana may be up to 25 percent in some areas. Precipitation decreases of up to 20 percent may occur during summer, with potential increases or decreases in the fall. In the fall western Montana may see little change in precipitation while the northwestern portion of the state may experience 5 to 10 percent increases.
- For most of Montana, annual median runoff is expected to decrease between 2 and 5 percent, but northwestern Montana may see little change in annual runoff. Mountain snowpack is expected to decline, reducing water availability in localities supplied by meltwater.
- Glaciers are already known to be melting, and all glaciers in Glacier National Park are expected to be completely melted by 2030 or sooner.
- Wind power production potential is predicted to decline in Montana based on modeling focused on the Great Falls area.
- Conditions in Montana wetlands across much of the northern part of the state are predicted to remain relatively stable, although some wetland habitat near Cut Bank is predicted to degrade to less favorable conditions.
- Water temperatures are expected to increase in lakes, reservoirs, rivers, and streams. Fish populations are expected to decline due to warmer temperatures, which could also lead to more fishing closures.
- Wildland fire risk is predicted to continue to increase due to climate change effects on temperature, precipitation, and wind. One study predicted an increase in median annual area burned by wildland fires in Montana based on a 1°C global average temperature increase to be 241 to 515 percent.

3.3 Soil Resources

Soils in the lease area include many soil types and complexes. Soil forming agents include biological activity (soil organic matter), chemical activity, climate (temperature and precipitation), parent material (geology and geomorphology) and topography. Important functions include water capture, storage and release, nutrient storage and cycling and carbon sequestration. Some soil types are sensitive and include soils that have high erosion ratings, have formed on steep slopes, and those with limitations related to construction activities and reclamation.

Lease parcels G4 and M8 are located within the Southwest Highlands Watershed (SWHW). The geology section of the recently completed Southwest Highlands Watershed Assessment describes the geology as quite complex and includes igneous, metamorphic, and sedimentary rocks that cover virtually the entire Montana geologic section ranging from nearly three billion-year-old metamorphic rocks to recent sediments along the Big Hole River valley. The soils in this watershed are in the Frigid (generally below 6,400 feet elevation) and Cryic (generally above 6,400 feet elevation) soil temperature regimes. Annual precipitation is 8 to 20 inches (Aridic and Ustic soil moisture regimes). Elevations range from about 4,800 feet, near the Big Hole River, to above 8,300 feet, on McCartney Mountain. The soils within the watershed formed in alluvium, colluvium, and residuum mainly from quartzite, limestone, sandstone, andisite, rhyolite, and granitic rock sources. Parcel GT, located in the East Pioneers watershed, has soils similar to those found in the SWHW. Parcels FX, FY, GA, GB, GC and GN are located within the Beaverhead West Watershed area. Precipitation ranges from 8 to 24 inches. In all other respects the soils are similar to those described in the Southwest Highlands Watershed.

Soil Survey areas within the study area include MT604 Dillon Area Beaverhead County, MT612 Horse Prairie, Beaverhead County and MT636, Madison County. An analysis of the soils occurring within the lease parcels indicates no Prime or Productive soils in 4 of the 9 lease parcels, low to very low percentages in three parcels and moderate percentages in two. No Prime or Productive soils were found in FX, GA, GC or GN. Low percentages, in the 4% range, occur in G4 and M8. Moderate percentages in GB (30% range) and GT (50% range). Hydric soils may occur in some lease parcels. Surgo Soil data contains a category titled Unknown Hydric. GT soils are approximately 10% Unknown Hydric. The majority of FY, GA, GB and GC are classified Unknown Hydric. Approximately 40% of the soils in FX are Unknown Hydric. The majority of soils in GN are mapped as Partially Hydric.

3.4 Water Resources

3.4.1 Hydrology – Surface and Ground Water Quality and Quantity

Surface water quality information was obtained from Montana Department of Environmental Quality (DEQ). Water quality is regulated by the Montana DEQ and is reported every two years on their Clean Water Act Information Center (CWAIC) website (MTDEQ 2012). DEQ reports condition on major streams. Of the 9 leases being offered for sale, two, G4 and GN, have surface water resources. These resources are tributary streams. At this time tributary streams are

not tracked by DEQ and they are not reported on CWAIC. The East Fork of Clark Canyon Creek runs through GN. Clark Canyon Creek is on Montana DEQ’s list of Impaired Streams. The Dillon Field Office works to assure compliance with the Clean Water Act on Public Lands via a Memorandum of Agreement between the State of Montana and the Montana/Dakotas State Office (USDI 2010). Through this MOA, the field office assesses leading indicators of water quality using the Proper Functioning Condition (PFC) methodology while DEQ assesses lagging indicators using more traditional sampling methodologies. Current resource conditions for the surface water resources located on Public Land indicate that Buhrer Gulch reaches 564 and 581 (G4), are Functioning at Risk (FAR) with an upward trend and FAR with a Static Trend respectively (BLM 2014). The Dillon Field Office has no information on the condition or function (PFC) for the East Fork of Clark Canyon Creek as it is located on private land. The Beaverhead Rock 7.5 minute Quadrangle (1962) shows an irrigation ditch (CO-OP Ditch) running through lease parcel M8.

Groundwater Data was obtained from Montana Bureau of Mines and Geology’s Groundwater Information Center (GWIC) for Townships in which lease parcels occur. The following tables were created using data from GWIC.

Table 2. Well Depth, Static Water Level

Township	Max Depth	Min Depth	Avg Depth	Max Static Water	Min Static Water	Avg Static Water
T4S, R7W	400	10	64.5	280	1	22.9
T4S, R8W	326	15	81.2	218	-1	29.9
T5S, R9W	580	6	149.5	190.9	3	37.2
T6S, R10W	1000	18	153.5	500	7	78.9
T7S, R9W	590	6.2	87.1	260	-1	36.5
T9S, R9W	145	145	145	25	25	25

Table 3. Yield

Township	Number of Records	Max Yield	Min Yield	Avg Yield
T4S, R7W	138	100	1.5	23.5
T4S, R8W	19	30	1	14.6
T5S, R9W	31	50	3	16.6
T6S, R10W	36	2000	2	113.1
T7S, R9W	430	2600	1	87.2
T9S, R9W	2	30	30	30

The geology of the Dillon Field Office is described in more detail in the Dillon RMP. The planning area contains an extremely diverse and wide range of geology and geologic features. The oldest known rocks in southwest Montana, the Archean basement rocks, were laid down as sediments and volcanic flows more than three billion years ago and were subjected to repeated episodes of metamorphism. This metamorphism resulted in what is known as the Belt Series which exceeds 50,000 feet in some places. Approximately 100 million years ago the ancestral Rocky Mountains began to rise. The mountain building process included folding and uplifting. Magma began to form and rise through overlying layers. Magmatic activity, including intrusion of granites and volcanic eruptions resulted in an enormous swarm of dikes and deep accumulations of volcanic ash. The mountain ranges in Southwest Montana are bounded by active faults. The Dillon Field Office is partially within the Rocky Mountain Overthrust Belt and partially within what is known as the Central Rocky Mountain Foreland Province. Both areas are considered highly prospective of oil and gas.

According to information from the USGS Groundwater Atlas of the United States, Montana, North Dakota, South Dakota and Wyoming (USGS 1996), the principal aquifers in Southwest Montana occur in the inter-montane basins. The Northern Rocky Mountains Inter-montane Basins aquifer system consists primarily of unconsolidated-deposit aquifers, commonly referred to as basin-fill aquifers, of Quaternary sand and gravel that overlie upper Tertiary aquifers in structural basins. These aquifers are recharged primarily by snowmelt from surrounding mountains. The intermountain valleys contain as much as 16,000 feet of Cenozoic basin-fill sediments (USGS 1985). Aquifer depths for Blacktail and Beaverhead Valleys range from 500 to 1000 feet (MBMG 2013, USGS 1999). The water table is usually within 200 feet of the surface.

3.5 Vegetation Resources

Vegetation in the project area is, primarily, characteristic of Northern Rocky Mountain Valleys (MLRA 44S) in the 10 to 14-inch precipitation zone. The analysis area is dominated by a sagebrush/grassland community, which primarily consists of very low sagebrush cover (5-14% shrub and 25-100% grass) to moderate sagebrush cover (25-34% shrub) with some intermixed xeric and mesic shrubs and grasslands, based on Landfire (2011) satellite imagery.

Table 4. Summary of Estimated Vegetation Type by Acreage of Proposed Lease Parcels.

<i>Cover Type</i>	<i>Acres</i>	<i>% of Acres</i>
Aspen	70	1.0
Forest	448	6.3
Grassland	373	5.2
Sagebrush / Shrub	5,931	83.1
Riparian	35	< 1.0
Mahogany	3	< 1.0
Other	273	3.8

TOTAL	7,133	100
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Existing influences on local distribution of plant communities include soils, topography, surface disturbance, availability of water, management boundary fence lines, and soil salinity.

Vegetation communities have been influenced by human activities for over a century. Some of these activities include: infrastructure developments (e.g., roads, powerlines, pipelines, etc.), chemical applications, wildfire suppression, and livestock grazing.

The following discussion focuses on existing vegetation rather than potential natural vegetation or climax vegetation. The plant association concept that describes existing vegetation regardless of successional status has been used to characterize the most common upland plant communities near the lease parcels (Cooper et al. 1995, Cooper et al. 1999, and Mueggler and Stewart 1980). Common and scientific names are introduced with a species' first occurrence; only the common names are used thereafter.

3.5.1 Shrublands

Shrublands are defined as plant associations where shrubs compose at least 5% of the canopy cover. Shrublands comprise about 83% of the acreage within the proposed lease parcels.

The mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*)/Idaho fescue (*Festuca idahoensis*) shrublands occur on slopes and upper terraces from 6,000-8,500 feet AMSL. Mountain big sagebrush canopy cover varies from 10-70% while the dominant grass, Idaho fescue, averages nearly 50%. Forbs are generally abundant and diversity is high. These shrublands occur within parcels GC and GN.

The mountain big sagebrush/bluebunch wheatgrass (*Pseudoroegneria spicata*) shrubland primarily occurs on south-facing slopes. Mountain big sagebrush is the dominant shrub with 10-40% canopy cover. Grass canopy cover is generally 40-70%. Bluebunch wheatgrass is the dominant species; needle-and-thread (*Hesperostipa comata*) and Sandberg bluegrass (*Poa secunda*) are other common species. Forb canopy cover is 10-30%, and diversity is low to moderate. Plains pricklypear (*Opuntia polyacantha*), cutleaf daisy (*Erigeron compositus*), and phlox (*Phlox* spp.) are common, as are mosses and lichens. These shrublands occur within parcels GC and GN.

The Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*)/bluebunch wheatgrass shrublands occur on gently sloping alluvial fans and terraces between 5,000 and 7,500 feet AMSL. Canopy cover of Wyoming big sagebrush ranges from 10 to 30% and grass canopy cover, which may include Sandberg bluegrass and prairie junegrass (*Koeleria macrantha*), may reach 60%. Common forbs include cushion phlox and sandwort. Mosses and lichens are uncommon or absent. These shrublands occur within parcels FX, FY, G4, GA, GB, GC, and GT.

3.5.2 Grasslands

Grasslands are defined as plant associations where shrub canopy cover is less than 5% and perennial graminoids constitute at least 50% of the total herbaceous canopy cover. Grasslands comprise about 5% of the acreage within the proposed lease parcels.

The needle-and-thread/blue grama (*Bouteloua gracilis*) grasslands commonly occur on floors and gently sloping alluvial fans between 4,500 and 6,300 feet AMSL. Prairie junegrass, Sandberg bluegrass, and needleleaf sedge (*Carex duriuscula*) may also be present, but are often poorly represented. Forb cover and diversity is low and often includes fringed sagewort (*Artemisia frigida*), broom snakeweed (*Gutierrezia sarothrae*), pricklypear, and scarlet globemallow (*Sphaeralcea coccinea*). These grasslands are present within parcels FX, FY, G4, GT, and M8.

The bluebunch wheatgrass/Sandberg bluegrass grasslands are common on moderate to steep slopes and alluvial fans with a warm aspect at elevations ranging from 5,800 to 7,500 feet AMSL. Forb cover is low, but diverse and can include phlox, sandwort (*Arenaria* spp.), stiffleaf penstemon (*Penstemon aridus*) and stemless mock goldenweed (*Stenotus acaulis*). Mosses are rare, but lichens may be common in some stands. These grasslands are present within parcels FX, FY, G4, GA, GB, GC, GT, and M8.

The Idaho fescue (*Festuca idahoensis*)/bluebunch wheatgrass grasslands occur on moderate to steep, predominantly south-facing slopes at 6,000-7,500 feet AMSL. Forbs are diverse and abundant, and typically include western yarrow (*Achillea millefolium* var. *occidentalis*), phlox and sandwort. Mosses and especially lichens may also be common. These grasslands are present within parcels GC and GN.

3.5.3 Wetlands, Floodplains and Riparian Areas

Riparian and wetland resource information is available through the Montana Natural Heritage Program. A riparian and wetland assessment was performed on private and public land using professional knowledge, the Dillon Field Office stream files and GIS layer and the Montana Natural Heritage Program Provisional Wetland and Riparian Area 7.5 Degree Quadrangles (MTNHP 2012). Wetland research in the arid west is not nearly as extensive as in areas that receive more abundant precipitation. Research as it does exist suggests that wetlands in the Intermountain West have significant hydroperiods and may not exhibit wetland characteristics for prolonged periods (Tiner 1999). Given the limitations so described, wetland and riparian resources are present in two areas: Buhner Gulch, north of the Burma Road, as shown on the Block Mountain 7.5 degree USGS Quadrangle G4 and the East Fork of Clark Canyon Creek, as shown on the Gallagher Mountain 7.5 Degree USGS Quadrangle GN. Riparian-wetland areas are among the most productive and important ecosystems, although they comprise less than one percent of the lease parcels. Healthy riparian systems filter and purify water as it moves through

the riparian-wetland zone, reduce sediment loads and enhance soil stability, provide micro-climate moderation when contrasted to temperature extremes in adjacent areas, and contribute to ground water recharge and base flow. Typically, riparian-wetland areas provide watering points for wildlife and livestock and display a greater diversity of plant, fish, wildlife, and other animal species and vegetative structure than adjoining ecosystems. The wetlands in Buhrer Gulch are shown on the Natural Heritage Maps as Palustrine Emergent Temporarily Flooded (PEMA) and Seasonally Flooded (PEMC) and Palustrine Shrub Scrub Temporarily Flooded (PSSA). The wetlands in the GN lease Parcel are Palustrine Emergent Temporarily Flooded (PEMA) and Seasonally Flooded (PEMC) and Palustrine Aquatic Bed Semipermanently Flooded (PABF).

Some of the more common vegetative species that occur in riparian-wetland areas include sedges (*Carex* spp.), rushes (*Juncus* spp.), and willow (*Salix* spp.). Wetter sites dominated by herbaceous vegetation may support water sedge (*Carex aquaticus*), beaked sedge (*Carex rostrata*), or Nebraska sedge (*Carex nebrascensis*). When these herbaceous dominated wetlands are disturbed, or begin to dry out, Kentucky bluegrass (*Poa pratensis*), meadow barley (*Hordeum brachyantherum*), and to a lesser extent foxtail barley (*Hordeum jubatum*) tend to increase. Forbs that may be present in wet meadows with a history of disturbance include common dandelion (*Taraxacum officinale*), pussy-toes (*Antennaria* spp.), common yarrow (*Achillia millefolium*) mountain golden bean (*Thermopsis montana*) and Canada thistle (*Cirsium arvense*).

The wetland at Buhrer Spring, in parcel G4, is fenced to exclude livestock and is a water birch (*Betula occidentalis*) habitat type (Hansen et al. 1995), which most often occurs as narrow bands adjacent to low to mid-elevation streams and springs on alluvial terraces. Species associated with this type may include gray alder (*Alnus incana*), sandbar willow (*Salix exigua*), chokecherry (*Cornus stolonifera*), and creeping bentgrass (*Agrostis stolonifera*). Shifts in species dominance occur as conditions become wetter or drier within the site.

The interrupted stream reach north of Buhrer Spring, also within parcel G4, is a beaked sedge (*Carex rostrata*) dominance type. This community typically occurs at mid-elevations and forms monotypic stands. This reach is relatively short, narrow, and includes several remnant black cottonwoods (*Populus angustifolia*).

The East Fork of Clark Canyon Creek flows through about 0.75 miles of parcel GN and is, primarily, a Douglas-fir (*Pseudotsuga menziesii*)/red-osier dogwood (*Cornus sericea*) habitat type. Although dominated by a Douglas-fir canopy, other species commonly associated with this community include Englemann spruce (*Picea engelmannii*), lodgepole pine (*Pinus contorta*), and quaking aspen (*Populus tremuloides*) with an understory of Wood's rose (*Rosa woodsii*), red-osier dogwood, and chokecherry (*Prunus virginiana*).

3.5.4 Noxious Weeds

There are two noxious weeds of concern, spotted knapweed and houndstongue found either in or near all of the parcels up for lease. Spotted knapweed is one of the more aggressive noxious weeds in the area administered by the Dillon FO. Infestations are mostly small in size and are found scattered throughout the parcels, primarily along roads accessible to the public. Due to its location, the potential is high for knapweed to be spread by vehicles, livestock, wildlife, recreation and other activities. Houndstongue, a noxious weed that is toxic to animals due to high levels of alkaloids contained in the plant, is found scattered in trace amounts along roads, trails, and streams. Because of its seeds ability to cling to hair and clothing, the potential is high for it to be spread rapidly.

Parcels G8 and FX contain large infestations of Dalmatian toadflax either within or adjacent to the parcels or in the general area. Toadflax is an aggressive perennial that reproduces by both seeds and creeping root stalks. The extensive root systems as well as a waxy leaf surface make this a very difficult plant to control.

Leafy spurge, a perennial that reproduces by vigorous rootstalks and seeds, is found scattered through parcel G4 and possibly in M8. Due to the private ownership of the surface of M8 the presence of weeds on this parcel is unknown but it is known that they occur in the area and could likely occur on this parcel. There have been numerous releases of a spurge controlling flea beetle on infestations in the area and they may be present in these parcels as well.

Other noxious or invasive weeds that occur in small patches and/or widely scattered infestations include cheatgrass, common mullein, black henbane, and Canada thistle. Cheatgrass is found in small patches is typically found on south and west facing slopes where there has been some past disturbance. Black henbane is found primarily along roads. Canada thistle is common in riparian bottoms that have had past disturbance.

Since 1989, BLM has been involved in cooperative control efforts with Beaverhead and Madison Counties. Private land owners in the proposed area have also been involved in control efforts. Throughout this period, the goal has been to prevent new noxious weed infestations and to contain, control or eradicate existing populations.

3.6 Special Status Species

3.6.1 Special Status Fish and Wildlife Species

Sage grouse populations and sagebrush habitats have declined throughout the west due to loss of suitable habitat from conversion for agricultural needs, urbanization, livestock grazing, and wildland fire. In March 2010, the Greater Sage Grouse became a candidate species under the Endangered Species Act, which emphasizes the need for region-wide assessments addressing habitat conditions and population stability. This emphasizes the importance of maintaining the

integrity of mid- to late-seral sagebrush habitats on public lands, not only for sage grouse but for all sagebrush obligate species. Important sage grouse seasonal habitat is centered on breeding and winter complexes. Nesting usually occurs within two miles of the lek, where suitable habitat is available. Brood rearing habitats require a mix of forbs and insects for a high protein diet, usually in association with riparian habitats. Winter diets consist of almost 100% sagebrush. The *Management Plan and Conservation Strategies for Sage Grouse in Montana* completed by the Montana Sage Grouse Working Group is used as a guideline for the management of sagebrush habitat.

Sage grouse may be transient through the remaining lease parcels that have not been deferred. The lease parcels within general and priority sage grouse habitat have been deferred, so will not be included in this analysis. Parcel GT is within ½ - 1 mile of a historic sage grouse lek. Efforts to locate an active lek in this area continue. Other special status species that may be present in the non-deferred parcels include fringed myotis, long-eared myotis, long-legged myotis, gray wolf, bald eagle, black tern, bobolink, ferruginous hawk, golden eagle, Swainson’s hawk, great gray owl, northern goshawk, loggerhead shrike, long-billed curlew, McCown’s longspur, peregrine falcon, sage sparrow, sage thrasher, and western toad.

Fringed myotis, long-eared myotis and long-legged myotis may forage within or adjacent to the parcels or roost in rock crevices or talus slopes in the area. There are no verified wolf packs near the parcels (Bradley et al., 2012). Transient wolves may travel through the area. There are several bald eagle nests within the vicinity of parcels G4 and M8. Black terns may use wetland and marsh habitat along the Big Hole River. Bobolinks may be found in open fallow fields, mixed-grass prairie, damp meadows, and similar habitats. Brewer’s sparrows utilize sagebrush habitat throughout the Dillon Field Office. Ferruginous hawks and Swainson’s hawks forage and nest within or near the lease parcels. Golden eagles forage within the parcels and nest in fairly close proximity to the lease parcels. Great gray owls and northern goshawks may be found foraging or nesting in forested habitat within or near parcel GN. Loggerhead shrikes may utilize pastures and prairies with shrubs including sagebrush and greasewood, as well as hedgerows and trees. Long-billed curlews and McCown’s longspurs use dry shortgrass prairies throughout the area. Peregrine falcons forage throughout the area and may nest on cliffs along the Big Hole River, although there are no documented eyries near the parcels. Sage sparrows and sage thrashers utilize sagebrush habitat in the area. Sage sparrows are less common than sage thrashers, however either species could potentially forage and nest within or adjacent to the parcels. Western toads may utilize beaver ponds, streams, marshes, wet meadows, and other similar habitat along the Big Hole River.

Table 5. Special Status Species Known or Suspected to Occur on the Dillon Field Office

Animal Species	Current Management Status	In Current Range?	Preferred habitat
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Canada Lynx (<i>Lynx canadensis</i>)	Threatened	No	Forest
Grizzly Bear (<i>Ursus arctos horribilus</i>)	Threatened	Unlikely	Forest
Greater Sage Grouse (<i>Centrocercus urophasianus</i>)	Candidate	Yes	Sagebrush shrubland
North American Wolverine (<i>Gulo gulo</i>)	Proposed Threatened	No	Forest
Mammals			
Fisher (<i>Martes pennanti</i>)	Sensitive	No	Forest
Fringed myotis (<i>Myotis thysanodes</i>)	Sensitive	Yes	Forest Grassland Sagebrush shrubland
Gray Wolf (<i>Canis lupus</i>)	Sensitive	Yes	All
Great Basin pocket mouse (<i>Perognathus parvus</i>)	Sensitive	Unlikely	Grassland Sagebrush shrubland
Long-eared Myotis (<i>Myotis evotis</i>)	Sensitive	Yes	Forest
Long-legged Myotis (<i>Myotis volans</i>)	Sensitive	Yes	Forest
Pygmy Rabbit (<i>Brachylagus idahoensis</i>)	Sensitive	No	Sagebrush shrubland
Townsend's Big-eared Bat (<i>Corynorhinus townsendii</i>)	Sensitive	Unlikely	Forest Sagebrush shrubland
Birds			
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Sensitive	Yes	Riparian/wetland
Black Tern (<i>Chlidonias niger</i>)	Sensitive	Yes	Wetland
Black-backed Woodpecker (<i>Picoides arcticus</i>)	Sensitive	No	Forest
Black-crowned Night Heron (<i>Nycticorax nycticorax</i>)	Sensitive	No	Wetland
Bobolink (<i>Dolichonyx orysivorus</i>)	Sensitive	Yes	Grassland
Brewer's sparrow (<i>Spizella breweri</i>)	Sensitive	Yes	Sagebrush shrubland
Burrowing Owl (<i>Athene cunicularia</i>)	Sensitive	No	Grassland
Common Loon (<i>Gavia immer</i>)	Sensitive	No	Wetland

Ferruginous Hawk (<i>Buteo regalis</i>)	Sensitive	Yes	Sagebrush shrubland
Flammulated Owl (<i>Otus flammeolus</i>)	Sensitive	Unlikely	Forest
Franklin's Gull (<i>Larus pipixcan</i>)	Sensitive	No	Wetland
Golden Eagle (<i>Aquila chrysaetos</i>)	Sensitive	Yes	Riparian/wetland Sagebrush Shrubland
Great Gray Owl (<i>Strix nebulosa</i>)	Sensitive	Yes	Forest
Harlequin Duck (<i>Histrionicus histrionicus</i>)	Sensitive	No	Riparian/wetland
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	Sensitive	Yes	Sagebrush shrubland
Long-billed Curlew (<i>Numenius americanus</i>)	Sensitive	Yes	Grassland
Marbled Godwit (<i>Limosa fedoa</i>)	Sensitive	Unlikely	Mudflats, shoreline
McCown's longspur (<i>Calcarius mccownii</i>)	Sensitive	Yes	Grassland
Northern Goshawk (<i>Accipiter gentilis</i>)	Sensitive	Yes	Forest
Peregrine Falcon (<i>Falco peregrinus anatum</i>)	Sensitive	Yes	Riparian/wetland
Sage Sparrow (<i>Amphispiza belli</i>)	Sensitive	Yes	Sagebrush shrubland
Sage thrasher (<i>Oreoscoptes montanus</i>)	Sensitive	Yes	Sagebrush shrubland
Sedge Wren (<i>Cistothorus platensis</i>)	Sensitive	No	Wetland
Swainson's Hawk (<i>Buteo swainsoni</i>)	Sensitive	Yes	Riparian/wetland Sagebrush shrubland
Three-toed Woodpecker (<i>Picoides tridactylus</i>)	Sensitive	Unlikely	Forest
Trumpeter Swan (<i>Cygnus buccinator</i>)	Sensitive	No	Riparian/wetland
White-faced Ibis (<i>Plegadis chihi</i>)	Sensitive	No	Riparian/wetland
Amphibians/Fish			
Boreal/Western toad (<i>Bufo boreas</i>)	Sensitive	Yes	Riparian/wetland/forest
Plains Spadefoot (<i>Spea bombifrons</i>)	Sensitive	No	Riparian/wetland
Northern leopard frog (<i>Rana pipiens</i>)	Sensitive	No	Riparian/wetland

Westslope cutthroat trout (<i>Oncorhynchus clarkii lewisi</i>)	Sensitive	No	Streams
Montana Arctic Grayling (<i>Thymallus arcticus</i>)	Candidate	Yes	Riverine

There are no known populations or habitats supporting westslope cutthroat trout within the analysis area.

The Big Hole River supports the last native self-sustaining population of strictly fluvial Arctic grayling in the lower 48 states. Fluvial Arctic grayling is a Montana Species of Special Concern and a candidate species currently under review for federal listing. A decision is expected in the fall of 2014. The current distribution of this species represents only 5% of its historic range.

Montana fluvial arctic grayling are occasionally found within the analysis area in the Big Hole River adjacent to parcels G4 and M8. Current riparian habitat conditions within the area are in good to excellent condition. The primary factors influencing grayling occurrence in this portion of the drainage are low summer flows and elevated water temperatures.

3.6.2 Special Status Plant Species

There are no known threatened or endangered plant species in the project area. Seven plant species identified on the Montana Plant Species of Concern list have been recorded in or near the lease parcels (MNHP 2014). The seven species are lesser Indian paintbrush (*Castilleja exilis*), linearleaf fleabane (*Erigeron linearis*), beautiful bladderpod (*Lesquerella pulchella*), taper-tip desert-parsley (*Lomatium attenuatum*), Lemhi beardtongue (*Penstemon lemhiensis*), mealy primrose (*Primula incana*), silver chicken sage (*Sphaeromeria argentea*). These species are designated as sensitive species by the BLM in Montana (Table 6). The following species-specific information was obtained from the Montana Natural Heritage Program website (MNHP 2014).

Taper-tip desert-parsley, beautiful bladderpod, and chicken sage generally prefer a habitat with rugged topography such as steep talus slopes and sparse vegetation. Often found in shallow limestone-derived soil.

Lesser Indian paintbrush is typically found in moist alkaline meadows in the valley zone.

Mealy primrose is most commonly found in saturated, often calcareous wetlands.

Lemhi beardtongue occurs on moderate to steep, east to southwest facing slopes, often on open soils. In the area of the lease parcels it generally would grow below or near the lower extent of

Douglas-fir and/or lodgepole pine forest, in habitat dominated by big sagebrush and bunchgrasses, including western wheatgrass and Idaho fescue.

Linearleaf fleabane generally prefers dry, often rocky soil from the foothills up to moderate elevations, frequently with sagebrush (Heidel and Cooper 1998).

Table 6. Special Status Plant Species Known to Occur On or Near Proposed Lease Parcels

Common Name	Scientific Name	Current Management Status	Known to Occur on BLM lands?	State Rank*	Leases Near Known Populations
Lesser Indian paintbrush	<i>Castilleja exilis</i>	Sensitive	Yes	S2	M8
Linearleaf fleabane	<i>Erigeron linearis</i>	Sensitive	Yes	S2	G4, GT, GC, FY, GB
Beautiful bladderpod	<i>Lesquerella pulchella</i>	Sensitive	Yes	S3	GC
Taper-tip desert-parsley	<i>Lomatium attenuatum</i>	Sensitive	Yes	S2	GN
Lemhi beardtongue	<i>Penstemon lemhiensis</i>	Sensitive	Yes	S3	GC
Mealy primrose	<i>Primula incana</i>	Sensitive	Yes	S3	M8
Chicken sage	<i>Sphaeromeria argentea</i>	Sensitive	Yes	S3	FY, GB, GC

* **S2** = At risk because of **very limited** and/or **potentially declining** population numbers, range and/or habitat, making it vulnerable to global extirpation in the state.

* **S3** = Potentially at risk because of **limited** and/or **declining** numbers, range and/or habitat, even though it may be abundant in some areas.

3.7 Fish and Wildlife

The BLM coordinates with Montana Fish, Wildlife, and Parks (MFWP), and the U.S. Fish and Wildlife Service (FWS) to manage fish and wildlife. While the BLM manages habitat on BLM lands, MFWP is responsible for managing all wildlife species populations. The FWS also manages some wildlife populations, but only those federal trust species managed under mandates such as the Endangered Species Act, Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act.

Managing fish and wildlife is factored into project planning at multiple scales and begins early in the planning process. The first step in evaluating potential impacts of a project on wildlife values is at the landscape scale. Wildlife values, including terrestrial conservation species, richness, and game quality, aquatic conservation connectivity, conservation species, and game species, have been mapped at the landscape level for Montana by MFWP. The oil and gas lease parcels were reviewed with an energy comment GIS application as an overlay to potential aquatic, terrestrial, and habitat values. This course scale landscape analysis of wildlife resources provides one tool for understanding the context of the wildlife values at a large scale. Fine

scaled tools, data and resource information based on inventory and monitoring data, as well as local knowledge from BLM and MFWP employees, are used to further examine resource issues at the site-specific level for the specific resources contained in the lease parcels considered in this EA.

3.7.1 Fish

Two of the lease parcels (G4 and M8) are in proximity to fishery habitat, located approximately ½ mile from the Big Hole River. This section of river supports several species of non-native and native fish species including Montana fluvial arctic grayling (see special status species above). Fish species present within this portion of the Big Hole River include fluvial arctic grayling, rainbow, brown, and brook trout, mountain whitefish, burbot, white and longnose sucker, mottled and slimy sculpin, longnose dace and redbreast shiner.

The Big Hole River is an internationally known blue ribbon trout fishery and supports one of the most popular cold water sport fisheries in the state, with over 25,000 angler-use days recorded for 2011 in this portion of the drainage.

3.7.2 Wildlife

The analysis area is primarily made up of big sagebrush and/or grassland habitat with limited riparian habitat. Lease parcel GN also has forest habitat. The analysis area provides seasonal and yearlong habitat for a wide variety of sagebrush/grassland dependent species such as pronghorn antelope, elk, mule deer, sage grouse and various bird species. The habitat also supports seasonal wildlife movements.

Mule deer and elk use is limited within the analysis area although some deer are year-long residents and parcel GN has more elk use. Mule deer and elk typically spend the summer and fall at higher elevations, with most migrating to lower elevation winter habitat. Lease parcel GC is mule deer winter range and parcels GN and GC are within elk winter range. There is an elk calving area bordering parcel GN. White-tailed deer utilize a variety of habitats, generally preferring riparian corridors, as well as woody draws and grasslands. Antelope are found throughout the analysis area. Antelope winter range covers all of the parcels except GA, GN, and GT. Moose can be found along the Big Hole River, throughout the Blacktail Mountains, and along riparian habitats in the analysis area.

Comprehensive inventories for other sagebrush dependent birds, small mammals, and reptiles have not been completed. Montana Natural Heritage Database was used to review occurrence records of the species in which field office inventories have not been completed.

3.8 Cultural Resources

The BLM is responsible for identifying, protecting, managing, and enhancing cultural resources which are located on public lands, or that may be affected by BLM undertakings on non-Federal lands, in accordance with the National Historic Preservation Act (NHPA) of 1966, as amended. The procedures for compliance with the NHPA are outlined in regulation under 36 CFR 800. Cultural resources include archaeological, historic, and architectural properties, as well as traditional life-way values and/or traditional cultural properties important to Native American groups.

The lease parcels fall within the traditional territories of the Shoshone, Salish, and Blackfoot (Deaver and Deaver 1990; Schwab et al. 2006). The location of the region between several geographical areas, including the Northern Rockies, Great Basin, Plains, and Columbia Plateau made it an ideal area for intertribal trade, travel, and seasonal hunting (Schwab et al 2006). Archaeological evidence indicates that the area was occupied for the last approximately 10,000 years (BLM 2005b; Hill and Davis 2005). Rock alignments, tipi rings, small habitation sites, cairns, quarries, and lithic scatters are the types of prehistoric sites common to this region.

Lewis and Clark moved through the area, traveling up and down the Beaverhead and Big Hole Rivers, during the expedition west in 1805, as well as Clark's return in 1806. During the late 19th century, the area was used as a travel corridor for ranching during historic times. In 1880 the Utah and Northern Railroad was constructed into Montana from Idaho, eventually arriving at what is now Dillon, Montana and continuing on to Silver Bow and eventually Butte, Montana. This rail line brought much needed supplies to mining towns and saw the development of towns along the railway (Waite 1998). Wagon roads, railroads, stage stations, homesteads, and trash dumps are the types of historic sites common to this region.

A total of 872 acres that involve portions of Parcels M8, G4, FX, FY, GA, GC, and GT have been inventoried for cultural resources. Parcels GB and GN have not been inventoried for cultural resources. These inventories have been completed for land adjustment, evaluation, and transfers; building stone collection; gravel pit operation, and range improvements. A file search for previously recorded cultural resources was completed for all parcels. No cultural resources have been recorded in Parcels FX, FY, GC, and GN; however, the other five parcels contain a total of 18 cultural resources. The types of cultural resources found in these five parcels include two historic grave sites, one historic trash dump, one historic homestead, the Union/Pacific Railroad, one railroad feature, eight prehistoric lithic scatters, one prehistoric rock alignment, one stone circle site, one prehistoric rock shelter/pictograph/lithic scatter site/stone circle site, and one prehistoric lithic scatter/burial/pictograph site. Parcels M8, G4, GA, GB, and GT contain cultural resources that are eligible to the National Register of Historic Places (NHRP). None of the parcels fall within or near cultural resources located in the Everson Creek, Muddy Creek/Big Sheep Creek, Beaverhead Rock, or Virginia City Historic District ACECs (Dillon Resource Management Plan 2006:24-25).

In order to meet Cultural Resources Goals 1 and 3 found in the Dillon Field Resource Management Plan (2006:24-25) Lease Notice 14-5 and Stipulation 16-1 will apply to all lease parcels (Appendix A). Cultural Resource Goal 1 aims to preserve and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations. Cultural Resource Goal 3 ensures that all authorizations for land and resource use avoid inadvertent damage to federal and nonfederal cultural resources in compliance with Section 106 of the National Historic Preservation Act (NHPA). The application of Lease Notice 14-5 and Stipulation 16-1 to all lease parcels ensures that these goals and BLM's obligations under Section 106 of NHPA, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and other statutes, as applicable, will be met.

In addition, NSO Stipulation 11-22 will apply to portions of lease parcels M8, G4, GA, GB, and GT to meet Goals 1 and 3 found in the Dillon Field Resource Management Plan (2006:24-25). Surface occupancy and use is prohibited within, and for a distance of 300 feet from the boundaries of, cultural resources determined to be eligible or potentially eligible to the NRHP in order to protect significant cultural resources and to avoid unintentional impacts to these resources.

3.9 Native American Religious Concerns

BLM's management of Native American Religious concerns is guided through its 8120 Manual: *Tribal Consultation Under Cultural Resources Authorities* and 8120 Handbook: *Guidelines for Conducting Tribal Consultation*. Further guidance for consideration of fluid minerals leasing is contained in BLM Washington Office Instruction Memorandum 2005-003: Cultural Resources, Tribal Consultation, and Fluid Mineral Leasing. The 2005 memo notes leasing is considered an undertaking as defined in the National Historic Preservation Act. Generally areas of concern to Native Americans are referred to as "Traditional Cultural Properties" (TCPs) which are defined as cultural properties eligible for the National Register because of its association with cultural practices or beliefs that (a) are rooted in that community's history and (b) are important in maintaining the continuing cultural identity of the community.

Letters containing a description of the oil and gas lease sale and maps showing parcel locations were mailed to the Tribal Historic Preservation Officers (THPO) of the Blackfeet Nation, Confederated Salish and Kootenai Tribes and the Eastern Shoshone Tribe, as well as cultural representatives of the Shoshone-Bannock Tribes in March 2014. These federally recognized tribes are known to have ancestral ties to the lease parcel areas. In this letter, the BLM requested information regarding sites of traditional cultural or religious value which may lie within the boundaries of the listed lease sale parcels. No concerns have been expressed by these groups or individuals concerning traditional gathering areas or traditional cultural properties (TCPs). TCPs are defined as a place that is eligible for inclusion in the National Register of Historic Places because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural

identity of the community.

In order to meet Cultural Resources Goal 5 and Tribal Treaty Rights Goal 1 found in the Dillon Resource Management Plan (2006:26, 63) Stipulation 16-1 will apply to all lease parcels (Appendix A). Cultural Resource Goal 5 states that consultation with Native Americans will be conducted in order to identify cultural values or religious beliefs that may be affected by BLM authorizations or actions. Tribal Treaty Rights Goal 1 states that the BLM will notify and consult with appropriate Native American tribes for BLM authorized actions. The application of Stipulation 16-1 to all lease parcels ensures that these goals and BLM's obligations under Section 106 of NHPA, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and other statutes as applicable will be met.

3.10 Paleontology

Paleontological resources in southwestern Montana are found in rocks from several different geologic ages spanning the at least the last 540 million years. Some parcels contain exposures of the Permian Phosphoria Formation which preserves a large diversity of Paleozoic Era invertebrate fossils. Fossils from the Mesozoic Era ("Age of Dinosaurs") have also been found in the immediate region and portions of some of the parcels are located in Cretaceous Period rocks, including the Blackleaf and Kootenai formations, units that are fossiliferous. Particularly well-known fossils from the area are from the Cenozoic Era ("Age of Mammals") (BLM 2005b). The formations containing mammalian fossils range in age from the mid Eocene to late Miocene epochs of the Tertiary Period which span the period from 50 million years to 7 million years before present and also from the Pleistocene and Holocene epochs of the Quaternary Period which represents the last 1.8 million years before present. These fossil bearing formations represent 50 million years of mammalian evolution and are some of the most northerly and westerly exposures of these deposits in North America. They are therefore important for understanding the variability of animal groups, and the timing of extinctions and appearances of new animals. Pleistocene vertebrate fossils have been found in the Centennial Valley. In particular, the Merrill Locality contained the Pleistocene fossils of mammoth, Scimitar cat, horse, and camel (Hill and Davis 2005).

Some of the parcels identified for lease have known paleontological localities. Also, parcel MTM 105431-G4 is located in the Block Mountain ACEC, established for its exceptional geologic character. Within the Block Mountain ACEC rocks of Jurassic, Cretaceous, and Tertiary ages are complexly folded, and those rock formations are known to be fossiliferous.

The BLM utilizes the Potential Fossil Yield Classification System (PFYC) (IM 2008-009) as a predictive model for identifying exposures likely to produce significant paleontological resources. The PFYC is a ranking of formations from 1 (very low potential) to 5 (very high

potential) based upon the unit's lithology and its history of producing significant paleontological finds. This model is just predictive, as there is a potential to find significant fossils almost anywhere, regardless of a rock unit's PFYC rank. Therefore, no rock unit has zero potential to produce significant paleontology resources and so at a minimum we apply LN 14-3 to all units, which simply says it is the responsibility of a developer to be aware of the potential to find fossils or any other objects of scientific interest, and to bring those discoveries to the attention of the Surface Management Agency immediately.

Parcels that include higher ranked PFYC rock units (3-5) are given LN 14-12 which indicates that the parcels need further assessment for their paleontological resources. Such assessment may include a pre-disturbance survey, onsite monitoring during ground disturbing activities, and an unanticipated discovery plan for paleontological resources. These issues are determined at the time of lease development.

Of the nine lease parcels, 6 are assigned LN14-12, and the remaining 3 are assigned LN 14-3.

3.11 Visual Resources

A Class III VRM area classification means the level of change to the character of the landscape should be moderate. Changes caused by management activities should not dominate the view of the casual observer and should not detract from the existing landscape features. Any changes made should repeat the basic elements found in the natural landscape such as form, line, color and texture.

The project area is characterized primarily by sagebrush-covered hillsides with one in the foothills of the Pioneer Mountains. Small powerlines, primitive roads, a railroad track, and barbed-wire fences in the foreground add some linear elements to the view which are very common elements in the region's viewshed. The Visual Resource Management (VRM) Class for the project area is all rated Class III in the 2006 Dillon Field Office RMP. The key observation point(s) for analysis should be Interstate 15, from which most observers would view project activities.

3.12 Forest and Woodland Resources

Parcel GN contains approximately 400 acres of forested habitat. The forested habitat is located almost entirely on private land so the BLM does not have inventory data. However, from the location, aspect and knowledge of adjacent BLM forested habitat, the forest composition likely consists of primarily Douglas fir, Engelmann spruce and aspen with scattered limber pine on the ridges. The forested habitat is located in steep topography and the soils data shows that it is moderately hydric.

3.13 Livestock Grazing

Of the nine parcels identified for lease, seven are entirely or partially within BLM grazing allotments. The remaining two parcels (FX and M8) are located entirely under deeded surface and are not located within livestock grazing allotments, although they are likely grazed by livestock during various times of the year. Lands within the FX parcel are rated from 2.4 to 3.8 acres/AUM, while lands within the M8 parcel are rated from 4.4 to 10.2 acres/AUM. It is not known to what extent these lands might contain fences or other improvements.

Parcel FY is located under BLM and deeded surface within the Argenta Flats #10687, Big Hole Road #10135, and West Big Hole Road #10503 grazing allotments. Lands within this parcel are rated from 2.0 to 6.5 acres/AUM. Livestock grazing is authorized within the Argenta Flats #10687 allotment, between April 1 and January 31 and between October 1 and June 30. Livestock grazing is authorized within the Big Hole Road #10135 allotment between October 12 and April 1 and between May 1 and June 15. Livestock grazing is authorized within the West Big Hole Road #10503 allotment between March 15 and May 31, annually. The three allotments are custodial (C) category allotments, are separated by fences, and are grazed by different grazing lessees. No other range improvement projects are known to occur within the lease parcel.

Parcel G4 is located entirely under BLM surface, primarily, within the Garrison #20314 grazing allotment, with only about 30 acres occurring within the adjacent Buhner #30414 allotment. These allotments are improve (I) category allotments, are currently authorized for livestock grazing between March 15 and December 30, annually, and are grazed by the same grazing permittee. Lands within this parcel are rated from 4.0 to 12.3 acres/AUM. The allotments are separated by a fence and there is also a livestock enclosure (fence) and water development located in T. 4 S., R. 8 W., Sec. 28, SW4NW4 and a corral located in T. 4 S., R. 8 W., Sec. 29, SE4NW4. No other range improvement projects are known to occur within the lease parcel.

Parcel GA includes a 40-acre parcel of BLM surface which is unleased for livestock grazing and contains no range improvement projects.

Parcel GB includes a 40-acre parcel of BLM surface that is within the Argenta Flats #10687 grazing allotment. Livestock grazing within this allotment was previously described under lease parcel FY. No range improvement projects are known to occur within this lease parcel.

Parcel GC is located under both BLM surface about 320 acres lies within the Kennison Spring #20182 allotment and about 40 acres lies within the Frying Pan #10131 allotment. Frying Pan is an improve (I) category allotment that is grazed by livestock between March 15 and May 31 and between September 1 and November 30. Kennison Spring is a maintain (M) category allotment that is grazed between September 1 and November 30. Lands within this parcel are rated from 3.7 to 13.3 acres/AUM. The allotments are separated by a fence and are grazed by the same

permittee. There may be additional range improvement projects on deeded surface within this lease parcel.

Parcel GN is located, primarily, under deeded surface within the Gallagher Mountain AMP #30013 grazing allotment. Only a single 40-acre parcel lies under BLM surface. This allotment is a maintain (M) category allotment and is grazed by livestock between May 1 and November 20. Lands within this parcel are rated at 4.2 acres/AUM. No range improvement projects are known to occur within the lease parcel.

Parcel GT is located, predominantly, on BLM surface within the Willow Creek Individual #20304 allotment. This allotment is a custodial (C) category allotment and is grazed by a one permittee between September 1 and December 31, but may occasionally be grazed between April 15 and May 15 in lieu of the deferred use. Lands within this parcel are rated at 2.8 acres/AUM. A single detached, 40-acre portion occurs on deeded surface outside of a grazing allotment and is separated by a fence. This 40-acre parcel is grazed in conjunction with an adjacent landowner's state lease.

3.14 Recreation and Travel Management

Three of the lease parcels fall within Special Recreation Management Areas (SRMA) and are subject to special stipulations. Much of the BLM-administered acres proposed for lease consist of small, isolated and scattered tracts with limited legal public access. The lack of public access limits use of the BLM parcels for recreational use by the general public. Although there are approximately 3 - 4 miles of primitive routes designated open to motorized travel across these parcels, these routes receive very limited public recreational use due to the absence of any outstanding scenery or opportunities for recreational activities. The heaviest use period for recreational activities would occur during the hunting seasons for deer, elk, antelope, and sage grouse.

3.15 Lands and Realty

The lands proposed for leasing of a portion of the federal mineral estate are a mixture of both full fee estate (BLM surface and federal mineral estate) and split estate (non-federal surface overlying federal mineral estate) under the jurisdiction of the BLM. Two of the nine parcels are split estate with non-federal surface only overlying the federal mineral estate. One parcel is full fee estate with both the surface and mineral estates under federal ownership. The remaining six parcels are split estate parcels containing a mixture of federal and non-federal surface overlying federal mineral estate.

In the case of eight of the nine proposed parcels, the federal government owns the full mineral estate (all minerals). For the ninth parcel, GT, the federal government owns the full mineral estate on all but a 40-acre portion on which the federal government reserved only oil and gas, coal, phosphate, and geothermal resources.

Parcel M8 is one of the two split estate parcels mentioned above with non-federal surface only overlying federal mineral estate. It lies about nine miles southwest of Twin Bridges, Montana. Much of the parcel has legal and physical general public access via an existing Madison County road. The lands constituting this parcel are subject to the standard government reservation for a right-of-way for ditches or canals constructed by authority of the United States in accordance with the Act of August 30, 1890 (43 U.S.C. 945). No other BLM issued rights-of-way or other land use authorizations exist on this parcel.

Parcel G4 is the one parcel mentioned above with both surface and mineral estates under federal ownership. It lies north of Dillon, Montana a distance of approximately 16 miles and consists of a single tract. The parcel is encumbered by two BLM-issued rights-of-way including: 1) MTM-96025 – a 20-foot-wide buried communications line right-of-way to 3 Rivers Telephone Cooperative, Inc. located in Lot 4, Sec. 28, and SW¹/₄NE¹/₄, NW¹/₄NW¹/₄, N¹/₂SE¹/₄NW¹/₄, and E¹/₂SE¹/₄, Sec.29, T. 4 S., R. 8 W., PMM, and 2) MTM-60935 – a 20-foot wide electric distribution line right-of-way to Vigilante Electric Cooperative with the same legal description as MTM-96025. Very small portions of the NW¹/₄NW¹/₄ and SE¹/₄SE¹/₄, Sec. 29, are included in a hay permit to the Garrisons. Portions of both Sec. 28 and 29 are within Power Site Classification 103. The NW¹/₄NW¹/₄ and the SE¹/₄SE¹/₄, Sec. 29, are within Power Site Reserve 515 established by Executive Order of December 13, 1915. Both of these latter two actions withdraw the lands from surface disposal only. This parcel has both physical and legal public access via a Madison County road that traverses the southern and western portions of the parcel.

Parcel GT is one of the six split estate parcels mentioned above containing a mixture of federal and non-federal surface overlying federal mineral estate. It's also the parcel discussed above where there's a 40-acre portion on which the federal government reserved only certain minerals. This patented 40-acre portion of the parcel also contains the standard reservation for ditches and canals. This parcel lies both along and near I-15 about 15 miles north of Dillon, Montana. Legal and physical public access to the larger of the two tracts composing this parcel is provided by both I-15 and the Old Butte County Road No. 030. The public does not appear to have legal access to the smaller of these two tracts.

Parcel GT is encumbered by several BLM-issued rights of way including: 1) MTM-60935 – a 20-foot wide electric distribution line right-of-way to Vigilante Electric Cooperative in the SW¹/₄NW¹/₄ and NW¹/₄SW¹/₄, Sec. 3, T. 5 S., R. 9 W., PMM; MTM-14057 – a variable width road right-of-way to the Montana Highway Commission for I-15 in the S¹/₂NW¹/₄ and N¹/₂SW¹/₄, Sec. 3; and MTM-90277 – a 20-foot wide buried fiber optic line right-of-way to 3 Rivers Telephone Cooperative, Inc. located in S¹/₂NW¹/₄, N¹/₂SW¹/₄, and SW¹/₄SE¹/₄, Sec. 3. It should be noted that the smaller of the two tracts, although patented, was patented subject to an existing 100-foot wide, 161kV power transmission line right-of-way to Northwestern Corporation under BLM Serial No. MTGF-085885. Also, while no BLM right-of-way can be located for it, the Union Pacific Railroad traverses the eastern portion of the larger tract in generally a southwest to

northeast direction. This is a functioning railroad with trains passing over these tracks on a frequent basis.

Parcel GC is one of the six split estate parcels mentioned above containing a mixture of federal and non-federal surface overlying federal mineral estate. This single tract is located about ten miles to the northwest of Dillon, Montana. All patented lands within this parcel have the standard government reservation for ditches or canals. The only BLM-issued right-of-way of record on this parcel is MTM-5487 which is a 100-foot wide, 230 kV power transmission line right-of-way issued to Northwestern Corporation. It's located in the E $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ NW $\frac{1}{4}$, and W $\frac{1}{2}$ SW $\frac{1}{4}$, Sec. 12, T. 6 S., R. 10 W., PMM. Legal general public access does not exist to this parcel by state or county roads.

Parcel FY is one of the six split estate parcels discussed above containing a mixture of federal and non-federal surface overlying federal mineral estate. This parcel, consisting of a single tract, lies about six miles to the northwest of Dillon, Montana. Those portions of the parcel with non-federal surface contain the standard government reservation for ditches or canals. The general public has physical and legal access to the parcel via a Beaverhead County Road known as the Ten Mile Road.

Parcel FY is encumbered by several BLM-issued rights-of-way including: 1) MTM-101296 – a 100-foot wide 69kV electric transmission line right-of-way to Vigilante Electric Cooperative located in Lot 3 and SW $\frac{1}{4}$, Sec. 5, W $\frac{1}{2}$ NW $\frac{1}{4}$, Sec. 8, T. 7 S., R. 9 W., PMM; 2) MTGF-085885 – an 80-foot wide 161kV electric transmission line right-of-way issued to Northwestern Corporation with the same legal description as the 69kV electric transmission line mentioned above in this paragraph; 3) MTM-30769 – an 80-foot wide right-of-way for a 161kV electric transmission line to Northwestern Corporation located in the S $\frac{1}{2}$ NW $\frac{1}{4}$ of Sec. 8; and 4) MTM-60935 – a 20-foot wide electric distribution line right-of-way to Vigilante Electric Cooperative located on patented surface in lot 3 and federal surface in the NE $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 7, T. 7 S., R. 9 W., PMM.

Parcel FY also has a relatively small portion that was patented to Beaverhead County as a shooting range under the Recreation and Public Purposes Act of June 14, 1926, as amended and supplemented. It includes Lots 1, 2, and 3, Sec. 7, T. 7 S., R. 9 W., PMM.

Parcel FX is one of the two split estate parcels discussed above with non-federal surface only overlying federal mineral estate. This parcel consists of two separate tracts located about three miles north-northwest of Dillon, Montana. Legal access to these two tracts by the general public does not exist. These two patented tracts contain the standard government reservation for ditches and canals. The tracts are not encumbered by any BLM-issued rights-of-way or other land use authorizations.

Parcel GA is one of the six split estate parcels mentioned above containing a mixture of federal and non-federal surface overlying federal mineral estate. It consists of a single tract lying about

a mile and a half west of Dillon, Montana. The vast majority of the parcel is patented and contains the standard government reservation for ditches and canals. Beaverhead County Road No. 017, known as the Ten Mile Road, clips the very southwestern portion of this parcel. The parcel is not encumbered by any BLM-issued rights-of-way or other land use authorizations.

Parcel GB is also one of the six split estate parcels mentioned above containing a mixture of federal and non-federal surface overlying federal mineral estate. It consists of a single tract of land lying approximately five miles west of Dillon, Montana. Two-thirds of the parcel is patented and contains the standard government reservation for ditches and canals. BLM ownership records show the patented portion of this parcel being encumbered with BLM-issued right-of-way, 100 feet in width, for a 161kV power transmission line issued to Northwestern Corporation. No other BLM-issued rights-of-way or land use authorizations encumber this parcel. The parcel does not have legal general public access.

Parcel GN is another of the six split estate parcels mentioned earlier with both federal and non-federal surface overlying federal mineral estate. However, the vast majority of this parcel, consisting of a single tract, has non-federal surface ownership. The parcel is located south of Dillon, Montana about 15 miles. That portion of this parcel comprised of non-federal surface contains the standard government reservation for ditches and canals. The BLM has a 40-foot wide, non-exclusive road easement from Zenchiku Land and Livestock, Inc. over the W $\frac{1}{2}$ E $\frac{1}{2}$, Sec. 33, T. 9 S., R. 9 W., PMM. The easement is limited in nature, but does allow recreation access by the general public to lands administered by the United States. No BLM-issued rights-of-way or other land use authorizations exist on this parcel.

It should be noted that a designated energy transport corridor follows the general north-south route of the above-mentioned 161kV electric transmission line right-of-way through the federal surface/federal minerals portion of Parcel FY. This corridor, designated on federal lands, was established through the February 2006 Dillon RMP as amended by the January 2009 Westwide Energy Corridor Programmatic EIS.

Renewable energy includes biomass, geothermal, solar power, and wind. As demand has increased for clean and viable energy, the opportunity for renewable energy sources available on BLM public lands is considered as part of our multiple use objectives. Developing renewable energy projects depends on market trends and market value. The primary limiting factors in site selection include access to power transmission interconnects, acquisition of permits, and power purchase agreements between the producer and owner of the power lines.

The Dillon RMP designates no specific public lands for renewable energy development. It indicates that opportunities for renewable energy development would be analyzed and provided on a case-by-case basis. Such opportunities would be provided to the extent consistent with other goals, objectives, and requirements of the land use plan while taking into consideration designated right-of-way exclusion and avoidance areas as well as designated corridors and use

areas. Currently, no biomass, geothermal, solar power, or wind projects are in the area of the aforementioned parcels.

3.16 Minerals

3.16.1 Fluid Minerals

It is the policy of the BLM to make mineral resources available for disposal and to encourage development of these resources to meet national, regional, and local needs, consistent with national objectives of an adequate supply of minerals at reasonable prices. At the same time, the BLM strives to assure that mineral development occurs in a manner which minimizes environmental damage and provides for the reclamation of the lands affected.

3.16.1.1 Federal Oil and Gas Lease Information and Federal, State and Private Oil and Gas Development Activity within the External Boundaries of the Field Office

There are 66,899 federal mineral acres that are leased for oil and gas in the Dillon FO. Currently 1,800 acres leased in Madison County and 65,099 acres leased in Beaverhead County. There is no existing production activity on or adjacent to this lease acreage. Since 1939, there has been a total of 8 oil and gas wells drilled in Madison County, with the latest drilling activity occurring in Section 18, T. 7 S., R. 1 E. in December 1984. For Beaverhead County, 29 oil and gas wells have been drilled since 1917, with the latest drilling activity occurring in Section 4, T. 13 S., R. 9 W., in January 1996. Information on numbers and status of wells on these leases and well status and numbers of private and state wells within the two townships containing lease parcels can be found in Table 7. Numbers of townships, leases acres within those townships, and development activity for all jurisdictions are summarized in Table 7.

If a lease parcel receives leasing interest and oil and gas lease sales lead to lease issuance, there could be interest in exploration or development activity during the term of the lease. Exploration and development proposals in the future would require a separate NEPA environmental document to consider specific proposals and site-specific resource concerns and subject to public review.

Table 7. Oil and Gas Leasing and Existing Development within Townships Containing Lease Parcels

	FEDERAL WELLS	PRIVATE AND STATE WELLS
Drilling Well(s)	0	0
Producing Gas Well(s)	0	0
Producing Oil Well(s)	0	0
Water Injection Well(s)	0	0
Shut-in Well(s)	0	0
Temporarily Abandoned Well(s)	0	0
	Madison County	Beaverhead County

Number of Townships Containing Lease Parcels	2	4
Total Acres Within Applicable Township(s)	46,080	92,160
Federal Oil and Gas Minerals	20,880	46,710
Percent of Township(s)	45.3	50.7
Leased Federal Oil and Gas Minerals	0	0
Percent of Township(s)	0	0
Leased Federal Oil and Gas Minerals Suspended	0	0
Percent of Township(s)	0	0
Federal Wells	0	0
Private and State Wells	0	0

3.16.2 Solid Minerals

Locatable Minerals

Locatable minerals are those minerals which fall under the jurisdiction of the General Mining Law of 1872 and subsequent mining laws. Locatable mineral areas may be staked by and filed by a claimant. This procedure gives the claimant exclusive rights to the use of the minerals within the claim boundaries. Management by the BLM consists of recordation of the mining claims, validity determinations, and implementation of the 43 CFR 3809 surface management regulations which ensure that environmental safeguards are in place and adequate reclamation of the public surface occurs (Heffern 1982).

There are no known locatable mineral mines, either active or abandon, in any of the parcels. A check of LR2000 on March 31, 2014 found no active claims. All of the parcels and the area in general are considered to have low potential for locatable minerals.

Saleable Minerals

Saleable minerals (mineral materials) are those common varieties of sand, stone, gravel, cinders, pumice, pumicite and clay that may be acquired under the Materials Act of 1947 (Heffern 1982; Maley 1979).

Disposal of mineral materials is a discretionary action of the authorized officer. It is sold to companies and private individuals either competitively or non-competitively depending on the volumes of material involved and presence of competitive interest. Mineral materials may also be obtained free of charge by public bodies and nonprofit organizations via a free use permit.

Potential for mineral materials within the analysis area consists primarily of sand, gravel, building stone, etc. There are no authorized mineral material sites on BLM managed lands within or near the parcels. Mineral materials occurring on public land are reserved to the government and the land patented under the Stock Raising Homestead Act.

Oil and gas operators potentially use gravel for surfacing haul roads and constructing pads for structures and equipment.

3.17 Special Designations

3.17.1 National Historic/Scenic Trails

None of the parcels are within or near national historic/scenic trails, thus further discussion is unnecessary.

3.17.2 Areas of Critical Environmental Concern (ACECs)

Only one parcel of the nine parcels being analyzed is within an ACEC. All of Section 28 in parcel G4 lies within the Block Mountain ACEC. The remainder of the parcel is west of the ACEC. The Block Mountain ACEC contains exceptional fold and thrust belt structure that is easily visible, making it a premier location to teach geologic field mapping. Each year a number of geologic field camps from around the world visit this site. Therefore, it was designated as an ACEC for its exceptional geologic features. Mineral development is not precluded in the ACEC, however, Lease Notice 14-10 would apply.

3.18 Social and Economic Conditions

3.18.1 Social and Environmental Justice

Introduction

Certain existing demographic and economic features influence and define the nature of local economic and social activity. Long-held customs, social cohesion, and history of an area provide valuable insight into how events or changes to the area may affect the livelihood and quality of life of the residents. Nominated parcels for leasing in the October 2014 lease sale occur in Beaverhead and Madison counties, Montana. While linkages exist across various social environments, given the location of the nominated parcels are mostly in unoccupied lands, the affected social environment consists of Beaverhead and Madison counties, Montana.

Affected Environment

Beaverhead and Madison counties are located in south-west portion of Montana. Both counties have close social and economic ties to the use of the available natural resources. Beaverhead County is a high producing agricultural county, especially in terms of cattle production and one of the world's largest talc mines is located there. Madison County is known for the vast recreational opportunities provided by the surrounding mountains and numerous natural resources. Beaverhead County is more populated than Madison County although both counties have a rural nature to them. The estimated populations in 2012 for each county were 9,346 and 7,733 residents respectively (US Census 2013a). The county seats are Dillon and Virginia City respectively and their estimated 2012 populations were 4,201 residents (Dillon) and 196 residents (Virginia City) (US Census 2013b). Dillon plays an important role as a commercial, education, and medical services center for this region.

Both counties contribute to Montana's agricultural production: Beaverhead County has 430 farms across 1,380,888 acres while Madison County has 571 farms with 1,085,291 acres of land in farms in 2012 (NASS 2014a). In 2013, Beaverhead County ranked first for cattle inventory and third for sheep inventory across Montana counties (NASS 2014b). In 2012, it ranked first for other hay production and seventh in alfalfa production across Montana counties (NASS 2014b). In comparison Madison County ranked eleventh across Montana counties for cattle inventory in 2013 and in 2012 ranked second in alfalfa production and third in other hay production (NASS 2014b). This information helps highlight the importance of agriculture in this region. Additional information describing the area is found in the Economics section below.

Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, states "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations..." (Executive Order 12989).

Minority populations as defined by Council on Environmental Quality (CEQ) guidance under the National Environmental Policy Act (CEQ 1997) include individuals in the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population is identified where "(a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater..." (CEQ 1997). Additionally, "[a] minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds" (CEQ 1997). Low-income populations are determined by the U.S. Census Bureau based upon poverty thresholds developed every year.

U.S. Census data is used to determine whether the populations residing in the study area constitute an "environmental justice population" through meeting either of the following criteria:

- At least one-half of the population is of minority or low-income status; or

- The percentage of population that is of minority or low-income status is at least 10 percentage points higher than for the entire State of Montana.

CEQ guidance does not provide specific criteria for determining low-income populations as it does for minority populations so for this planning effort we will use the criteria for minority populations, which are discussed above, as the criteria for low-income populations. We identify low-income and minority population percentages that are “meaningfully greater” as at least 10 percentage points higher than for the entire State of Montana.

Data for the identification of low-income is from the U.S. Census Bureau, Small Area Income and Poverty Estimates (SAIPE). The SAIPE program produces yearly single year poverty estimates for states, counties, and school districts and is considered the most accurate for these geographic scales, especially for areas with populations of 65,000 or less. Minority populations are identified using the U.S. Census Population Estimates program which provides estimates for the resident population by age, sex, race, and Hispanic origin at the national, state and county scales. Estimates from SAIPE and the Population Estimates program are used in federal funding allocations. The analysis was conducted at the county level due to the availability of the most current data.

Table 13 presents percentages of: a) individuals in poverty and b) the population’s race and ethnicity for the State of Montana, Beaverhead County and Madison County. Table 13 indicates that Yellowstone County does not have an environmental justice minority population since neither the minority nor low-income status in the study area meets the above criteria. Therefore no additional analysis is needed for this EA.

Table 8. Demographics

	Percent of Population (All Ages)								
	In Poverty ¹	Race ²						Ethnicity ²	Aggregated Minority ^{2,3}
		White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Two or more races	Hispanic	
Montana	15.6	89.7	0.6	6.5	0.7	0.1	2.5	3.1	12.8
Beaverhead County	17.2	95.1	0.8	1.6	0.6	0.4	1.6	3.9	8.4
Madison County	12.8	97.0	0.5	0.6	0.4	0.0	1.5	2.7	5.4

¹Source: U.S. Census. 2013. 2012 Poverty and Median Household Income Estimates. Small Area Income and Poverty Estimates (SAIPE) Program. Release date: December 2013.

²Source: U.S. Census. 2013. Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin for the United States, States, and Counties. Population Division. Release date: June 2013.

³The term "aggregated minority" refers to that part of the total population which is not classified as Non-Hispanic White Only by the U.S. Census Bureau. By using this definition of aggregated minority, the percentage is inclusive of Hispanics, other minority single race categories and multiple race categories that include a minority race category. This definition is most inclusive of populations that may be considered as a minority population under EO 12898.

3.19 Economics

Certain existing demographic and economic features influence and define the nature of local economic and social activity. Among these features are the local population, the presence and proximity of cities or regional business centers, longstanding industries, infrastructure, predominant land and water features, and unique area amenities. Several additional parcels in Beaverhead and Madison counties have been nominated for leasing in the October 2014 lease sale. While the majority of nominated land is unoccupied there are social and economic linkages which connect nominated parcels to people and businesses in surrounding communities.

In 2012, Beaverhead and Madison counties were estimated to have a combined total population of 17,079 people, with 8,221 households earning an average annual household income of \$73,336 (IMPLAN, 2012). In 2012, this 2-county area economy supported approximately 11,336 jobs in 153 industrial sectors, equating to approximately 1.5 people or 0.7 households per job. The top five industries operating in the local economy included: food service and drinking places, hotels and motels, cattle ranching and farming, real estate, and private hospitals (IMPLAN, 2012). High levels of economic activity concentrated in food service, drinking places, hotels and motels suggests that travel and tourism play a large role in the local economy. This is very common in many rural areas, like Beaverhead and Madison counties, where a large percentage of the area is administered as federal lands supporting a wide range of recreational opportunities.

Mineral rights can be owned by private individuals, corporations, Indian tribes, or by local, State, or Federal Governments. Typically companies specializing in the development and extraction of oil and gas lease the mineral rights for a particular parcel from the owner of the mineral rights. As of April, 2014, there were 1,800 acres in Madison and 65,099 acres in Beaverhead leased from the BLM for oil and gas development. Federal oil and gas leases are generally issued for 10 years unless drilling activities result in one or more producing wells, or the lease is part of a communitization agreement and incorporated into an existing field or unit. Once production of federal minerals from a lease has begun, the lease is considered to be held by production and the lessee is required to make royalty payments to the Federal Government. Of 66,899 acres leased from the BLM in these counties, zero acres were classified as held by production at the time of this analysis.

Leasing mineral rights for the development of oil and gas generates public revenue through the bonus bids paid at lease auctions and annual rents collected on leased parcels not held by production. Nominated parcels approved for leasing are offered by the BLM at a minimum rate of \$2.00 per acre at periodic mineral auctions. These sales are competitive and parcels with high potential for oil and gas production command bonus bids in excess of the minimum bid. The last sale in which BLM minerals in Dillon Field Office were sold was in November 2009 when a 1,197.3 acre parcel sold for \$2/ acre. While a number of parcels in Beaverhead and Madison

counties were sold at auctions prior to November 2009, only a few were sold for more than the minimum bid. Between 2006 and 2009, the BLM leased 54,738 acres of federal minerals within these the two-county study area at an average price of \$2.4 per acre. Total federal revenue generated from the lease sale of these 54,738 acres totaled \$125,656 over this time period. . In addition to the one-time payment to lease mineral rights from the federal government, lessees are required to pay rent annually until the lease is classified as held by production, or until the lease expires. These rent payments are equal to \$1.50 an acre for the first five years and \$2.00 an acre for the second five years of the lease. On annual average, total federal rental revenue from the 66,899 acres currently leased from the BLM valued at approximately \$117,000. As mentioned above, Federal oil and gas production in Montana is subject to production taxes or royalties. The Federal oil and gas royalties on production from public domain minerals equal 12.5 percent of the value of production (43 CFR 3103.3.1). At the time of this analysis, there was no oil and gas production in Beaverhead and Madison counties. Since production has yet to begin, there has been no royalty revenue associated with fluid minerals in these counties.

Forty-nine percent of Federal revenue from leasing and production of public domain minerals are distributed to the State, who then distributes 25 percent of this state revenue back to the counties of production (Title 17-3-240, MCA). If production comes from acquired Federal minerals under the Bankhead Jones authority, 25 percent of the Federal revenues are distributed directly to the counties of production. All fluid minerals leased from the Dillon Field Office were public domain at the time of this analysis. The redistribution of federal revenue from the leasing and development of public domain minerals administered by the BLM in these counties is estimated to generate more than \$57,000 in state revenue on annual average, with approximately \$14,000 returning back to Beaverhead and Madison counties. Since the distribution of revenue back to the counties is proportionate to the level of leasing and production in each county, nearly all of these revenues are distributed back to Beaverhead County. Federal revenues distributed back to counties helps fund traditional county functions such as enforcing laws, administering justice, collecting and disbursing tax funds, providing for orderly elections, maintaining roads and highways, providing fire protection, and/or keeping records. Other county functions that may be funded include administering primary and secondary education and operating clinics/hospitals, county libraries, county airports, local landfills, and county health systems.

The economic contribution of oil and gas related activities to the local economy can be measured by estimating the employment and labor income generated by 1) payments to counties associated with the leasing and rent of Federal minerals, 2) local royalty payments associated with production of Federal oil and gas, and 3) economic activity generated from exploration, drilling and associated activities. Activities related to oil and gas leasing, exploration, development, and production form a basic industry that brings money into the State and region and creates jobs in other sectors. As of 2012, the extraction of oil and natural gas (NAICS sector 20), drilling oil

and gas wells (NAICS sector 28), and support activities for oil and gas operations (NAICS sector 29) supported an estimated 33 jobs¹, about \$12,000 in employee compensation, and nearly \$512,000 in proprietor income across the two-county area (IMPLAN, 2012). Since BLM minerals account for only a small portion of fluid minerals in Beaverhead and Madison counties, only a fraction of total employment and income in these oil and gas related sectors can be attributed to leasing and development of minerals administered by the Dillon Field Office. While additional employment and income may be attributable to the payments to counties from federal minerals within county lines, these contributions are also minimal.

¹ IMPLAN job estimates are not full-time equivalents and include all full-time, part-time, and temporary positions supported oil and gas activities within the planning area. These activities may support, or partially support a number of jobs annually. In this respect, 1 job in IMPLAN lasting 12 months = 2 jobs lasting 6 months each = 3 jobs lasting 4 months

4.0 ENVIRONMENTAL IMPACTS

4.1 Assumptions and Reasonably Foreseeable Development Scenario Summary

This chapter describes the environmental effects (direct, indirect, and cumulative) that would result from the alternatives. This analysis is tiered to the final environmental impact statement (EIS) for the Dillon RMP/ROD. The analysis contained within that RMP/FEIS remains adequate. The RMP determined which areas are available for oil and gas leasing and under what conditions those leases are to be offered and sold.

The act of leasing parcels would not impact the resources. The only direct effects of leasing are creation of valid existing right and related to revenue generated by the lease sale receipts.

Potential indirect effects associated with a lease sale would result from any future developments. The BLM assumes there is a high interest in development of any leased parcels but, even if lease parcels are leased, it is speculative to assume development would actually occur, and if so, it is speculative to assume where specific wells would be drilled and where facilities would be placed. This would not be determined until the BLM receives an APD in which detailed information about proposed wells and facilities would be provided for particular leases. Upon receipt of an APD, the BLM would initiate a more site-specific NEPA analysis with public review opportunities to more fully analyze and disclose site-specific effects of specifically identified activities. In all potential exploration and development scenarios, the BLM would require the use of BMPs documented in “Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development” (USDI and USDA 2007), also known as the “Gold Book.” The BLM could also identify APD COAs, based on site-specific analysis that could include moving the well location, restrict timing of the project, or require other reasonable measures to minimize adverse impacts (43 CFR 3101.1-2 Surface use rights; Lease Form 3100-11, Section 6) to protect sensitive resources, and to ensure compliance with laws, regulations, and land use plans.

For split-estate leases, the BLM would notify the private landowners that oil and gas exploration or development activities are proposed on their lands and they are encouraged to attend the onsite inspection to discuss the proposed activities. In the event of activity on such split estate leases, the lessee and/or operator would be responsible for adhering to BLM requirements as well as reaching an agreement with the private surface landowners regarding access, surface disturbance, and reclamation.

The RFD for this EA (Appendix D) is based on information contained in the RFD developed in 2004 and for the DFO RMP. The RFD prepared for the DFO RMP contains the number of potential oil and gas wells that could be drilled and produced in the DFO area and used to

analyze the potential number of wells drilled for the 17 nominated lease parcels. The projected number of wells is used to conduct analysis for economic resources. These well numbers are only an estimate based on historical drilling and geologic data. A detailed description of the RFD forecast for this EA is found in Appendix D.

No surface disturbance would occur as a result of issuing leases. The potential acres of disturbance reflect acres typically disturbed by construction, drilling, and production activities, including infrastructure installation throughout the DFO. Typical exploration and development activities and associated acres of disturbance were used as assumptions for analysis purposes in this EA.

The assumptions were not applied to Alternative A because the lease parcels would not be offered for lease; therefore, no wells would be drilled or produced on the lease parcel, and no surface disturbance would occur on those lands from exploration and development activities).

Environmental consequences are discussed below by alternative to the extent possible at this time for the resources described in Chapter 3. As per NEPA regulations at 40 CFR 1502.14(f), 40 CFR 1502.16(h), and 40 CFR 1508.20, mitigation measures to reduce, avoid, or minimize potential impacts are identified by resource below.

4.2 Alternative A (No Action Alternative)

4.2.1 Direct and Indirect Effects Common to All Resources

Under Alternative A, the 26 parcels would not be offered for competitive oil and gas lease sale. Under this alternative, the state and private minerals could still be leased in surrounding areas.

There would be no new impacts from oil and gas exploration or production activities on the federal lease parcel lands. Development of oil and gas resources cannot occur without a lease and therefore no development would occur on the nominated parcels at this time. There would be no new impacts associated with natural resources from oil and gas production on the parcel lands although future nominations for leases may occur and would be screened for conformance with the land use plan. It is speculative to guess what and when future nominations could be. No additional natural gas or crude oil would enter the public markets, and no royalties would accrue to the federal or state treasuries from the parcel lands. The No Action Alternative would result in the continuation of the current land and resource uses on the lease parcels.

Except for Economic resources, described below, no further analysis of the No Action Alternative is presented.

4.2.2 Economics

4.2.2.1 Direct and Indirect Effects:

The economic contributions of activities associated with oil and gas development on BLM administered Federal minerals are measured in terms of the employment and labor income generated by 1) payments to counties associated with the leasing and rent of Federal minerals, 2) royalty payments associated with production of Federal oil and gas, and 3) economic activity generated from drilling and associated activities. Forward and backward linkages between businesses and people in communities surrounding parcels leased for the development of Federal minerals has enabled the oil and gas industry to attract new revenue to the region, growing the local economy and creating new employment and income opportunities in a wide range of industrial sectors. Table 9 is a summary of local revenues, employment, and labor income impacts of each alternative.

Alternative A is the no action alternative. Under Alternative A, no additional parcels would be leased and no additional public revenue would be generated. The economic contributions of activities associated with oil and gas development would remain consistent with existing conditions described in the Economics section of Chapter 3. Economic effects are summarized and displayed in comparative form in Table 9.

Table 9. Summary Comparison of Estimated Average Annual Economic Impacts

Alternative	Acres Leased	Change in Local Revenue to Counties
A	0	0
B	7,118	\$3,427

***These impacts would be in addition to impacts from existing Federal leases, rents, royalties and related activities.**

4.2.2.2 Cumulative Effects:

The lack of measurable direct and indirect effects to economic conditions under the No Action Alternative translates to a lack of measurable cumulative effects. Under this alternative the BLM will not make any additional Federal minerals available for leasing and Federal minerals leased from the Dillon will likely continue at existing levels. Current levels of BLM mineral leasing Beaverhead and Madison counties support jobs and income in the 2-county local economy and the economic contributions of oil and gas activities associated with these leases will continue to be similar to those discussed in Chapter 3.

Cumulative economic impacts associated with Federal mineral leasing under the alternatives are shown below in Table 10.

Table 10. Summary Comparison of Cumulative Annual Economic Impacts by Alternative

Activity	<u>A</u>	<u>B</u>
Existing Acres leased	66,899	66,899
Acres that would be leased based on this EA	0	7,118
Total acres leased	66,899	74,017
Acres held by production	0	0
Total acres leased for which lease rents would be	66,899	74,017

paid		
Total average annual Federal lease and rental revenue		
Average annual distribution to State*		
Average annual distribution to Counties**		
Average annual oil production (bbl)	0	0
Average annual gas production (MCF)	0	0
Total Average annual Federal O&G royalties	0	0
Average annual distribution to State*	0	0
Average annual distribution to Counties**	0	0
Total average annual Federal Revenues	\$117,073	\$147,293
Total average annual State Revenues	\$57,366	\$72,174
Total average annual revenue distributed to counties	\$14,341	\$18,043

*49 percent of Federal revenue from public domain minerals and 25 percent of Federal revenue from acquired minerals are distributed back to the State.

**Montana distributes 25 percent of public domain revenue and all of acquired mineral revenue received from the Federal Government back to the counties where revenue was generated.

Disclosure of the direct, indirect, and cumulative effects of GHG emissions provides information on the potential economic effects of climate change including effects that could be termed the “social cost of carbon” (SCC). The USEPA and other federal agencies developed a method for estimating the SCC and a range of estimated values (USEPA 2014). The SCC estimates economic damages associated with climate change impacts to net agricultural productivity, human health, property damage, and ecosystems. Using a 3 percent average discount rate and year 2020 values, the incremental SCC is estimated to be \$46 per metric ton of annual CO₂e increase. Based on the GHG emission estimate provided in Section 4.3.3.1.2, the annual SCC associated with potential development on lease sale parcels is negligible at \$444 (in 2011 dollars). Estimated SCC is not directly comparable to economic contributions reported above, which recognize certain economic contributions to the local area and governmental agencies but do not include all contributions to private entities at the regional and national scale. Direct comparison of SCC to the economic contributions reported above is also not appropriate because costs associated with climate change are borne by many different entities.

4.2.3 Social and Environmental Justice

4.2.3.1 Direct and Indirect Effects

Alt A (No Action)

The No Action alternative would result in the continuation of the current land and resource uses and would cause no additional social impacts. There would be no disproportionate effects to low income or minority populations under this alternative.

4.3 Alternative B (BLM Preferred Action)

Under Alternative B 9 parcels, 7117.78 federal mineral acres would be offered for competitive oil and gas lease sale.

4.3.1 Direct and Indirect Effects Common to All Resources

The action of leasing the parcels in Alternative B would, in and of itself, have no direct impact on resources. Direct effects of leasing are the creation of a valid existing right and those related to the revenue generated by the lease sale receipts.

Any potential effects on resources from the sale of leases would occur during lease exploration and development activities, which would be subject to future BLM decision-making and NEPA analysis upon receipt of an APD or sundry notice.

Oil and gas exploration and development activities such as construction, drilling, production, infrastructure installation, vehicle traffic and reclamation could be indirect effects from leasing the lease parcels in Alternative B. As mentioned above, it is speculative to make assumptions about whether a particular lease parcel would be sold and, even if so, it is speculative to assume when, where, how, or if future surface disturbing activities associated with oil and gas exploration and development such as well sites, roads, facilities, and associated infrastructure would be proposed. It is also not known how many wells, if any, would be drilled and/or completed, the types of technologies and equipment would be used and the types of infrastructure needed for production of oil and gas. Thus, the types, magnitude and duration of potential impacts cannot be precisely quantified at this time, and would vary according to many factors.

Typical impacts to resources from oil and gas exploration and development activities such as well sites, roads, facilities, and associated infrastructure are described in the Dillon field Office RMP (2004), the Montana Statewide Oil & Gas Amendment/EIS (2003) and the Supplement (2008) to that document.

4.3.2 Potential Air Resources

4.3.2.1 Direct and Indirect Effects

4.3.2.1.1 Air Quality

Leasing the parcels would have no direct impacts on air quality. Any potential effects on air quality from sale of lease parcels would occur at the time the leases are developed.

Potential impacts of development could include increased airborne soil particles blown from new well pads or roads; exhaust emissions from drilling equipment, compressors, vehicles, and dehydration and separation facilities; and potential releases of GHGs and volatile organic compounds during drilling or production activities. The amount of increased emissions cannot be precisely quantified at this time since it is not known for certain how many wells might be

drilled, the types of equipment needed if a well were to be completed successfully (e.g., compressor, separator, dehydrator), or what technologies may be employed by a given company for drilling any new wells. The degree of impact would also vary according to the characteristics of the geologic formations from which production occurs, as well as the scope of specific activities proposed in an APD.

HAPs would also be emitted from oil and gas operations, including well drilling, well completion, and gas and oil production. Recent air quality modeling performed for the Billings FO indicates that concentrations of benzene, ethylbenzene, formaldehyde, n-hexane, toluene, and xylene would be less than 11 percent of applicable health-based standards and that the additional risk of cancer would be less than 0.25 in one million (BLM 2013).

Current data indicate that criteria pollutant concentrations in Beaverhead and Madison counties are below applicable air quality standards. The potential level of development and mitigation described below is expected to maintain good air quality in the lease area.

5.0 CONSULTATION AND COORDINATION:

5.1 Persons, Agencies, and Organizations Consulted

Coordination with MFWP and USFWS was conducted for the 9 lease parcels being reviewed. BLM has coordinated with MFWP and USFWS in the completion of this EA in order to prepare analysis, identify protective measures, and apply stipulations associated with these parcels being analyzed.

The BLM consults with Native Americans under Section 106 of the National Historic Preservation Act. BLM sent letters to tribes in Montana, North and South Dakota and Wyoming at the beginning of the 15 day scoping period informing them of the potential for the 9 parcels to be leased and inviting them to submit issues and concerns BLM should consider in the environmental analysis. Letters were sent to the Tribal Chairperson/Presidents and THPO or other cultural contacts for the Eastern Shoshone Tribe, Blackfeet Tribe, Shoshone-Bannack Tribe, Confederated Salish and Kootenai Tribe. BLM will send a second letter to the tribes informing them about the 30 day public comment period for the EA and soliciting any information BLM should consider before making a decision whether to offer any or all of the 29 parcels for sale.

5.2 Summary of Public Participation

Scoping

Public scoping for this project was conducted through a 15-day scoping period advertised on the BLM Montana State Office website and posting on the field office website NEPA notification log. Scoping was initiated March 25, 2014. Surface owner notification letters were also distributed briefly explaining the oil and gas leasing process and planning process. The surface

owner notification letter requested written comments regarding any issues or concerns that should be addressed in the environmental analysis. The written and verbal communication resulted in a total of 6 individual scoping comments pertaining to this EA.

The 6 comments received were a combination of comments/requests for additional information (e.g., split estate brochure) regarding the general process of oil and gas leasing, split estate, questions about the planning process, and questions regarding the verification of mineral ownership and extension of scoping deadline.

5.3 List of Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Robert Gunderson	Geologist	IDT Lead, Minerals (Locatable, Salable)
Stephen Armiger	Hydrologist	Soil, Water, Riparian
Kelly Savage	Rangeland Management Specialist	TES plants
Katie Benzel	Wildlife Biologist	Wildlife
Paul Hutchinson	Fish Biologist	Fish
Michael Mooney	Range Technician (IWM Program Manager)	Noxious weeds
Brian Thrift	Rangeland Management Specialist	Vegetation Resources, Livestock grazing
Rick Waldrup	Outdoor Recreation Planner	Visual Resources, Recreation and Travel Management
Jason Strahl	Archaeologist	Cultural Resources, Native American Religious Concerns
Greg Liggitt	Paleontologist	Paleontologist
Jeff Daugherty	Realty Specialist	Lands
Laurie Blinn	GIS Specialist	Maps and Data
Jennifer Dobb	Planning & Environmental Specialist	Economic Conditions
Mike Philbin	Acting Branch Chief for Biological resources and Science	Riparian/Groundwater Review
Barney Whiteman	Petroleum Engineer	Fluid Minerals
Cornie Hudson	Field Manager	Review
Jennifer Dobb	Specialist	Economic Analysis
Susan Bassett	Air Resource Specialist	Air Resources, Climate

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7.0 DEFINITIONS

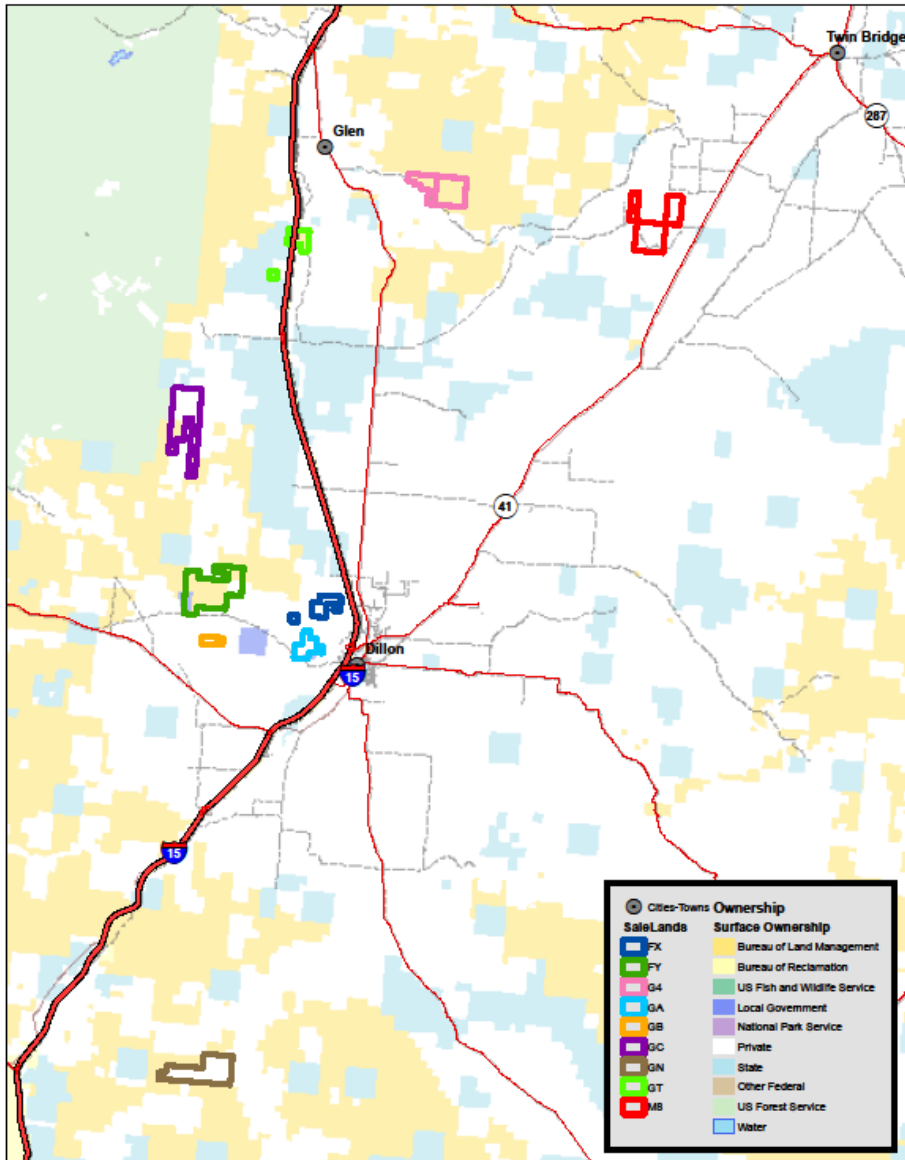
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MAPS

Map 1

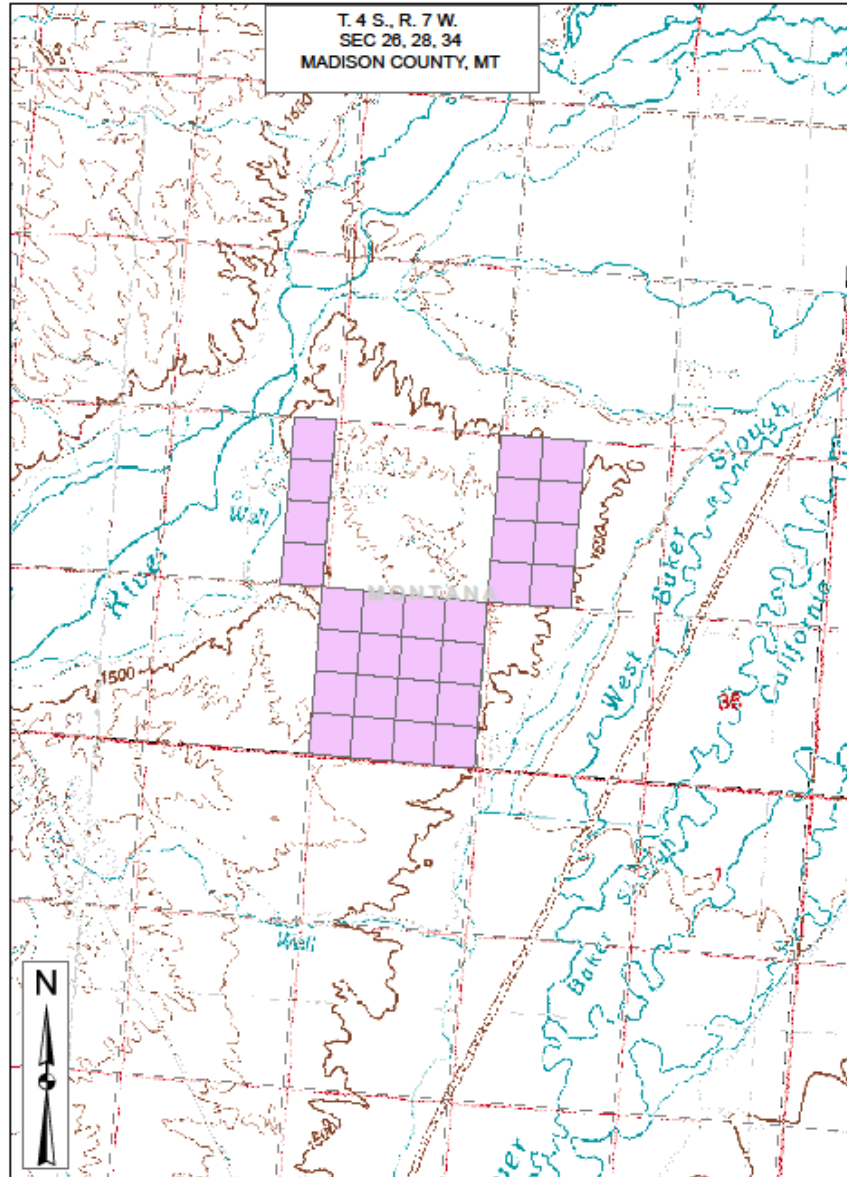
October 2014 Lease Sale Parcels



Map 2



MTM79010M8



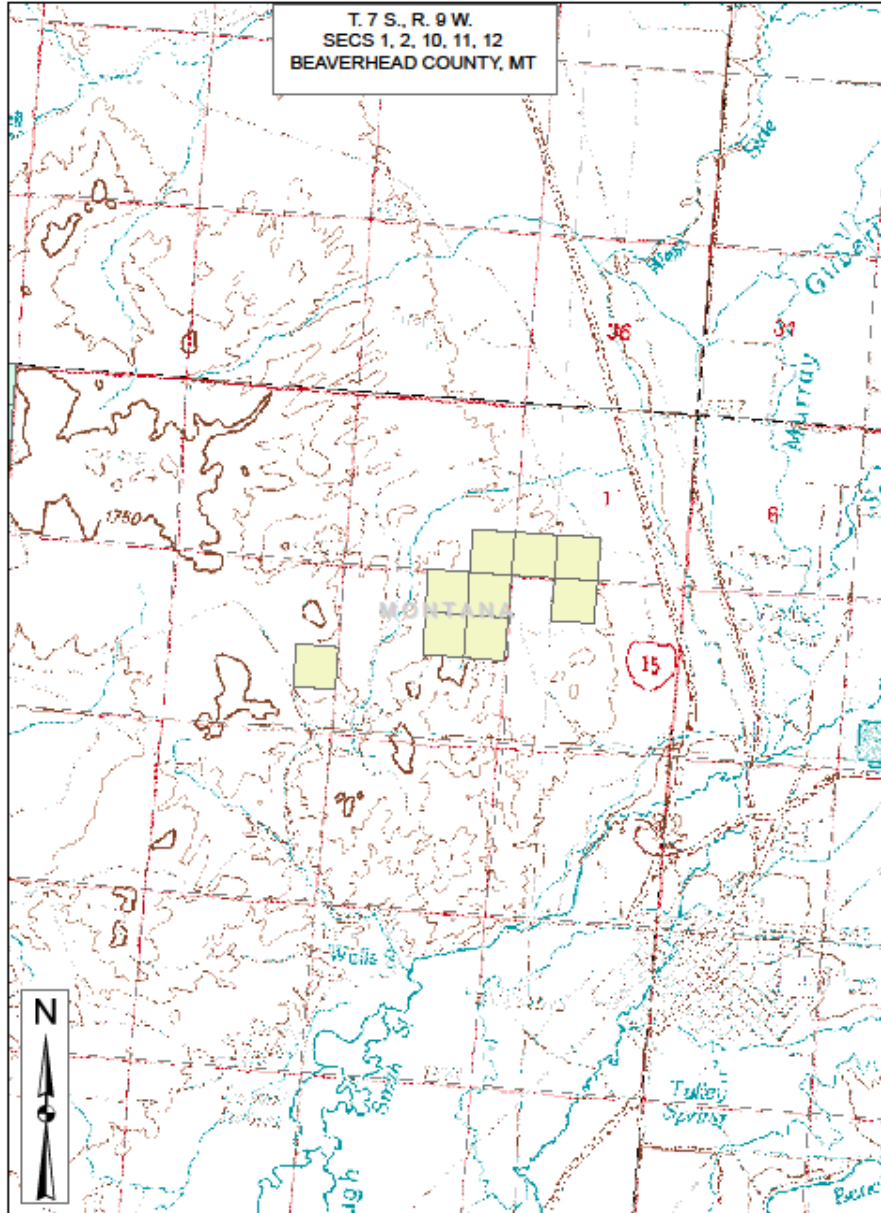
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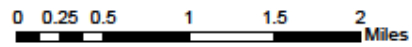
Map 3



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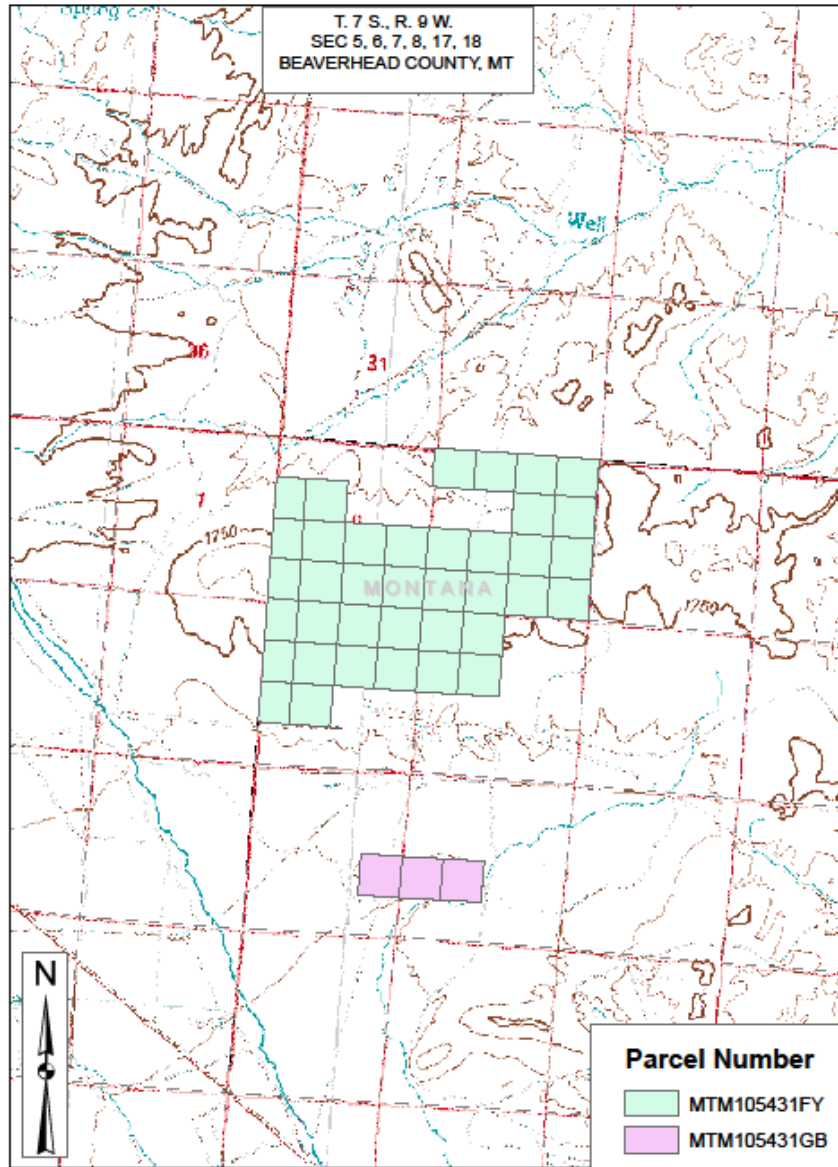
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Map 4



Lease Sale Parcels



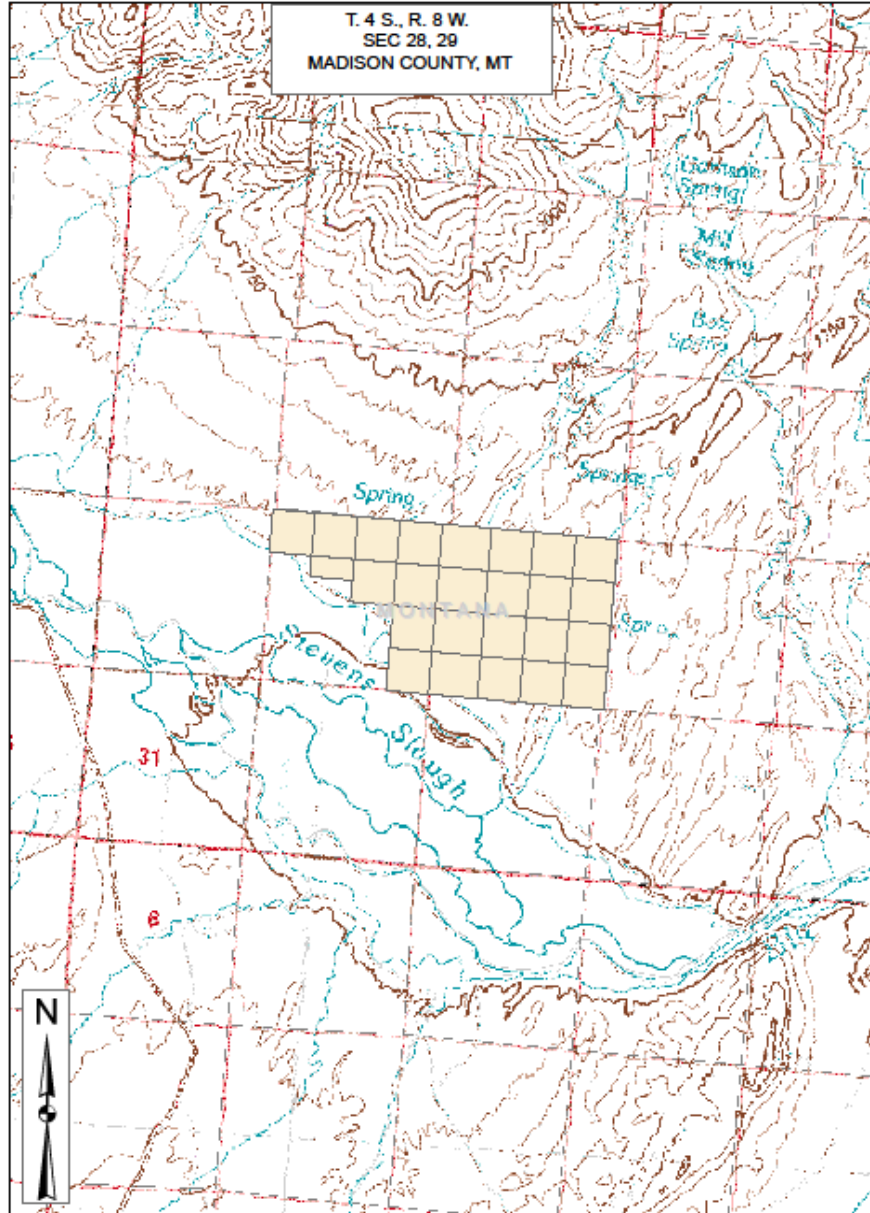
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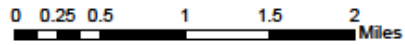
Map 5



MTM105431G4



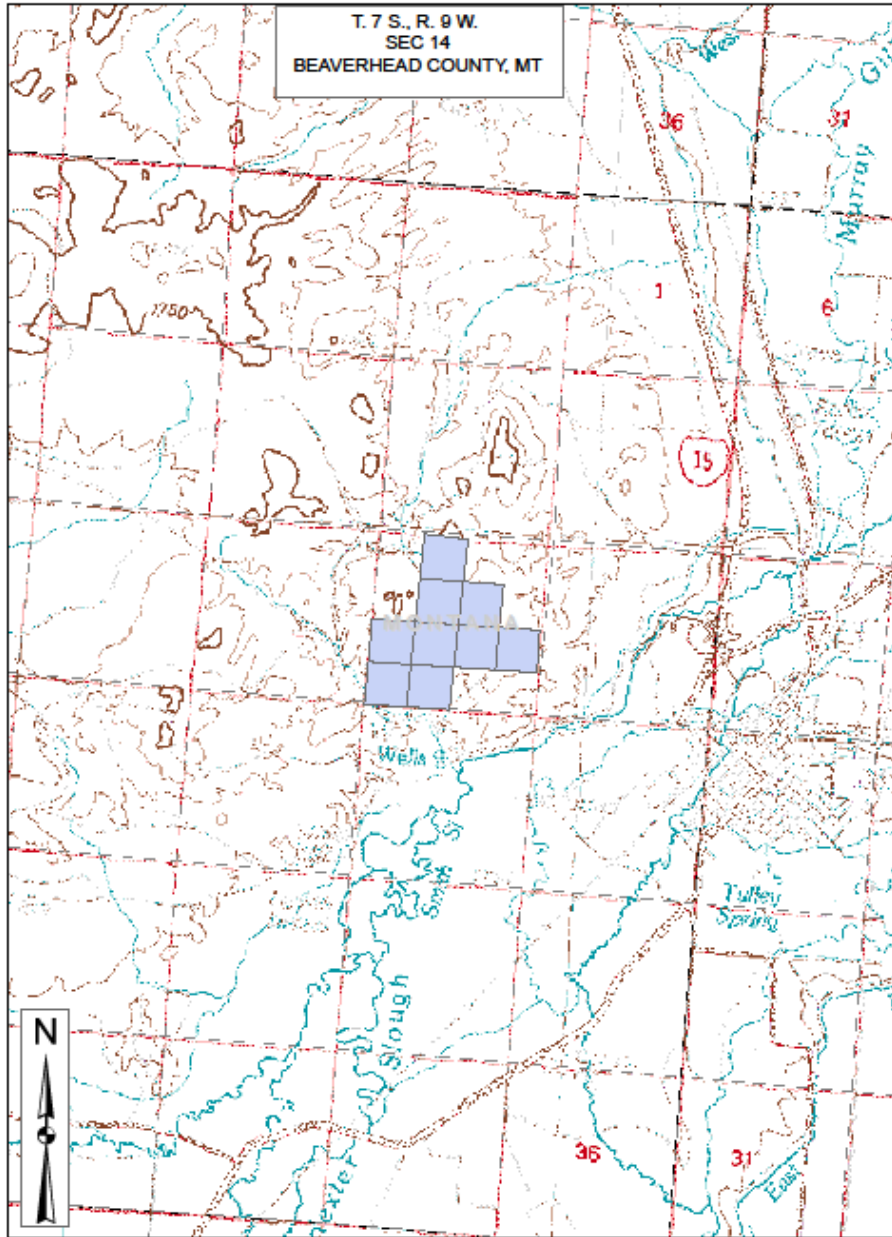
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Map 6



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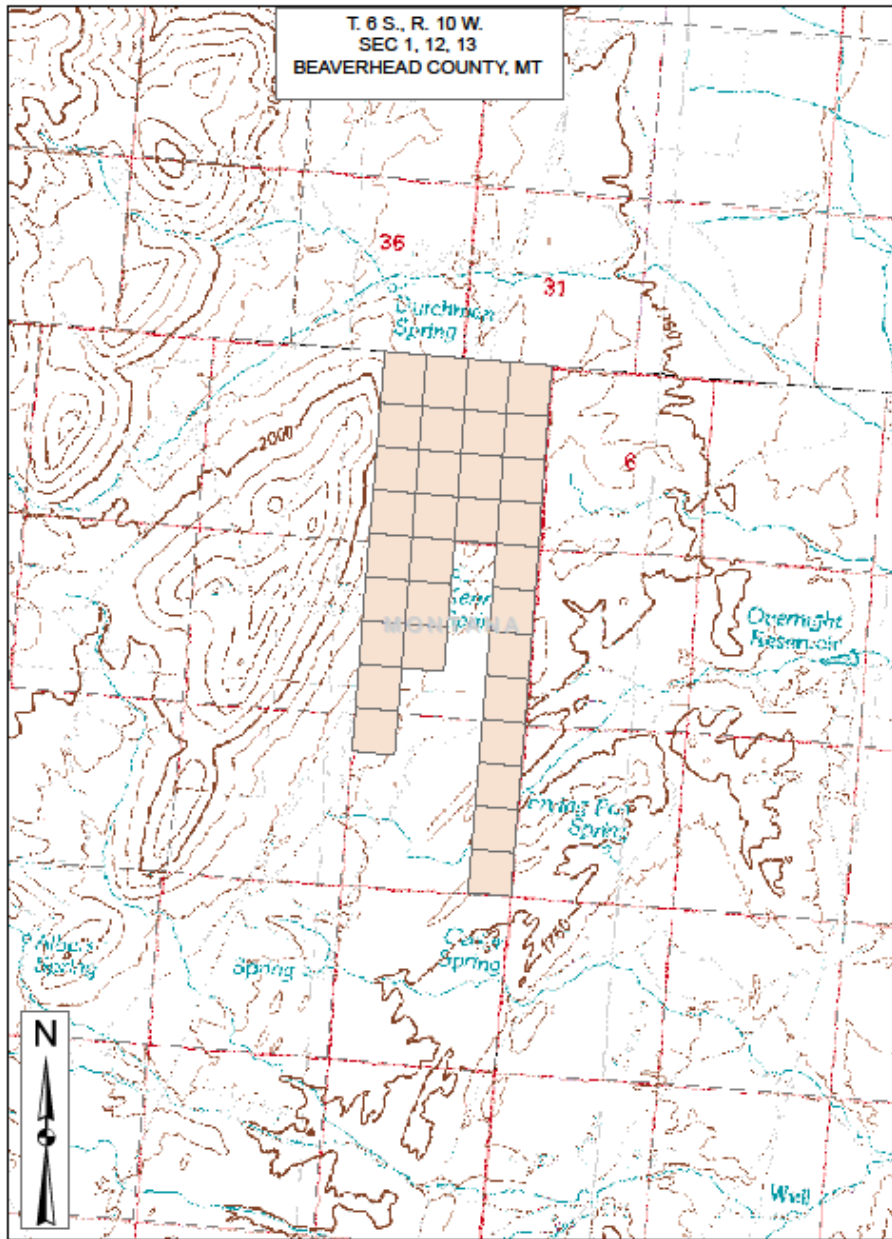
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Map 7



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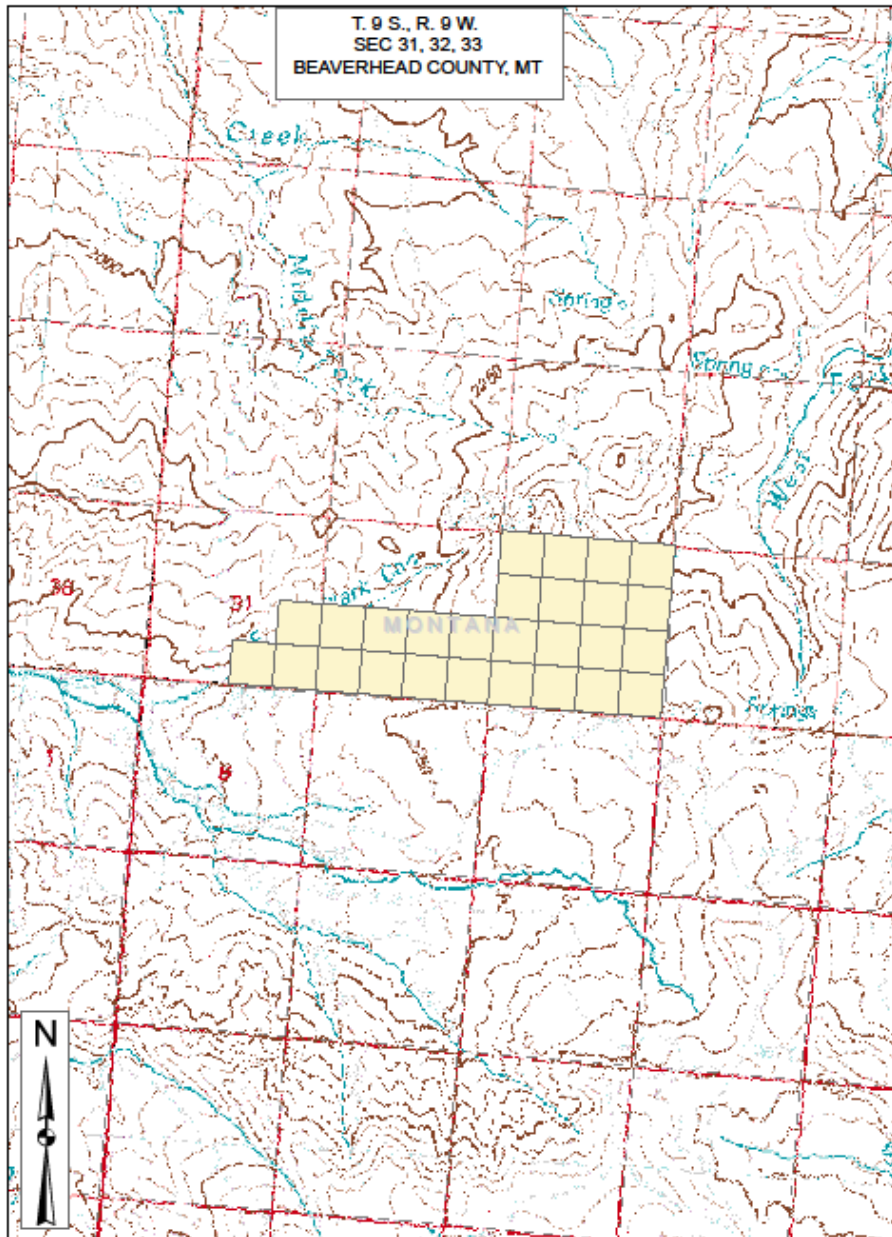


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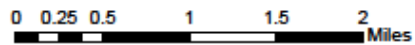
Map 8



MTM105431GN



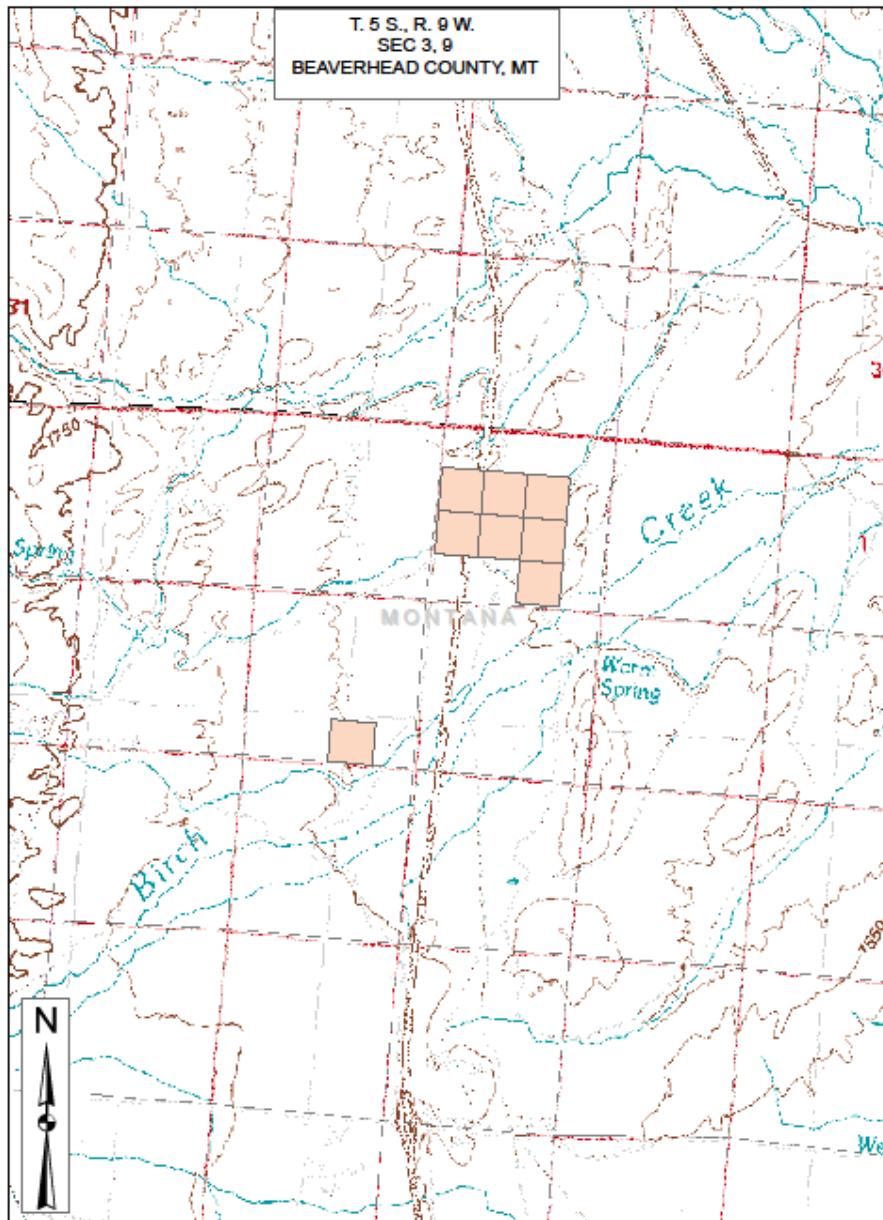
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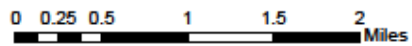
Map 9



MTM105431GT



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Appendix A. Lease Parcel Summary

PARCEL NUMBER	PARCEL DESCRIPTION	PROPOSED FOR LEASING ALTERNATIVE B	PROPOSED FOR DEFERRAL-NO LEASING
MTM 105431-GY	T. 6 S, R. 6 W, PMM, MT SEC. 14 LOT 7; SEC. 14 SESW,N2SE,SWSE; SEC. 22 LOT 1; SEC. 23 LOT 4; SEC. 23 SWNW,N2SW; MADISON COUNTY 398.69 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT
MTM 79010-M8	T. 4 S, R. 7 W, PMM, MTSEC. 26 W2;SEC. 28 E2E2;SEC. 34 ALL; MADISON COUNTY 1120.00 AC PD	LN-12 (ALL LANDS) CR 16-1 (ALL LANDS) TES 16-2 (All Lands) NSO-11-6 SEC. 28 E2NE; NSO-11-20 SEC. 28 W2NE,NESE; NSO-11-23 SEC. 28 E2E2;SEC. 34 N2NW; CSU-12-7 (ALL LANDS) CSU-12-10 (ALL LANDS) TL-13-7 SEC. 26 W2;SEC. 34 ALL; TL-13-10 SEC. 26 W2;SEC. 28 E2E2;	

MTM 105431-GQ	T. 8 S, R. 7 W, PMM, MTSEC. 5 SW,NWSE,S2SE;SEC. 6 E2SE;SEC. 8 N2N2,SENE,S2NW,N2SW,SESW,SE; BEAVERHEAD COUNTY 920.00 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT
MTM 105431-GR	T. 8 S, R. 7 W, PMM, MT SEC. 17 NE,S2; SEC. 20 N2N2; BEAVERHEAD COUNTY 640.00 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT
MTM 105431-G3	T. 4 S, R. 8 W, PMM, MT SEC. 20 LOTS 1-4; SEC. 20 E2,E2W2; SEC. 21 ALL; MADISON COUNTY 1309.16 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT

<p>MTM 105431-G4</p>	<p>T. 4 S, R. 8 W, PMM, MT SEC. 28 LOTS 1-4; SEC. 28 E2,E2W2; SEC. 29 NE,N2NW,N2SENE,E2SE; MADISON COUNTY 1006.00 AC PD</p>	<p>LN 14-12 (ALL LANDS) CR 16-1 (ALL LANDS) TES 16-2 (ALL LANDS) NSO-11-2 SEC. 28 LOTS 1 and 2; NSO-11-12 SEC. 28 LOT 3;SEC. 28 NESW; NSO-11-23 SEC. 28 LOTS 1-4;SEC. 28 E2NW, NESW;SEC. 29 NE, E2SE; NSO-11-24 SEC. 28 LOT 1;SEC. 29 N2N2; NSO-11-28 SEC. 29 NWNW,SESE; CSU-12-1 SEC. 28 LOTS 1-3;SEC. 28 N2NE, SE, NESW;SEC. 29 N2NE, SENE, NESE; CSU-12-7 (ALL LANDS) CSU-12-10 (ALL LANDS) TL-13-7 SEC. 28 LOTS 1-4;SEC. 28 E2, E2W2;SEC. 29 NE, N2NW, N2SENE, NESE; TL-13-10 SEC. 29 W2NE, SENE, N2NW, N2SENE, E2SE; TL-13-13 SEC. 28 E2;</p>	
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MTM 105431-GK	T. 9 S, R. 8 W, PMM, MTSEC. 1 LOTS 1-4;SEC. 1 S2N2;SEC. 2 S2N2,NESW; BEAVERHEAD COUNTY 521.44 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT
MTM 105431-GL	T. 9 S, R. 8 W, PMM, MT SEC. 12 N2NE,SENE,NENW,NESE; BEAVERHEAD COUNTY 200.00 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT
MTM 105431-GT	T. 5 S, R. 9 W, PMM, MT SEC. 3 SWNE,S2NW,N2SW,W2SE; SEC. 9 SWSE; BEAVERHEAD COUNTY 320.00 AC PD	LN 14-12 (ALL LANDS) CR 16-1 (ALL LANDS) TES 16-2 (ALL LANDS) NSO-11-22 SEC. 3 SWNE, NESW, W2SE; CSU-12-7 (ALL LANDS) CSU-12-10 (ALL LANDS) TL-13-7 SEC. 9 SWSE;	
MTM 105431-GU	T. 5 S, R. 9 W, PMM, MT SEC. 4 LOTS 3,4; SEC. 4 SWNW; SEC. 5 LOTS 1-4; SEC. 5 S2N2,N2SW,SESW,SE; BEAVERHEAD COUNTY 729.60 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT

MTM 105431-GV	T. 5 S, R. 9 W, PMM, MT SEC. 6 LOTS 1-7; SEC. 6 S2NE,SE,SE; SEC. 7 LOTS 1-4; SEC. 7 W2NE,E2W2,SE; BEAVERHEAD COUNTY 1189.73 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT
MTM 105431-GW	T. 5 S, R. 9 W, PMM, MT SEC. 18 LOTS 1-4; SEC. 18 E2,E2W2; SEC. 19 LOTS 1,2; SEC. 19 E2NW; BEAVERHEAD COUNTY 791.69 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT
MTM 105431-FX	T. 7 S, R. 9 W, PMM, MT SEC. 1 S2SW;SEC. 2 SESE;SEC. 10 NESE;SEC. 11 NE;SEC. 12 NENW; BEAVERHEAD COUNTY 360.00 AC PD	LN 14-3 (ALL LANDS) CR 16-1 (ALL LANDS) TES 16-2 (ALL LANDS) CSU-12-1 SEC. 1 SWSW; SEC. 2 SESE; SEC. 10 NESE; SEC. 11 W2 NE,SENE; SEC. 12 NENW; CSU-12-7 (ALL LANDS) CSU-12-10 (ALL LANDS) TL-13-7 SEC. 1 SWSW; SEC. 2 SESE; SEC. 10 NESE; SEC. 11 NE; SEC. 12 NENW;	

<p>MTM 105431-FY</p>	<p>T. 7 S, R. 9 W, PMM, MT SEC. 5 LOTS 1-4; SEC. 5 S2NE,S2; SEC. 6 LOTS 5-7; SEC. 6 SENW,E2SW,SE; SEC. 7 LOTS 1-3; SEC. 7 NE,E2NW,NESW; SEC. 8 NW; BEAVERHEAD COUNTY 1448.48 AC PD</p>	<p>LN 14-12 (ALL LANDS) NSO-11-28 SEC. 7 LOTS 1-3; CSU-12-6 SEC. 5 LOTS 1-4; SEC. 5 S2NE, N2SW; SEC. 6 LOTS 5 and 6; SEC. 6 SENW,NESW,N2SE; CSU-12-1 SEC. 5 NESE,SWSE,SESW; SEC. 6 W2SE,E2SW; CSU-12-7 (ALL LANDS) CSU-12-10 (ALL LANDS) TL-13-7(ALL LANDS)</p>	
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<p>MTM 105431-GA</p>	<p>T. 7 S, R. 9 W, PMM, MT SEC. 14 LOT 4; SEC. 14 SWNE,E2NW,SW,NWSE; BEAVERHEAD COUNTY 357.30 AC PD</p>	<p>LN 14-3 (ALL LANDS) CR 16-1 (ALL LANDS) TES 16-2 (ALL LANDS) NSO-11-17 SEC. 14 SW; NSO-11-20 SEC. 14 LOT 4; SEC. 14 S2SW, NWSE; NSO-11-22 SEC. 14 LOT 4; SEC. 14 NWSE; NSO-11-23 SEC. 14 LOT 4; SEC. 14 SWNE, E2NW, E2SW, NWSW, NWSE; NSO-11-26 (ALL LANDS) CSU-12-1 (ALL LANDS) CSU-12-7 (ALL LANDS) CSU-12-10 (ALL LANDS) TL-13-11 SEC. 14 SW; TL-13-13 (ALL LANDS)</p>	
<p>MTM 105431-GB</p>	<p>T. 7 S, R. 9 W, PMM, MT SEC. 17 N2SW; SEC. 18 NESE; BEAVERHEAD COUNTY 120.00 AC PD</p>	<p>LN 14-12 (ALL LANDS) CR 16-1 (ALL LANDS) TES 16-2 (ALL LANDS) NSO-11-22 SEC. 17 NESW; NSO-11-23 (ALL LANDS) CSU-12-1 (ALL LANDS) CSU-12-7 (ALL LANDS) CSU-12-10 (ALL LANDS) TL-13-7 (ALL LANDS)</p>	

MTM 105431-GM	T. 9 S, R. 9 W, PMM, MT SEC. 29 ALL; SEC. 30 LOT 1; SEC. 30 E2,E2W2; BEAVERHEAD COUNTY 1158.92 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT
MTM 105431-GN	T. 9 S, R. 9 W, PMM, MT SEC. 31 NESE,S2SE; SEC. 32 S2; SEC. 33 ALL; BEAVERHEAD COUNTY 1080.00 AC PD	LN 14-3 (ALL LANDS) CR 16-1 (ALL LANDS) TES 16-2 (ALL LANDS) NSO-11-2 SEC. 31 NESE,SWSE;SEC. 32 N2SW, SESE;SEC. 33 N2NE, E2SW; NSO-11-25 SEC. 31 SWSE; CSU-12-1 SEC. 31 NESE, S2SE;SEC. 32 N2, SW, SE;SEC. 33 E2E2, SWNE, E2NW, NWNW, NESW, N2SE, SESE; CSU-12-7 (ALL LANDS) CSU-12-10 (ALL LANDS) TL-13-7 (ALL LANDS) TL-13-8 SEC. 33 SESE;	

MTM 105431-GC	T. 6 S, R. 10 W, PMM, MT SEC. 1 LOTS 1-4; SEC. 1 S2N2,S2; SEC. 12 E2E2,NW,N2SW,SWSW; SEC. 13 E2E2,NWNW; BEAVERHEAD COUNTY 1306.00 AC PD	LN 14-12 (ALL LANDS) NSO-11-24 SEC. 1 LOTS 2-4; SEC. 1 SWNE, S2NW, S2; SEC. 12 NENE, NW, N2SW, SWSW; SEC. 13 NWNW; CSU-12-1 SEC. 1 LOTS 1-4; SEC. 1 SENE, SWNW,NWSW, W2SE, NESE; SEC. 12 SENE, E2SE, NW, N2SW, SWSW; SEC. 13 E2E2, NWNW; CSU-12-6 SEC. 12 E2E2, NW, N2SW, SWSW;SEC. 13 E2E2, NWNW; CSU-12-7 (ALL LANDS) CSU-12-10 (ALL LANDS) TL-13-7 (ALL LANDS)	
MTM 105431-GD	T. 6 S, R. 10 W, PMM, MT SEC. 11 LOTS 1-4; SEC. 11 W2E2; SEC. 14 LOTS 1-4; SEC. 14 NE,N2S2; BEAVERHEAD COUNTY 784.93 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT
MTM 105431-GF	T. 6 S, R. 10 W, PMM, MT SEC. 22 N2,S2SW,SE; SEC. 27 ALL; BEAVERHEAD COUNTY 1200.00 AC PD		ALL LANDS DEFERRED

MTM 105431-GG	T. 6 S, R. 10 W, PMM, MT SEC. 23 N2,SW,W2SE,SESE; SEC. 24 N2NE,SWNE,NWNW, S2NW, NESW,S2S2,NWSE; BEAVERHEAD COUNTY 1080.00 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT
MTM 105431-GH	T. 6 S, R. 10 W, PMM, MT SEC. 25 ALL; SEC. 26 NE,E2NW,S2; BEAVERHEAD COUNTY 1200.00 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT
MTM 105431-GJ	T. 6 S, R. 10 W, PMM, MT SEC. 34 N2NE,SENE,NENW,SW, NESE,SWSE; SEC. 35 ALL; BEAVERHEAD COUNTY 1040.00 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT
MTM 105431-GX	T. 7 S, R. 10 W, PMM, MT SEC. 1 LOTS 1-4; SEC. 1 S2N2,E2SW,SE; SEC. 2 LOTS 1-4; SEC. 2 S2NE,SENW,N2SW; SEC.12 N2NE,SENE; BEAVERHEAD COUNTY 1034.02 AC PD		ALL LANDS DEFERRED FOR CORE SAGE GROUSE HABITAT

Appendix B – Master Stipulation List

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
Bureau of Land Management		
CR 16-1	CULTURAL RESOURCES LEASE STIPULATION This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities.	All Offices
CSU 12-1	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: Prior to surface disturbance on slopes over 30 percent, an engineering/reclamation plan must be approved by the authorized officer.	Billings, Miles City, South Dakota, Dillon
CSU 12-2	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: Prior to surface disturbance, a surface use plan of operations (SUPO) for oil and gas activities must be approved for black-footed ferret reintroduction areas by the authorized officer in consultation with the U.S. Fish and Wildlife Service.	Billings, Miles City, South Dakota
CSU 12-3	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: Prior to surface disturbance, prairie dog colonies and complexes 80 acres or more in size will be examined to determine the absence or presence of black-footed ferrets. The findings of this examination may result in some restrictions to the operator's plans or may even preclude use and occupancy that would be in violation of the Endangered Species Act of 1973.	Billings, Miles City, South Dakota
CSU 12-4	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: All surface-disturbing activities, semi-permanent and permanent facilities in Visual Resource Management (VRM) Class II areas may require special design, including location, painting and camouflage, to blend with the natural surroundings and meet the visual quality objectives of the area.	Billings, Miles City, South Dakota
CSU 12-5	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: No disturbance of riparian areas of wetlands, intermittent, ephemeral, or perennial streams and rivers would be allowed except for essential road and utility crossings.	North Dakota
CSU 12-6	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: Operations within Special Recreation Management Areas (SRMAs) must be conducted in a manner that minimizes encounters and conflicts with recreation users. Proposed activities may not alter or depreciate important	Dillon

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	recreational values located outside of developed areas but within the SRMA boundary.	
CSU 12-7	<p>CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: Oil and gas activities will comply with all motorized vehicle use and travel plan restrictions, including seasonal restrictions and areas closed to motorized travel.</p>	Dillon
CSU 12-8	<p>CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: An inventory of the leased lands may be required prior to surface disturbance to determine if cultural resources or paleontological localities are present and to identify needed mitigation measures.</p>	Dillon, Butte
CSU 12-9	<p>CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: In areas known to have a high potential for containing significant paleontological resources, the lessee may be required to conduct a paleontological inventory prior to any surface disturbance. If inventory is required, the lessee must engage the services of a qualified paleontologist, acceptable to the Surface Managing Agency, to conduct the inventory. An acceptable inventory report is to be submitted to the BLM for review and approval at the time a surface-disturbing plan of operations is submitted.</p>	Dillon
CSU 12-10	<p>CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: All surface disturbing activities and construction of semi-permanent and permanent facilities in Visual Resource Management (VRM) Class II, III, and IV areas may require special design including location, painting, and camouflage to blend with the natural surroundings and meet the visual quality objectives for each respective class.</p>	Dillon, Butte
CSU 12-11	<p>CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: A field inspection will be conducted for special status plant species by the lessee prior to any surface disturbance. A list of special status plant species and any known populations or suitable habitat will be provided after the issuance of the lease. Plant species on the list are subject to change over time as new information becomes available. Plant inventories must be conducted at the time of year when the target species are actively growing and flowering. An acceptable report must be provided to the BLM documenting the presence or absence of special status plants in the area proposed for surface disturbing activities. The findings of this report may result in restrictions to the operator's plans or may preclude use and occupancy.</p>	Dillon, Butte
CSU 12-12	<p>CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraints: The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. The BLM may recommend modifications to exploration and development proposals to further its</p>	Dillon, Butte

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. The BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. The BLM will not approve any ground-disturbing activity that may affect any such species or requirements of the Endangered Species Act as amended, 16 U.S.C. § et seq., including completion of any required procedure for conference or consultation.	
CSU 12-13	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: Activities within one-half mile of streams containing 90% up to 99% genetically pure westslope cutthroat trout may be relocated, require special design, or require on and off site mitigation measures to prevent impacts to sensitive trout populations.	Dillon
CSU 12-18	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: Prior to surface disturbance on areas of active mass wasting, unstable land areas, or slopes greater than 30 on non-Boulder Batholith soils or 20 percent on Boulder Batholith soils, an engineering/reclamation plan must be approved by the authorized officer. Such plan must demonstrate how the following will be accomplished: <ul style="list-style-type: none"> •site productivity will be restored. •surface runoff will be adequately controlled. •off-site areas will be protected from accelerated soil erosion. •surface disturbing activities will not be conducted during wet periods. 	Butte
CSU 12-19	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraint: Operations within Special Recreation Management Areas (SRMAs) must be conducted within a manner that minimizes encounters and conflicts with recreation users. Proposed activities may not alter or depreciate important recreational values located within the SRMA boundary.	Butte
LN 14-1	LEASE NOTICE Land Use Authorizations incorporate specific surface land uses allowed on Bureau of Land Management (BLM) administered lands by authorized officers and those surface uses acquired by the BLM on lands administered by other entities. These BLM authorizations include rights-of-way, leases, permits, conservation easements, and recreation and public purpose leases and patents.	Billings, Miles City, South Dakota
LN 14-2	LEASE NOTICE CULTURAL RESOURCES The Surface Management Agency is responsible for assuring that the leased lands are examined to determine if cultural resources are present and to specify mitigation measures.	Billings, Miles City, South Dakota, North Dakota
LN 14-3	LEASE NOTICE The lessee or operator shall immediately bring to the attention of the Surface Management Agency (SMA) any paleontological	Dillon

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	resources or any other objects of scientific interest discovered as a result of approved operations under this lease, and shall leave such discoveries intact and undisturbed until directed to proceed by the SMA.	
LN 14-4	LEASE NOTICE Portions of the lands in this parcel are occupied by a cemetery. As per the Standard Stipulation (May 2001) attached to this lease, occupancy will be excluded from the cemetery and a 300 foot buffer zone around the cemetery.	Malta, Glasgow
LN 14-5	LEASE NOTICE CULTURAL RESOURCES An inventory of the lease lands may be required prior to surface disturbance to determine if cultural resources are present and to identify needed mitigation measures.	Dillon
LN 14-7	LEASE NOTICE This parcel contains the following occupancy exclusions: 1. Exploration and development activity must be conducted with roads constructed to an appropriate standard no higher than necessary to accommodate the intended use. 2. Anti-raptor perch devices are required on all aboveground structures. 3. U.S. Fish and Wildlife Service (FWS) staff responsible for the management of the Creedman Coulee National Wildlife Refuge will be notified of any exploration and development proposals by the Bureau of Land Management. This notice is necessary to provide the FWS an opportunity to participate in the evaluation of any proposed activity on the lease, including on-site inspections before site preparation occurs.	Havre
LN 14-8	LEASE NOTICE Cultural sites are located in the _____, Sec. __ T. , R. . This parcel is located adjacent to the Lake Mason National Wildlife Refuge. In accordance with 43 CFR 3101.1-2, additional mitigation may be required in regard to exploration and development.	Billings
LN 14-9	LEASE NOTICE CULTURAL RESOURCES The lease is located adjacent to known sacred sites and historic properties, and contains high potential for National Register eligible historic and cultural properties. Lessees are notified that archaeological resource inventory and mitigation costs may be high within this area. A cultural plan of operations will be developed in consultation with the Billings Field Office (FO) and must be approved before field development takes place. All surface use plans will be presented to the Billings FO archaeologist for approval.	Billings
LN 14-10	LEASE NOTICE BLOCK MOUNTAIN GEOLOGIC AREA The Block Mountain Geologic Area has been designated an area of critical environment concern (ACEC). As a result, special mitigation measures may be applied to any applications for permit to drill (APDs).	Dillon
LN 14-11	LEASE NOTICE GREATER SAGE-GROUSE HABITAT The lease may in part, or in total, contain important Greater Sage-Grouse habitats as identified by the BLM, either currently or prospectively. The operator may be required to implement specific measures to reduce impacts of oil and gas operations on	All Offices

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	the Greater Sage-Grouse populations and habitat quality. Such measures shall be developed during the application for permit to drill on-site and environmental review process and will be consistent with the lease rights granted.	
LN 14-12	<p>LEASE NOTICE PALEONTOLOGICAL RESOURCE INVENTORY REQUIREMENT</p> <p>This lease has been identified as being located within geologic units rated as being moderate to very high potential for containing significant paleontological resources. The locations meet the criteria for Class 3, 4 and/or 5 as set forth in the Potential Fossil Yield Classification System, WO IM 2008-009, Attachment 2-2. The BLM is responsible for assuring that the leased lands are examined to determine if paleontological resources are present and to specify mitigation measures. Guidance for application of this requirement can be found in WO IM 2008-009 dated October 15, 2007, and WO IM 2009-011 dated October 10, 2008.</p> <p>Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or project proponent shall contact the BLM to determine if a paleontological resource inventory is required. If an inventory is required, the lessee or project proponent will complete the inventory subject to the following:</p> <ul style="list-style-type: none"> • the project proponent must engage the services of a qualified paleontologist, acceptable to the BLM, to conduct the inventory. • the project proponent will, at a minimum, inventory a 10-acre area or larger to incorporate possible project relocation which may result from environmental or other resource considerations. • paleontological inventory may identify resources that may require mitigation to the satisfaction of the BLM as directed by WO IM 2009-011. 	All Offices
LN 14-13	<p>LEASE NOTICE GRASSLAND / WETLAND EASEMENT</p> <p>The lease parcel is encumbered with a U.S. Fish and Wildlife Service wetland and/or grassland easement to restrict draining, burning, filling, or leveling of wetlands and/or protection of grassland depending on the specific easement. The operator may be required to implement specific measures to reduce the impacts of oil and gas operations on wetlands or grasslands on easements. Additional measures may be developed during the application for permit to drill during the on-site inspection as well as the environmental review process, consistent with the lease rights granted and in accordance with 43 CFR 3101.1-2.</p>	North Dakota
LN 14-14	<p>LEASE NOTICE CULTURAL VISUAL SETTING</p> <p>The lease area is within a Setting Consideration Zone (SCZ) which may contain a visual sensitive value in regard to the surrounding cultural setting. The leased lands may require an assessment by the authorized officer to determine the visual impacts of proposed and existing development. The operator may be required to implement specific measures to reduce impacts of oil and gas operations on the cultural visual setting. Such measures would be developed during the application for</p>	Miles City

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	permit to drill and environmental review processes, consistent with the lease rights.	
LN 14-15	<p>LEASE NOTICE SPRAGUE'S PIPIT The lease area may contain habitat for the federal candidate Sprague's pipit. The operator may be required to implement specific measures to reduce impacts of oil and gas operations on Sprague's pipits, their habitat and overall population. Such measures would be developed during the application for permit to drill and environmental review processes, consistent with lease rights.</p> <p>If the U.S. Fish and Wildlife Service lists the Sprague's pipit as threatened or endangered under Endangered Species Act, the BLM would enter into formal consultation on proposed permits that may affect the Sprague's pipit and its habitat. Restrictions, modifications, or denial of permits could result from the consultation process.</p>	Billings, Miles City, South Dakota, North Dakota, Malta, Havre, Glasgow
MT 15-1	<p>DRAINAGE All of the lands contained in this lease are subject to drainage by a well located adjacent to the lease. The lessee shall, within 60 days of lease issuance, notify the field office of its plans to protect the lease from drainage or alternatively demonstrate to the authorized officer that a protective well would have little or no chance of producing in paying quantities.</p>	All Offices
NSO 11-1	<p>NO SURFACE OCCUPANCY STIPULATION No surface occupancy, use or directional drilling is allowed within the boundaries of existing coal leases.</p>	Billings, Miles City, South Dakota
NSO 11-2	<p>NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within riparian areas, 100-year flood plains of major rivers, and on water bodies and streams.</p>	Billings, Miles City, South Dakota, Dillon, Butte
NSO 11-3	<p>NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed in the designated Bighorn Sheep Range.</p>	Miles City
NSO 11-4	<p>NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-quarter mile of grouse leks.</p>	Billings, Miles City, South Dakota, Dillon, Butte
NSO 11-5	<p>NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-quarter mile of designated reservoirs with fisheries.</p>	Billings, Miles City, South Dakota
NSO 11-6	<p>NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile of known bald eagle nest sites which have been active within the past seven years and within bald eagle nesting habitat in riparian areas.</p>	Billings, Miles City, South Dakota, Dillon
NSO 11-7	<p>NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one mile of identified peregrine falcon nesting sites.</p>	Billings, Miles City, South Dakota, Dillon, Butte
NSO 11-8	<p>NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile of known ferruginous hawk nest sites which have been active within the past two years.</p>	Billings, Miles City, South Dakota
NSO 11-9	<p>NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-quarter mile of wetlands identified as piping plover habitat.</p>	Billings, Miles City, South Dakota

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
NSO 11-10	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-quarter mile of wetlands identified as interior least tern habitat.	Billings, Miles City, South Dakota
NSO 11-11	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within sites or areas designated for conservation use, public use, or sociocultural use.	Billings, Miles City, South Dakota, Dillon
NSO 11-12	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within designated paleontological sites. ----- ----- No surface occupancy or use is allowed within known paleontological sites.	Billings, Miles City, South Dakota Dillon
NSO 11-13	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within developed recreation areas and undeveloped recreation areas receiving concentrated public use.	Billings, Miles City, South Dakota, Dillon
NSO 11-14	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed in Visual Resource Management Class (VRM) I areas (i.e., wilderness, wild and scenic rivers, etc.).	Miles City
NSO 11-15	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the boundary of State Game Ranges administered by the Fish, Wildlife and Parks.	Dillon, Butte
NSO 11-16	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile of North American Wetland Conservation Act/Intermountain Joint Venture (NAWCA/IMWJV) wetland projects.	Dillon
NSO 11-17	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile of ferruginous hawk nest sites.	Dillon, North Dakota
NSO 11-18	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile from centerline of stream containing known populations of 99 to 100% genetically pure westslope cutthroat trout.	Dillon, Butte
NSO 11-19	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile from centerline of occupied or influencing habitat for fluvial and adfluvial arctic grayling, including the North Fork of the Big Hole River, the Big Hole, the Beaverhead and Ruby Rivers, and tributaries to Upper Red Rock Lake.	Dillon, Butte
NSO 11-20	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile from the centerline of Class 1 fishery streams (Blue Ribbon trout streams).	Dillon, Butte
NSO 11-21	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile of developed recreation sites.	Dillon
NSO 11-22	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within, and for a distance of 300 feet from the boundaries of cultural properties and archaeological/historic districts determined to be eligible or	Dillon

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	potentially eligible to the national register of historic places. This includes cultural properties designated for conservation use, scientific use, traditional use, public use and experimental use.	
NSO 11-23	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile of the boundaries of cultural properties determined to be of particular importance to Native American groups, determined to be traditional cultural properties, and/or designated for traditional use. Such properties include (but are not limited to) burial locations, plant gathering locations and areas considered sacred or used for religious purposes.	Dillon, Butte
NSO 11-24	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-quarter mile of special status plants or populations.	Dillon, Butte
NSO 11-25	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed on areas of active mass movement (landslides).	Dillon
NSO 11-26	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile of designated National Historic Trails.	Dillon, Butte
NSO 11-27	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile of the Continental Divide National Scenic Trail.	Dillon, Butte
NSO 11-28	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed on recreation and public purposes leases and patents and on leases and permits authorized under regulations found at 43 CFR 2920.	Dillon, Butte
NSO 11-29	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the Beaverhead Rock, Muddy-Big Sheep Creek and Everson Creek ACECs.	Dillon
NSO 11-30	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the Centennial Sandhills ACEC and within one mile of special status plants that are contained within the Centennial Sandhills ACEC.	Dillon
NSO 11-31	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the Bighorn Sheep core areas in the Hidden Pasture Area and the Greenhorn Mountains reintroduction area.	Dillon
NSO 11-33	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within 200 feet of wetlands, lakes, and ponds.	North Dakota
NSO 11-34	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile of Prairie Falcon nests known to have been occupied at least once within the seven previous years.	North Dakota
NSO 11-35	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-fourth mile of active sage grouse strutting grounds.	North Dakota
NSO 11-36	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed in the floodplain of the Yellowstone River.	North Dakota
NSO 11-37	NO SURFACE OCCUPANCY STIPULATION	North Dakota

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	No surface occupancy or use is allowed within 200 feet of wetlands, lakes or ponds.	
NSO 11-38	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile of golden eagle nests known to have been occupied at least once within the seven previous years.	North Dakota
NSO 11-39	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed on lands within the floodplain of the Missouri River.	North Dakota
NSO 11-40	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed in a visible area within a 3.5 mile radius of the Fort Union Historic Site.	North Dakota
NSO 11-41	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within 1,000 feet of wetlands, lakes or ponds.	Havre
NSO 11-42	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the bighorn sheep core areas.	Butte
NSO 11-43	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-fourth mile of developed recreation sites, regardless of administering agency.	Butte
NSO 11-44	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile of bald eagle nest sites and within bald eagle nesting habitat in riparian areas.	Butte
NSO 11-45	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the boundary of the Recovery Zone for Grizzly Bears.	Butte
NSO 11-46	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the boundary of any prairie dog town.	Butte
NSO 11-47	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile from centerline of streams containing known populations of bull trout.	Butte
NSO 11-48	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile from centerline of streams containing known populations of 90-100% genetically pure Yellowstone cutthroat trout.	Butte
NSO 11-49	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile from centerline of streams that are identified by the BLM as having high restoration potential for westslope cutthroat trout, Yellowstone cutthroat trout, arctic grayling and/or bull trout.	Butte
NSO 11-50	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed in the following municipal watersheds: Missouri River Siphon, Tenmile Creek Drainage, Big Hole River Intake, and Moulton Reservoir.	Butte
NSO 11-51	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile	Butte

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	from centerline of stream containing known populations of 90-99% genetically pure westslope cutthroat trout.	
NSO 11-52	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within 300 feet of site boundaries and/or districts eligible for or listed on the National Register of Historic Places.	Butte
NSO 11-53	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile either side of the active river channel. This would apply to the following river segment lengths: 3.1 miles of the Upper Missouri River and 2.6 miles of Muskrat Creek.	Butte
NSO 11-54	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within one-half mile of ferruginous hawk nest sites which have been active within the past five years.	Butte
NSO 11-55	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed on lands acquired with Land and Water Conservation Funds.	Butte
NSO 11-56	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the Makoshika State Park and surrounding area of management concern except on designated sites identified in the 1999 Decision Record for Oil and Gas Leasing in the Makoshika State Park Area of Management Concern.	Miles City
NSO 11-57	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the Terry Badlands limber pine areas.	Miles City
NSO 11-58	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed in Finger Buttes ACEC.	Miles City
NSO 11-59	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed on lands administered by the U.S. Fish and Wildlife Service (FWS) within a designated waterfowl production area or National Wildlife Refuge. These lands are managed for the purpose of protecting migratory birds, waterfowl habitat and/or wetland values suitable for breeding waterfowl and other migratory birds.	North Dakota
Standard 16-3	STANDARD LEASE STIPULATION ESTHETICS --To maintain esthetic values, all surface-disturbing activities, semipermanent and permanent facilities may require special design including location, painting and camouflage to blend with the natural surroundings and meet the intent of the visual quality objectives of the Federal Surface Managing Agency (SMA). EROSION CONTROL --Surface-disturbing activities may be prohibited during muddy and/or wet soil periods. CONTROLLED OR LIMITED SURFACE USE STIPULATION --This stipulation may be modified, consistent with land use documents, when specifically approved in writing by the Bureau of Land Management (BLM) with concurrence of the SMA. Distances and/or time periods may be made less restrictive depending on the actual onground conditions. The prospective lessee should contact the SMA for more specific locations and information regarding the restrictive nature of this	Lewistown, Havre, Glasgow, Malta, North Dakota

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	<p>stipulation.</p> <p>The lessee/operator is given notice that the lands within this lease may include special areas and that such areas may contain special values, may be needed for special purposes, or may require special attention to prevent damage to surface and/or other resources. Possible special areas are identified below. Any surface use or occupancy within such special areas will be strictly controlled, or if absolutely necessary, excluded. Use or occupancy will be restricted only when the BLM and/or the SMA demonstrates the restriction necessary for the protection of such special areas and existing or planned uses. Appropriate modifications to imposed restrictions will be made for the maintenance and operations of producing oil and gas wells. After the SMA has been advised of specific proposed surface use or occupancy on the leased lands, and on request of the lessee/operator, the Agency will furnish further data on any special areas which may include:</p> <ul style="list-style-type: none"> • 100 feet from the edge of the rights-of-way from highways, designated county roads and appropriate federally-owned or controlled roads and recreation trails. • 500 feet, or when necessary, within the 25-year flood plain from reservoirs, lakes, and ponds and intermittent, ephemeral or small perennial streams: 1,000 feet, or when necessary, within the 100-year flood plain from larger perennial streams, rivers, and domestic water supplies. • 500 feet from grouse strutting grounds. Special care to avoid nesting areas associated with strutting grounds will be necessary during the period from March 1, to June 30. One-fourth mile from identified essential habitat of state and federal sensitive species. Crucial wildlife winter ranges during the period from December 1 to May 15, and in elk calving areas during the period from May 1 to June 30. <ul style="list-style-type: none"> • 300 feet from occupied buildings, developed recreational areas, undeveloped recreational areas receiving concentrated public use and sites eligible for or designated as National Register sites. • Seasonal road closures, roads for special uses, specified roads during heavy traffic periods and on areas having restrictive off-road vehicle designations. • On slopes over 30 percent or 20 percent on extremely erodible or slumping soils. <p>APPLICATIONS FOR PERMIT TO DRILL (APDs)--The appropriate BLM field offices are responsible for the receipt, processing, and approval of APDs. The APDs are to be submitted by oil and gas operators pursuant to the requirements found in Onshore Oil and Gas Order No. 1 -- Approval of Operations on Onshore Federal and Indian Oil and Gas Leases (Circular No. 2538). Additional requirements for the conduct of oil and gas operations can be found in the Code of Federal Regulations Title 43, Part 3160. Copies of Onshore Oil and Gas Order No. 1, and pertinent regulations, can be obtained from the</p>	

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	<p>BLM field offices in which the operations are proposed. Early coordination with these offices on proposals is encouraged.</p> <p>CULTURAL AND PALEONTOLOGICAL RESOURCES-- The SMA is responsible for assuring that the leased lands are examined to determine if cultural resources are present and to specify mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator, unless notified to the contrary by the SMA, shall:</p> <ul style="list-style-type: none"> • Contact the appropriate SMA to determine if a site-specific cultural resource inventory is required. If an inventory is required, then: • Engage the services of a cultural resource specialist acceptable to the SMA to conduct a cultural resource inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the area of proposed disturbance to cover possible site relocation which may result from environmental or other considerations. An acceptable inventory report is to be submitted to the SMA for review and approval no later than that time when an otherwise complete application for approval of drilling or subsequent surface-disturbing operation is submitted. • Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as testing salvage and recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the SMA, surface occupancy on that area must be prohibited. <p>The operator shall immediately bring to the attention of the SMA any cultural or paleontological resources discovered as a result of approved operations under this lease, and not disturb such discoveries until directed to proceed by the SMA.</p> <p>ENDANGERED OR THREATENED SPECIES--The SMA is responsible for assuring that the leased land is examined prior to undertaking any surface-disturbing activities to determine effects upon any plant or animal species, listed or proposed for listing as endangered or threatened, or their habitats. The findings of this examination may result in some restrictions to the operator's plans or even disallow use and occupancy that would be in violation of the Endangered Species Act of 1973 by detrimentally affecting endangered or threatened species or their habitats.</p> <p>The lessee/operator may, unless notified by the authorized officer of the SMA that the examination is not necessary, conduct the examination on the leased lands at his discretion and cost. This examination must be done by or under the supervision of a qualified resources specialist approved by the SMA. An acceptable report must be provided to the SMA identifying the anticipated effects of a proposed action on endangered or threatened species or their habitats.</p>	
TES 16-2	ENDANGERED SPECIES ACT SECTION 7 CONSULTATION STIPULATION	All Offices

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	The lease area may now or hereafter contain plants, animals or their habitats determined to be threatened, endangered or other special status species. BLM may recommend modifications to exploration and development, and require modifications to or disapprove proposed activity that is likely to result in jeopardy to proposed or listed threatened or endangered species or designated or proposed critical habitat.	
TL 13-1	TIMING LIMITATION STIPULATION No surface use is allowed within crucial winter range for wildlife for the time period December 1 to March 31 to protect crucial white-tailed deer, mule deer, elk, antelope, moose, bighorn sheep and sage grouse winter range from disturbance during the winter use season, and to facilitate long-term maintenance of wildlife populations. This stipulation does not apply to operation and maintenance of production facilities.	Billings, Miles City, South Dakota
TL 13-2	TIMING LIMITATION STIPULATION No surface use is allowed within established spring calving range for elk for the time period April 1 to June 15 to protect elk spring calving range from disturbance during the spring use season, and to facilitate long-term maintenance of wildlife populations. This stipulation does not apply to operation and maintenance of production facilities.	Billings, Miles City, South Dakota
TL 13-3	TIMING LIMITATION STIPULATION No surface use is allowed from March 1 to June 15 in grouse nesting habitat within two miles of a lek. This stipulation does not apply to operation and maintenance of production facilities.	Billings, Miles City, South Dakota
TL 13-4	TIMING LIMITATION STIPULATION No surface use is allowed within one-half mile of raptor nest sites which have been active within the past two years during the time period March 1 to August 1 to protect nest sites of raptors which have been identified as species of special concern. This stipulation does not apply to operation and maintenance of production facilities.	Billings, Miles City, South Dakota
TL 13-5	TIMING LIMITATION STIPULATION No surface use is allowed within one-half mile of occupied ferruginous hawk nests known to be occupied at least once within the seven previous years from March 15 to July 15 to protect ferruginous hawk nesting. This stipulation does not apply to operation and maintenance of production facilities.	North Dakota
TL 13-6	TIMING LIMITATION STIPULATION No surface use is allowed from March 1 through June 30 in nesting and early brood-rearing habitat (defined as within three miles of leks). This stipulation does not apply to operation and maintenance of production facilities.	Dillon
TL 13-7	TIMING LIMITATION STIPULATION No surface use is allowed from December 1 through May 15 within big game winter/spring range for wildlife. This stipulation does not apply to operation and maintenance of production facilities.	Dillon
TL 13-8	TIMING LIMITATION STIPULATION No surface use is allowed from April 1 through June 30 in elk calving/big game birthing areas to protect mule deer, elk, antelope and moose birthing areas from disturbance and facilitate long-term maintenance of wildlife populations. This	Dillon

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	stipulation does not apply to operation and maintenance of production facilities.	
TL 13-9	TIMING LIMITATION STIPULATION No surface use is allowed from November 1 through June 30 in bighorn rutting, winter and lambing habitat to protect the habitat from disturbance and facilitate long-term maintenance of bighorn sheep populations. This stipulation does not apply to operation and maintenance of production facilities.	Dillon, Butte
TL 13-10	TIMING LIMITATION STIPULATION No surface use is allowed from February 1 through August 31 in a one mile radius around bald eagle nest sites/breeding habitat to protect nesting sites and/or breeding habitat in accordance with the Endangered Species Act and the Montana Bald Eagle Management Plan. This stipulation does not apply to operation and maintenance of production facilities.	Dillon
TL 13-11	TIMING LIMITATION STIPULATION No surface use is allowed from March 1 through July 31 within one-half mile of raptor nest sites which have been active within the past five years. This stipulation does not apply to operation and maintenance of production facilities.	Dillon
TL 13-12	TIMING LIMITATION STIPULATION No surface use is allowed from April 1 through August 31 within one-half mile of waterfowl production and molting areas to protect these areas from disturbance and facilitate long-term maintenance of waterfowl populations. This stipulation does not apply to operation and maintenance of production facilities.	Dillon
TL 13-13	TIMING LIMITATION STIPULATION No surface use is allowed from March 1 through August 31 within one mile of ferruginous hawk nest sites that have been active within the past five years. This stipulation does not apply to operation and maintenance of production facilities.	Dillon
TL 13-14	TIMING LIMITATION STIPULATION No surface use is allowed from December 1 through May 15 within winter and spring range for sage grouse. This stipulation does not apply to operation and maintenance of production facilities.	Dillon, Butte
TL 13-15	TIMING LIMITATION STIPULATION No seismic exploration is allowed within 500 feet of waterfowl nesting habitat from March 1 through July 1 to protect nesting waterfowl. This stipulation does not apply to operation and maintenance of production facilities.	North Dakota
TL 13-16	TIMING LIMITATION STIPULATION No surface use is allowed within one-half mile of occupied prairie falcon nests from March 15 through July 15 to protect prairie falcon nesting. This stipulation does not apply to operation and maintenance of production facilities.	North Dakota
TL 13-17	TIMING LIMITATION STIPULATION No surface use is allowed within two miles of active strutting grounds from March 1 to June 15 to protect sage grouse strutting activities. This stipulation does not apply to operation and maintenance of production facilities.	North Dakota
TL 13-18	TIMING LIMITATION STIPULATION No surface use is allowed on bighorn sheep lambing range from April 1 to June 15 to protect bighorn sheep lambing activities.	North Dakota

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	This stipulation does not apply to operation and maintenance of production facilities.	
TL 13-19	TIMING LIMITATION STIPULATION No surface use is allowed on bighorn sheep winter range from December 1 to April 1 to protect bighorn sheep winter range activities. This stipulation does not apply to operation and maintenance of production facilities.	North Dakota
TL 13-20	TIMING LIMITATION STIPULATION No surface use is allowed from April 1 through August 15 to protect Creedman Coulee National Wildlife Refuge wildlife populations and habitats. This stipulation does not apply to operation and maintenance of production facilities.	Havre
TL 13-21	TIMING LIMITATION STIPULATION No surface use is allowed within one-half mile of occupied golden eagle nests from February 15 to July 15 to protect golden eagle nesting. This stipulation does not apply to operation and maintenance of production facilities.	North Dakota
TL 13-22	TIMING LIMITATION STIPULATION No surface use is allowed from June 1 to July 1 to protect elk calving. This stipulation does not apply to operation and maintenance of production facilities.	North Dakota
TL 13-23	TIMING LIMITATION STIPULATION No surface use is allowed on elk winter range from November 30 to May 1 to protect wintering elk. This stipulation does not apply to operation and maintenance of production facilities.	North Dakota
TL 13-24	TIMING LIMITATION STIPULATION No surface use is allowed from February 15 to July 15 within one-half mile of occupied golden eagle nests known to be occupied at least once within the seven previous years to protect golden eagle nesting. This stipulation does not apply to operation and maintenance of production facilities.	North Dakota
TL 13-25	TIMING LIMITATION STIPULATION No surface use is allowed from March 1 through July 31 within one-half mile of raptor nest sites which have been active within the past five years. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.	Butte
TL 13-26	TIMING LIMITATION STIPULATION No surface use is allowed from February 1 through August 31 in a one mile radius around bald eagle nest sites. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.	Butte
TL 13-27	TIMING LIMITATION STIPULATION No surface use is allowed from November 1 through June 30 in bighorn rutting, winter and lambing habitat. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.	Butte
TL 13-28	TIMING LIMITATION STIPULATION	Butte

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	No surface use is allowed from December 1 through May 15 within winter range for wildlife. This stipulation does not apply to operation and maintenance of production facilities.	
TL 13-29	TIMING LIMITATION STIPULATION No surface use is allowed from April 1 through June 30 in big game birthing areas. This stipulation does not apply to operation and maintenance of production facilities.	Butte
TL 13-30	TIMING LIMITATION STIPULATION No surface use is allowed from March 1 through June 30 in nesting and early brood rearing habitat (defined as within three miles of leks). This stipulation does not apply to operation and maintenance of production facilities.	Butte
TL 13-31	TIMING LIMITATION STIPULATION No surface use is allowed from April 1 to June 30 and from September 15 to October 15 in the grizzly bear distribution zone.	Butte
TL 13-32	TIMING LIMITATION STIPULATION No surface use is allowed within a one mile buffer around wolf dens or rendezvous sites from April 15 to June 30 in the Northwest Montana Recovery Area. This stipulation does not apply to operation and maintenance of production facilities.	Butte
Region 1 Forest Service		
DPG 13d (McKenzie RD)	FOREST SERVICE - Agency lease stipulations.	
DPG 13d (Medora RD)	FOREST SERVICE - Agency lease stipulations.	
DPG NSO 14-1	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed on slopes greater than 40 percent to protect soil resources from loss of productivity, prevent erosion on steep slopes, soil mass movement, and resultant sedimentation.	
DPG NSO 14-4	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within 0.25 mile (line of sight) of prairie falcon and burrowing owl nests to prevent reduced reproductive success and adverse habitat loss.	
DPG NSO 14-5	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within 0.5 mile (line of sight) of golden eagle, merlin, and ferruginous hawk nests; to prevent reduced reproductive success and adverse habitat loss.	
DPG NSO 14-6	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within bighorn sheep habitat MA 3.51 to achieve optimum habitat suitability for bighorn sheep.	
DPG NSO 14-7	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within 0.25 mile (line of sight) of a sharp-tailed grouse and sage grouse display ground to prevent abandonment of display grounds, reduced reproductive success, and adverse habitat loss.	
DPG NSO 14-9	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the established boundaries of Bear Den-Bur Oak,	

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	Cottonwood Creek Badlands, Little Missouri River, Mike's Creek, Ponderosa Pines, Limber Pine, and Two Top/Big Top Research Natural Areas; to maintain natural conditions for research purposes and protect against activities, which directly or indirectly modify the natural occurring ecological processes within the RNA.	
DPG NSO 14-10	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the boundaries of Aspen Stand, The Bog, Grand River Sand Dunes, Black Butte, Black Cottonwood, Riparian Pools, and Roundtop Butte Special Interest Area; to protect the botanical resources.	
DPG NSO 14-11	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the boundaries of Battle of the Badlands, Custer Trail/Davis Creek, and Square Buttes Special Interest Areas to protect the heritage resources.	
DPG NSO 14-13	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within developed recreation sites to maintain the recreation opportunities and settings within developed recreation sites.	
DPG NSO 14-14	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within boundaries of backcountry non-motorized management areas to retain recreation opportunities in a natural-appearing landscape.	
DPG NSO 14-15	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within ¼ mile each side of the Little Missouri River, to maintain the recreation opportunities and settings within the river corridor.	
DPG NSO 14-16	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within National Register eligible heritage sites to protect the immediate environment of the site.	
DPG TL 15-1	TIMING LIMITATION STIPULATION No surface use is allowed during the following time period(s) March 1 – June 15 within 1 mile (line of sight) of active sharp-tailed grouse display grounds. This stipulation applies to drilling, testing, new construction projects, and does not apply to operation and maintenance of production facilities.	
DPG TL 15-2	TIMING LIMITATION STIPULATION No surface use is allowed during the time period(s) March 1 through June 15 within 2 miles (line of sight) of a sage grouse display ground. This stipulation applies to drilling, testing, new construction projects, and does not apply to operation and maintenance of production facilities.	
DPG TL 15-4	TIMING LIMITATION STIPULATION No surface use is allowed during the time period(s) January 1 through March 31 to maintain the health, vigor, and physical condition of wintering pronghorn by minimizing disturbance on winter range during the critical period.. This stipulation applies to drilling and testing and new construction projects, and does not apply to operation and maintenance of production facilities.	
DPG TL 15-6	TIMING LIMITATION STIPULATION No surface use is allowed during the time period(s) May 1 through December 1 within 0.25 miles of the established boundaries of Burning Coal Vein, Buffalo Gap, Sather Lake, CCC, Campgrounds and Summit, Whitetail Picnic Areas, and the 6 Maa Daa Hey Trail overnight camps; Wannagan, Roosevelt, Elkhorn, Magpie, Beicegel, and Bennett	

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
	to maintain the recreation opportunities and settings within the area surrounding campgrounds, picnic areas, and recreation trail overnights... This stipulation does not apply to operation and maintenance of production facilities.	
DPG TL 15-7	TIMING LIMITATION STIPULATION No surface use is allowed during the time period(s) April 1 through June 15 within 1 mile (line-of-sight) of lambing areas to safeguard lamb survival and prevent bighorn sheep displacement from lambing areas.. This stipulation applies to drilling and testing and new construction projects, and does not apply to operation or maintenance of production facilities.	
DPG TL 15-8	TIMING LIMITATION STIPULATION No surface use is allowed during the time period(s) October 16 – June 14 to provide quality forage, cover, escape terrain and solitude for bighorn sheep. This stipulation applies to drilling and testing of wells and new construction projects, and does not apply to operation and maintenance of production facilities. Limit on-lease activities (operation and maintenance of facilities) to the period from 10 am to 4 pm except in emergency situations.	
DPG CSU 16-1	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to special operating constraints: To protect key paleontological resources from disturbance, or mitigate the effects of disturbance to conserve scientific and interpretive values, and the interests of the surface owner.	
DPG CSU 16-2	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraints: Try to locate activities and facilities away from the water’s edge and outside the riparian areas, woody draws, wetlands, and floodplains.	
DPG CSU 16-5	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraints: Operations may be moved or modified to preserve certain geologic type sections for future scientific research, education, and interpretation.	
DPG CSU 16-6	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraints. Surface occupancy and use is subject to operational constraints to maintain the Scenic Integrity Objective (SIO) for areas identified as high.	
DPG CSU 16-7	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraints: Surface occupancy and use is subject to operational constraints to maintain the Scenic Integrity Objective (SIO) for areas identified as moderate.	
DPG CSU 16-8	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to special operating constraints: New developments, including new facilities, roads, and concentrations of humans, within 1 mile of bighorn sheep lambing areas may be moved or modified to be out of view of the lambing areas. This stipulation applies to drilling and testing and new construction projects, not to operation or maintenance of production.	
DPG TES 18a	FOREST SERVICE - Agency lease stipulations.	
DPG 22b	LEASE NOTICE - ROADLESS AREA CONSERVATION RULE Operations such as road construction or reconstruction may be prohibited by the Roadless Area Conservation Rule or subsequent modifications thereof.	
DPG 22c	LEASE NOTICE - ROADLESS AREA CONSERVATION RULE Operations such as road construction or reconstruction may be prohibited by the Roadless Area Conservation Rule or subsequent modifications thereof.	
DPG 23	LEASE NOTICE - LITTLE MISSOURI BADLANDS MILITARY COMPLEX/DAVIS CREEK AND SQUARE BUTTE AREAS Each proposed well, both inside and outside the critical area, will be evaluated individually, and allowed if they can be mitigated to the level of no adverse effect.	
Region 2 Forest Service		

Stipulation Number	Stipulation Name/Brief Description	Field Office(s)
WO-10/05/2006	FOREST SERVICE - Agency Lease Stipulation	
R2-FS-2820-14	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within .25 mile (line of sight) of a sharp-tailed grouse display ground.	
R2-FS-2820-15	TIMING LIMITATION STIPULATION No surface use is allowed during the following time period(s) March 1 through June 15 within 1 mile (line of sight) of a sharp-tailed grouse display ground. This stipulation does not apply to operation and maintenance of production facilities.	
R2-FS-2820-16	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraints: Surface occupancy and use is subject to operational constraints to maintain the Scenic Integrity Objective (SIO) for areas identified as moderate.	
R2-FS-2820-16	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraints: To protect fossils and immediate environment of the site, including inherent scientific, natural historic, interpretive, educational, and recreational values for the area potentially impacted.	
Bureau of Reclamation		
BOR 17-1	BUREAU OF RECLAMATION - Agency lease stipulations.	
BOR 17-2	BUREAU OF RECLAMATION - Agency special stipulations.	
Corps of Engineers		
COE 18-1	CORPS OF ENGINEERS - Agency lease stipulations.	
COE 18-2	CORPS OF ENGINEERS - Agency lease stipulations.	
COE 18-3	CORPS OF ENGINEERS - Agency lease stipulations.	
COE 18-4	CORPS OF ENGINEERS - Agency lease stipulations.	
COE 18-5	CORPS OF ENGINEERS - Agency lease stipulations.	
COE 18-6	CORPS OF ENGINEERS - Agency lease stipulations.	
COE 18-7	CORPS OF ENGINEERS - Agency lease stipulations.	
Federal Energy Regulatory Commission		
FERC 19-1	Federal Energy Regulatory Commission - Agency lease stipulations.	
International Boundary Commission		
IBC 18-8	International Boundary Commission - Agency lease stipulations.	

Appendix C: MITIGATION MEASURES TO REDUCE WILDLIFE IMPACTS ASSOCIATED WITH OIL AND GAS DEVELOPMENT

Roads

- Use existing roads and two-tracks if they are sufficient and not within environmentally sensitive areas.
 - Construct the minimum number and length of roads necessary..
- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Salvage topsoil from all road construction and re-apply during interim and final reclamation.
- Locate roads away from bottoms of drainages, which often provide the most important sources of cover and forage for wildlife.
- Design road crossings of streams to allow fish passage at all flows. Types of crossing structures that minimize aquatic impacts, in descending order of effectiveness, are: a) bridge spans with abutments on banks; b) bridge spans with center support; c) open bottomed box culverts; and d) round culverts with the bottom placed no less than one foot below the existing stream grade. Perched culverts block fish passage and are unacceptable in any stream that supports a fishery.
- Locate and construct all structures crossing intermittent and perennial streams such that they do not decrease channel stability or increase water velocity.
- Use a variety of native grasses and forbs to establish effective, interim reclamation on road shoulders and borrow areas.

Wells

- If geologically and technically feasible, drill multiple wells from the same pad using directional (horizontal) drilling technologies (up to 16 wells per pad, as technologically feasible).
 - Disturb the minimum area (footprint) necessary to efficiently drill and operate a well.
- Salvage topsoil from all well pad excavations and re-apply during interim and final reclamation.
- If geologically and technically feasible, locate well pads in the least environmentally sensitive areas, well away from riparian habitats, streams or drainages, below ridge lines, away from important sources of forage, cover, reproductive habitats, winter habitats, parturition areas, brood-rearing habitats, etc.
- Use a variety of native grasses and forbs to establish effective, interim reclamation on all well pads and associated disturbances.

Ancillary Facilities

- Locate facilities including tanks, transfer stations, shops, equipment shelters, utility towers, etc. in the least environmentally sensitive areas, well away from riparian habitats, streams or drainages, below ridge lines, away from important sources of forage, cover, reproductive habitats, winter habitats, parturition areas, brood-rearing habitats, etc.
- Salvage topsoil from all facilities construction and re-apply during interim and final reclamation.
- Design all facilities such that they will not be used as perching or nesting substrates by raptors, crows, and ravens in open prairie or shrub-steppe environments.
- Modify new and existing power poles to prevent raptor electrocutions and perching.
- Use existing utilities, road and pipeline corridors to the extent feasible.
 - Bury power lines in or adjacent to roads where possible.

- Establish effective, interim reclamation on all surface disturbances associated with ancillary facilities, including equipment staging areas. Interim reclamation should be achieved using a variety of native grasses and forbs.

Noise

- Minimize noise generally. All compressors, vehicles, and other sources of noise should be equipped with effective mufflers or noise suppression systems (e.g., “hospital mufflers”).
- To minimize the effects of continuous noise on bird populations, reduce noise levels to 49 dBA or less, particularly during the bird nesting season (1 April through 30 June). Constant noise generators should be located far enough away from sensitive habitats or muffled such that noise reaching those habitats is less than 49 dBA.

Traffic

- Develop a travel plan that minimizes the amount of vehicular traffic needed to monitor and service wells and other facilities.
- Prohibit or substantially limit traffic during high wildlife use hours (within 3 hours of sunrise and sunset) to the extent possible.
 - Use pipelines to transport condensates off site, or install larger capacity storage tanks when frequent truck trips would impact habitat effectiveness.
- Transmit instrumentation readings from remote monitoring stations to reduce maintenance traffic.
- Post speed limits on all access and maintenance roads to reduce wildlife collisions and limit dust: 30-40 mph is adequate in most cases.

Pollutants, Toxic Substances, Fugitive Dust, Erosion and Sedimentation

- Avoid exposing or spilling hydrocarbon products on the surface. Oil pits should not be used, but if absolutely necessary, they should be enclosed in small-mesh netting and fence to prevent entrapment of birds and mammals. All netting and fence should be maintained and kept in serviceable condition.
 - Limit the permitted discharge of produced water to those areas where it can be beneficially used by wildlife, provided water quality standards for wildlife and livestock are met. Produced water should not be discharged on the surface within big game crucial winter ranges or near complexes of sage grouse leks. New water sources within crucial winter ranges encourage yearlong use by livestock and wildlife, and may result in reduced or depleted forage during winter. Additional water sources near lek complexes could increase vulnerability of sage grouse to mosquito-borne, West Nile virus. However, produced water of suitable quality may be used for supplemental irrigation to improve reclamation success.
- Employ erosion control practices and sediment retention structures to prevent sediment transport off site during precipitation events and runoff.
- Sour gas (hydrogen sulfide) should not be released into the environment.
- Use dust abatement procedures including reduced speed limits, and application of [environmentally compatible] chemical suppressants or suitable quality water.

Monitoring and Environmental Response

- Monitor conditions or events that may indicate environmental problems. Such conditions or events can include any significant chemical spill or leak, detection of multiple wildlife mortalities, sections of roads with frequent

and recurrent wildlife collisions (especially big game or sage grouse), poaching and harassment incidents, severe erosion into tributary drainages, raptor electrocutions, structures associated with frequent bird or bat collisions, migration impediments (e.g., pronghorn concentrating along a fence), wildlife entrapment, sick or injured wildlife, or other unusual observations.

- Promptly report observations of potential wildlife problems to the regional office of the MT Fish, Wildlife and Parks and, as applicable, the U.S. Fish and Wildlife Service.

Research and Special Studies

- Where questions or uncertainties exist about the degree of impact to specific resources, or the effectiveness of mitigation, companies should consider funding or cost-sharing special studies to collect data for evaluation and documentation.

Noxious Weeds

- Control noxious and invasive plants that become established along roads, on well pads, or adjacent to other facilities.
- Clean and sanitize all equipment brought in from other regions. Seeds and propagules of noxious plants are commonly imported by equipment and mud clinging to equipment.
- Request employees to clean mud from boots/work shoes before traveling to the work site, to prevent importation of noxious weeds.

Final Reclamation

- Salvage topsoil during decommissioning operations and reapply to reclaimed surfaces.
- Replant a mixture of forbs, grasses, and shrubs that are native to the area and suitable for the specific ecological site.
- Restore vegetation to achieve cover, composition, and diversity that are commensurate with the ecological site.
- Continue to monitor and treat reclaimed areas until plant cover, composition, and diversity standards have been met.

Stream habitats and Riparian Corridors

- Line reserve pits with a suitable, impermeable barrier to eliminate possible contamination of soil and groundwater.
- Design drill pad sites to drain excess water storm water and other fluids into a properly sized reserve pit. The pit should have adequate capacity to intercept and hold excess precipitation. Discharges from the pit should meet NPDES standards or otherwise assure the discharged water is of suitable quality.
- All pipeline crossings of a watercourse should be protected against surface disturbances and damage to the pipeline, which could result in a spill event.
- Any stream crossing of a pipeline should be protected by installation of automatic shutoff valves.

- Any pipeline crossing of a perennial stream should be done by boring underneath the stream rather than trenching
- Design road crossings of streams to allow fish passage at all flows. Types of crossing structures that minimize aquatic impacts, in descending order of effectiveness, are: a) bridge spans with abutments on banks; b) bridge spans with center support; c) open bottomed box culverts; and d) round culverts with the bottom placed no less than one foot below the existing stream grade. Perched culverts block fish passage and are unacceptable in any stream that supports a fishery.
- Locate and construct all structures crossing intermittent and perennial streams such that they do not decrease channel stability or increase water velocity.
- Avoid stripping riparian canopy or stream bank vegetation if possible. It is preferable to crush or shear streamside woody vegetation rather than completely remove it. Any locations from which vegetation is stripped during installation of stream crossings, should be revegetated immediately after the crossing is completed.
- Staging, refueling, and storage areas should not be located in riparian zones or on flood plains. Keep all chemicals, solvents and fuels at least 500 feet away from streams and riparian areas.
- Hydrostatic test waters released during pipeline construction could cause alterations of stream channels, increased sediment loads and introduction of potentially toxic chemicals or invasive species into drainages. Avoid discharging hydrostatic test waters directly to streams. Release these waters first into a temporary, sediment retention basin if the concentration of total suspended solids is significantly higher than in the receiving water. Dewater temporary sedimentation basins in a manner that prevents erosion.
- Locate pipelines that parallel drainages, outside the 100-year floodplain. Construct pipeline crossings at right angles to all riparian corridors and streams to minimize the area of disturbance.
- Use the minimum practical width for rights-of-way where pipelines cross riparian areas and streams.

Other Appendices if/as Appropriate

Biological Evaluation for Special Status Fish, Wildlife and Plant Species

Appendix D:

REASONABLE FORESEEABLE DEVELOPMENT SCENARIO FOR OIL AND GAS

INTRODUCTION

The reasonable foreseeable development (RFD) scenario is an estimate of the oil and gas activity expected because of resumed oil and gas leasing in the Dillon FO. The scenario is hypothetical in that drilling may occur anywhere in the planning area where an oil and gas lease is issued that allows surface occupancy. Probably, actual drilling proposals that result from leasing, if any, will differ in location from the RFD scenario proposals. It is also possible that leasing could result in either more or less drilling proposals than presented in the RFD scenario. The RFD scenario attempts to portray the most reasonable and likely number of wells expected from a leasing decision on the Dillon FO. It is derived from knowledge of the USGS plays, Energy Information Administration (EIA) price forecasts, the oil and gas occurrence and development potential classifications for the Dillon FO, and historical activity. Development potential is a ranking system which is created so the potential cumulative impacts of an oil and gas leasing decision on a designated area can be evaluated. Bureau of Land Management petroleum geologists rank the development potential of the planning area based on the probability, at this point in time, of oil and gas exploration, production, and associated infrastructure occurring in the future. It is important to understand that development potential is a dynamic ranking system, which changes with time as new data and ideas become available. While the geology does not change, the perception of the geology can change.

DRILLING ACTIVITY FORECAST

In order for the BLM to analyze the effects of oil and gas leasing and subsequent possible exploration and development, we had to complete the best possible analysis of how many wells industry might drill in the next 10 to 15 years. The BLM has developed an RFD scenario using historical oil and gas development information from the United States Geological Survey, BLM files, and other technical sources. BLM has mapped the potential of occurrence of oil and gas under Madison and Beaverhead Counties and the potential for industry to develop those possible resources. The classification of the development potential is depicted on Map 83 in the RMP. From these maps and other information, including leasing history and past and present economics, the BLM forecasts how many wells might be drilled in all of the two counties on all mineral ownerships. Based on our analysis, we estimate that six wildcat wells could be drilled in the area in the next 10 to 15 years. (A “wildcat well” is an exploratory well drilled in an area with no existing production.) Of these six wells, we estimate that four would be dry holes. (If no economically producible oil or gas is discovered, a well is called a “dry hole” or “noncommercial discovery.”) Dry holes would be plugged and abandoned with surface reclamation occurring shortly afterward. For analysis purposes, we believe that two of the wells could likely have gas discoveries (however there is also a lower chance of oil production). One producer would be on either BLM minerals or lands administered by the Forest Service. The other would be on privately owned minerals. Each of those wells would probably prompt additional step-out wells. (A “step-out well” is a well drilled adjacent to or near a proven well to establish the limits of the oil or gas reservoir.) For analysis purposes, we estimate that a total of four step-out wells would be drilled, two for each discovery.

The general areas where exploration might occur in the two counties are depicted on Map 83 in the RMP. We forecast that the six projected wildcat wells would be drilled somewhere within the boundaries of these four areas. Area # 1 is referred to as “Big Hole Basin.” This area consists of the Big Hole Tertiary

graben basin. This basin is floored by Middle Eocene volcanic rock. These rocks are unconformably overlain by late Eocene to Miocene devitrified volcanoclastic and lacustrine rocks associated with locally derived clastic rocks. In the Big Hole Basin this sequence is overlain by Miocene and younger predominately coarse siliclastic sediments. Basin fill is up to 15,000 feet thick in the Big Hole Basin. Anticipated reservoir rocks are sandstones of Oligocene to Miocene age. Source rocks are late Eocene to Oligocene in age. Natural gas has been encountered in wells drilled in the Basin. A 14,000 foot gas discovery is predicted in this area. An additional two wells are expected on 640 acre spacing. This forecast is based on the existing geologic perception of the area and is our best projection of reasonably foreseeable development. Area #2 includes the Beaverhead River basin around the town of Dillon, the Retort Mountain area, the Armstead thrust area and the Blacktail salient area. It is referred to as "Dillon". The center of the northern part of the area in, T. 8 and 9 S., R. 9, 10, and 11 W., appears to be complicated by imbricate thrust faults. The best hydrocarbon shows in the area occur here. The well in sec. 9, T. 9 S., R. 9, W., American Quasar 9-1 May-Federal drilled to 4,351 feet and reported Cambrian at 3,444 feet. A subsequent examination of the samples showed an age date of upper Mississippian Chester at 2,800 feet to total depth, Heath-Otter equivalents. The drill stem test at 2,569 feet to 2,654 feet, which recovered a small amount of free gas, appears to be in Pennsylvanian Amsden rocks. Another test at 2,675-2,750 recovered gas-cut mud. Seven-inch casing was set at 2,826 feet and a completion attempt in a number of Amsden zones failed to recover commercial gas. Several older, shallower wells were drilled 3 to 5 miles northeast. One reported an oil show. These wells were 100 feet, 1,800 feet and 2,500 feet deep.

It is not known what interval may have had the oil show. When BLM geologists mapped this general area they determined that there was a large area of "MODERATE" development potential based in part on the presence of adequate sediments with source and reservoir potential and the existing drilling results. A dry hole well is predicted near Jim Brown Mountain at about 5,000 feet depth in Permian or Pennsylvanian rocks on BLM minerals. This well would be drilled and abandoned. One other wildcat resulting in another dry hole is projected for Area 2. Area #3 includes the Tendoy overthrust area and a foreland zone east of the thrust sheet and also a Cretaceous foreland basin at the south end of the Tendoy Mountains. It is referred to as "Lima". A well with a good show of sweet gas in Mississippian rocks, has been drilled in this Cretaceous basin and a gas field could be expected to be developed on 640 acre spacing in the area. The northern and north central portions of this area have had recent strong leasing interest. This is the general area that has potential for oil production. Two wildcats are expected; one dry hole and one discovery well. The result is predicted to be a three well gas field covering about 2,000 acres. Drilling depth is about 13,500 feet and much of this field will be on Forest and/or BLM minerals. This forecast is based on the existing geologic perception of the area and is our best projection of reasonably foreseeable development. Area #4 consists of the Gravelly Range and the Snowcrest Trough to the south and east of the Gravelly Range. This area is referred to as the "Gravelly." One 11,000-foot exploratory well is projected to be drilled on National Forest System land in this area and found to be a dry hole. This well would be drilled and abandoned. The Gravelly Range is a west dipping sequence of rocks from Precambrian Archean age up into the Cretaceous Montana Group age. In the south and central portions of the Gravelly Range total thickness of post Precambrian sediments is about 12,000 feet. The interval from the top of the Permian to the Precambrian is about 5,000 feet. The primary targets for oil and gas exploration are probably in this interval. The dipping sediments of Cambrian through Cretaceous age are repeated by thrust faulting. Structural traps are probable beneath the thrust. The possibility exists of testing an upper Paleozoic trap on the hanging wall block and a Cretaceous Colorado Group through

Cambrian structure in the foot wall block of about 11,000 feet. One dry well tested the southern part of this subpart of Area #4. In 1970 Union Texas Petroleum drilled the #1 Metzel-Federal, in the NW1/4NW1/4 Sec. 5, T. 13S., R. 2 W., to a total depth of 4,125 feet into the Cambrian Park Shale. Possible source beds were identified in the well, although they may be too shallow and thermally immature to have generated and expelled hydrocarbons. Possible reservoirs were also noted. The other part of Area #4 lies south and west of the Gravelly Range. This is the Permian to upper Mississippian Snowcrest depositional trough. It is bounded on the south and east by the Snowcrest Thrust Fault. This area has been classified as having both moderate occurrence and development potential except for an area around an igneous intrusion in T. 11 S., R. 5W. It contains good source beds of Permian through upper Mississippian ages. This forecast is somewhat different than that adopted by the Forest Service for their oil and gas leasing EIS for the Beaverhead National Forest. It is noted that the forecast for the Beaverhead EIS only covered lands administered by the US Forest Service. Also, that document projected all wells as if they would occur on National Forest System lands. The BLM forecast examined all of Beaverhead and Madison Counties. The BLM forecast was completed several years after completion of the forecast for the Beaverhead EIS. During that time the economic outlook for the oil and gas industry has changed along with the completion of a dry hole in the area. The BLM is not able to forecast the exact locations for wells that might be drilled in the future. This is a matter that future Federal oil and gas lessees will decide for themselves based on their own more detailed analysis of the geologic and geophysical data that they will collect before drilling. Nor does the BLM have any control on the location of wells drilled on private lands if the minerals are not owned by the Federal government. The location of new wells will also be strongly influenced by lease stipulations developed in this plan amendment. Location of wells on the Beaverhead National Forest would be controlled in large part by the stipulations that were developed in their oil and gas leasing EIS. The Dillon RMP/EIS does not address leasing decisions on National Forest System lands. It must be understood that drilling may occur outside of the four areas described above. Possible environmental effects will also be analyzed in those areas. By looking at what could happen if wells were drilled in the indicated areas, the BLM can predict and extrapolate possible environmental effects throughout the study area, especially where sensitive resources are located and development potential is either "LOW" or "MODERATE." In addition to the four areas noted above, the reader will note that there is an area of moderate development potential located on the map of the project area along the trend of the Madison River valley. The BLM is not postulating any drilling in this area for the life of this planning document. Two wells have been drilled within the boundaries of the Madison River graben. No oil or gas shows were noted in either well. Gravity measurements indicate a valley fill thickness of up to 12,000 feet at a point about two miles from either well. The part of the graben with the greatest thickness is shown on internal BLM reports as being on the Hebgen Lake Quadrangle commencing about 1 -1/4 miles south of the Ennis Quadrangle boundary and continuing southeastward for a distance of about 7 -1/2 miles. In this area valley fill is estimated from gravity data to be 15,000 feet or more. From this depocenter, the Tertiary thickness decreases northward. About three miles east of Ennis, the Tertiary thickness is about 7,500 feet. The potential for hydrocarbons, probably gas, may be theorized for the Tertiary sediments at the greater depths than encountered in the two wells. Their bottomhole temperatures were 144 ~~°F~~ F, respectively. geothermal F/100 ft. indicating gradients for these wells of 1.12 ~~ft. to F/100~~ F/100 ft. indicating 12,900 feet to 17,900 feet would be needed to approach 200 F (the approximate top of the "oil window" temperature which allows for the early generation of hydrocarbons from organic sources). This approximation suggests that most of the sediments in the Madison River Valley are immature for

thermogenic hydrocarbon generation because they are shallower than these depths, and that the potential for gas is therefore focused on biogenic methane gas at cooler temperatures at shallower depths.

SURFACE ACTIVITY DESCRIPTION

This part of the Reasonable Foreseeable Development Scenario includes information to characterize the type of disturbance projected. The first section predicts the number of acres of ground surface disturbance resulting from exploration and field production activities, regardless of surface ownership. The calculation of acres disturbed relies upon assumptions derived from past exploration activity in the Dillon Field Office (DFO) and existing production from overthrust belt fields. All calculations assume a maximum acreage figure for analysis purposes if past activities show a range (e.g., 3.5 acres would be used if the range is 2.5-3.5 acres). This assumption was made in order to portray what the largest amount of disturbance could be expected to be. Reclaimed lands are also included in these calculations. Although no production exists in the DFO, there have been 44 test wells. The area is still considered a wildcat area with no commercial discoveries. Therefore, in order to model a production scenario, many assumptions are necessary. These assumptions include location, productive capability, reservoir parameters and hydrocarbon type and are based on information from representative oil and gas fields in Montana (Blackleaf and Kevin Sunburst). Even though the drilling activity forecast predicts two gas fields it is possible that the Lima area could also result in an oil field. Assumptions for both gas and oil fields are included here to make sure this possibility is factored into the analysis of impacts. Other critical factors that need to be considered when evaluating potential impacts of oil and gas activity are shown after the disturbance calculations and field assumptions. These factors include the duration of activity, and the type and quantity of equipment, personnel and other resources used and the frequency of such use. The drilling activity forecast predicts a total of 6 exploration wells and 4 development wells. The area that would be

disturbed totals 35 acres for well pads, 170 acres for access roads and 318 acres for pipelines for a total of 523 acres disturbed as a result of projected well drilling and field development. It is assumed that 6 wells would prove to be commercially productive. For production the access roads and rights of way would be stabilized by seeding the cut and fill slopes and surfacing the top of the road bed. A small portion of the road rights of way would be returned to a pre-disturbance condition. A major portion of the well pads (up to two thirds) would be rehabilitated. The gas/oil gathering lines would be constructed along existing or new access roads resulting in no additional disturbance. Gas trunk lines would be completely rehabilitated. The following table displays the estimated amount of disturbance (in acres) expected from drilling and production activity predicted in the drilling activity forecast. It is based on the previously discussed assumptions and successful reclamation after construction operations are completed or oil and gas operations cease.

Estimation of Surface Disturbance Assumptions
The maximum area cleared per well pad would be 3.5 acres (about 380 ft. x 400 ft.) and 2.3 acres would be stabilized in about 2 years.
The maximum area cleared per access road per well would be 17 acres (about 40 ft. x 18480 ft.) and 9 acres would be stabilized in about 2 years.
All field gathering pipelines (2-4 inch diameter) will follow existing or new access roads and no additional disturbance would result.

The maximum area cleared for trunk lines to transport gas from two different fields to the existing transmission line near Dillon, Montana would be **318 acres** (about 25 ft. x 554,400 ft.) and the entire area of disturbance would be stabilized in about 2 years. All perennial stream crossings would use horizontal drilling to avoid disturbance to the stream, its bed and banks.

Dry and abandoned wells would be reclaimed.

	Unsuccessful Wildcat Wells		Commercially Productive Wells	
	Pre-Site Reclamation	Post-Site Reclamation	Re-Site Reclamation	Post-Site* Reclamation
Well Site	14	0	21	7.2
Access Roads	68	0	102	48
Pipelines	0	0	318	0
Total Acres Disturbed	82	0	441	55.2

*The figures in this column represent the total area committed to production facilities and permanent access roads after the unused portions have been successfully rehabilitated.

Gas Field Assumptions

Gas fields would be discovered in the Lima and Big Hole Basin areas.

Fields would be roughly 3 square miles in surface area.

Full development would require 3 wells (one discovery and two step out wells). 3-D seismic would be run to refine step out well locations.

Gas would be transported by pipeline an order to be marketed. From Lima it would be transported north to Dillon for approximately 45 miles. From the Big Hole Basin it would be transported approximately 60 miles to the south and east to Dillon.

Compressor stations would be necessary along the pipeline route, with one of those stations being within one mile of the main line in order to boost the pipeline gas to the pressure of the main line.

Wells would be drilled 10,000 to 15,000 feet deep. One well would be drilled from each well pad. Only one development well would be drilled at a time.

Wells would take approximately 300 days to drill.

Condensate, gas, and water separation would occur at the wellsites. Water disposal would be into a lined pit at the surface or water would be injected into the subsurface through a dry hole converted into a water disposal well. Condensate would be shipped by truck (1 truck every 4 days).

The field is expected to produce for 25 years.

Well servicing, repair, and maintenance would continue throughout the life of the field. Well servicing operations would take 5 days per well and occur 6 times/well over the 25 year life of the field. A well tender would make one trip per day

Activity	Approximate Time Frame	Number of Workers	Vehicles and Equipment	Number of Trips
<p>Construction of well pad and access road</p> <p>Reserve pit is 125 ft X 200 ft X 12 deep; lined with 8-10 mil reinforced nylon/ plastic. Location fixed by rig location.</p>	1 week	5-6	2 Bulldozers 2 Scrapers Grader Water truck Workers' vehicles	2 (1/wk per dozer) 2 (1/wk per scraper) 1 (1/wk) 35 (5/day) 28 (4/day)

Access Road Culverts added if stream channels must be crossed, but operators usually would lengthen road to avoid drainages to minimize maintenance and to maintain maximum grade of 10% or less.

In extreme terrain or remote locations, company may put up camps at drill site. Additional buildings (portable) for sleeping quarters and cooking and eating are used. Camp crew includes cook, assistant cook. Support facilities include septic systems, refrigerated food storage. Camp jobs eliminate some traffic due to shift changes.

Activity	Approximate Time Frame	Number of Workers	Vehicles and Equipment	Number of Trips
<p>Well Drilling</p> <p>Rig-Size/Type: Triple derrick, jackknife type; Diesel or diesel-electric Weight: rig about 2,000,000 lbs Height: 160 ft (assumes 20 ft substructure) Engine: 1500-2000 horse power from 3 engines Derrick capacity: 1 million lbs</p> <p>Drilling Equipment requires: 40-50 one-way semi-truck loads to move rig to site at 45,000 lbs per load</p>	300 days	<p>5-6, during Drilling phase;</p> <p>10, during cementing and running casing phases</p>	<p>Rig set-up (semi-trucks)</p> <p>Maintenance (pickup truck)</p> <p>Well-logging truck</p> <p>Semi-truck carrying casing</p> <p>Semi-truck carrying drilling steel</p> <p>Service trucks (mud, bits, special equipment)</p> <p>Water trucks Workers' vehicles Salesmen's vehicles</p>	<p>200 (20/day for 10 days)</p> <p>300 (1/day)</p> <p>3 (1/day, 3 separate days)</p> <p>30 (5/day, 6 separate days)</p> <p>8 (1/day, 8 separate days)</p> <p>86 (2/wk)</p> <p>600 (2/day)</p> <p>1800 (6/day)</p> <p>86 (2/wk)</p>

Water truck - several trips per day (fresh water required to drill through all fresh water aquifers ranging from 600 ft to 2500 ft below surface, at rate of 10 bbl per ft). About 40,000 bbls of water required to drill remainder of well unless lost circulation problems occur, then more water required. A separate water truck may make 2-3 trips per day to spray fresh water on roads for dust control. Water source well is usually drilled for rank wildcat wells.

Activity	Approximate Time Frame	Number of Workers	Vehicles and Equipment	Number of Trips
<p>Well Testing and Completion: the drilling rig is typically used to set the casing. A completion rig (smaller in size) is used to complete well for production.</p>	1 week to 1 month	<p>4 during testing;</p> <p>10-12 for completion, fracturing, and/or acidizing phases</p>	<p>Truck carrying tubing, packers</p> <p>Truck carrying wellhead</p> <p>Truck carrying testing tools</p> <p>Truck carrying perforation tools</p> <p>Pump and bulk trucks</p>	<p>6 (3/day for 2 days)</p> <p>1 (1 in 1 day)</p> <p>12 (3/wk)</p> <p>3 (1/day for 3 days)</p> <p>10 (5 on 2 separate days)</p>

Activity	Approximate Time Frame	Number of Workers	Vehicles and Equipment	Number of Trips
Placement of Production Facilities	1 week	4-5	Truck carrying meter device	1 (1/wk)
				1 (1/wk)
			Truck carrying pipe, fittings, etc.	1 (1/wk)
				3 (3/wk)
			Truck carrying dehydrator	1 (1/wk)
			Truck carrying tank	28 (4/day)
Backhoe				
Workers' vehicles				

Activity	Approximate Time Frame	Number of Workers	Vehicles and Equipment	Number of Trips
Pipeline Construction-per mile	1 week	5-8	Trencher	1 (1/wk)
			Dozer	1 (1/wk)
			Welding Truck	14 (2/day)
			Pipeline Truck	5 (5/wk)
			Workers' vehicles	28 (4/day)

Activity	Approximate Time Frame	Number of Workers	Vehicles and Equipment	Number of Trips
Abandonment/ Reclamation Well plugging, equipment dismantling and removal, and reclamation	3 weeks	5-6	Workover Rig and associated equipment	24 (3/day for 8 days)
				3
			Bulldozer, scraper and road grader	21 (1/day)
			Maintenance (pickup truck)	3
				4
			Semi-truck for equipment hauling	126 (6/day)
Service trucks				
Workers' vehicles				