United States Department of the Interior
Bureau of Land Management

Environmental Assessment MT
DOI-BLM-MT-B050-2010-0018-EA
August 12, 2010

Dillon Field Office 2010 Oil and Gas Leases

U.S. Department of the Interior
Bureau of Land Management
Dillon Field Office
1005 Selway Drive
Dillon, MT 59725
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BLM

PARCELS INVOLVED AND LEGAL DESCRIPTIONS

Total Acres – 6994.71

SERIAL NUMBER	PARCEL DESCRIPTION	COUNTY	TOTAL ACRES
MTM 79010-7O	T. 14 S, R. 7 W, PMM, MT sec. 33 E2E2; 34 E2NW; T. 15 S, R. 7 W, PMM, MT sec. 6 LOT 7; 6 SESW,S2SE	Beaverhead	400.63
MTM 79010-7P	T. 15 S, R. 6 W, PMM, MT sec. 6 LOTS 2,3,4; 6 NENE,S2NE,SENW,E2SW; 7 LOTS 1,2, 7 E2W2,E2	Beaverhead	995.03
MTM 79010-7Q	T. 15 S, R. 6 W, PMM, MT sec. 3 SESW; 4 S2NE,SENW,W2W2,NESE	Beaverhead	360.00
MTM 79010-7R	T. 14 S, R. 6 W, PMM, MT sec. 31 LOTS 1,2; 31 NE,E2NW; 32 ALL	Beaverhead	957.36
MTM 79010-7S	T. 14 S, R. 6 W, PMM, MT sec. 33 ALL; 34 ALL; 35 N2	Beaverhead	1600.00
MTM 79010-7T	T. 14 S, R. 6 W, PMM, MT sec. 28 ALL; 29 ALL; 30 LOTS 1,2,3,4; 30 E2W2,E2	Beaverhead	1918.28
MTM 79010-7U	T. 14 S, R. 6 W, PMM, MT sec. 19 LOTS 1,2,3,4; 19 N2NE,E2W2,S2SE; 20 N2N2,S2SW,SWSE	Beaverhead	763.41

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Dillon Field Office
1005 Selway Drive
Dillon, Montana 59725-8449
www.blm.gov/mt

In Reply Refer To:
1600/3100 (MTB050)

August 12, 2010

Dear Reader:

The Bureau of Land Management (BLM) Dillon Field Office has prepared an Environmental Assessment (EA) to revisit our decisions concerning oil and gas leases that were issued in 2008, and subsequently suspended under the terms of a settlement agreement in March 2010. This analysis addresses seven lease parcels issued in 2008.

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 September 13, 2010, to be considered. Comments may be submitted using one of the following methods:

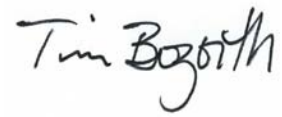
Email: MT_DillonFO_Lease_EA@blm.gov
Mail: Dillon Field Office
Attention: Oil and Gas EA
1005 Selway Drive
Dillon, MT 59725

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – will be available for public review. If you wish to withhold personal identifying information from public review or disclosure under the Freedom of Information Act (FOIA), you must clearly state, in the first line of your written comment, "CONFIDENTIALITY REQUESTED." While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from organizations, from businesses, and from individuals identifying themselves as representatives of organizations or businesses, will be available for public review.

Upon review and consideration of public comments, the EA, 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 www.blm.gov/mt. From this home page, go to the heading titled "Frequently Requested," where you will find a number of links to information about our oil and gas program. Current and updated information about our environmental assessments can be found on the link titled "Oil and Gas Leasing EAs" and Lease Sale notices are listed under the "Current competitive oil and gas lease sale and results lists" link.

If you have any questions, or would like more information about lease sale notices or the issuance of the final EA, Decision Record and FONSI, please contact us at 406-896-5013.

Sincerely,



Tim Bozorth
Field Manager

U.S. Department of the Interior
Bureau of Land Management
Dillon Field Office
1005 Selway Drive
Dillon, MT 59725

Finding of No Significant Impact
Environmental Assessment DOI-BLM-MT-B050-2010-0018-EA

This unsigned Finding of No Significant Impact and the attached DOI-BLM-MT-B050-2010-0018-EA for the Dillon Field Office are available for public review and comment for 30 days beginning on August 12, 2010.

Impact identification and analysis of approving the project proposal and/or alternatives(s) has been completed. Environmental analysis has been conducted based on available inventory and monitoring data files. The proposed action conforms with and is within the scope of the land use decisions described in the Dillon Resource Management Plan (RMP) approved in February 2006 and its associated environmental impact statement.

Based on my review of the EA and supporting documents, I have determined that the project, including the implementation of required stipulations/mitigating measures, is not a major federal action and will not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. No potential environmental effects associated with the project meet the definition of significance in context or intensity as defined in 40 CFR 1508.27, nor do potential effects exceed those effects described in the Dillon RMP/FEIS. An environmental impact statement (EIS) is not required. Any future proposed development on such parcels would be subject to additional site-specific NEPA analysis and documentation.

The decision to approve or deny the proposed action and preparation of a signed Finding of No Significant Impact with rationale, as appropriate, will be released after consideration of public comments and completion of the EA.

Recommended by: _____ Date_____
Tim Bozorth, Field Manager

Concurrence by: _____ Date_____
Richard M. Hotaling, District Manager

Approved by: _____ Date_____
Theresa M. Hanley, Deputy State Director, Division of Resources

DOI-BLM-MT-B050-2010-0018-EA
August 12, 2010
Dillon Field Office 2010 Monida Oil and Gas Leases

CONTENTS

DOI-BLM-MT-B050-2010-0018-EA
August 12, 2010
Dillon Field Office 2010 Oil and Gas Leases

1.0 PURPOSE & 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 in 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. Mineral leases can be sold on such lands as well. The Montana State Office has historically conducted five lease sales per year.

Oil and gas companies 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. The 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 (including those covered by this EA) are nominated by the oil and gas industry and, therefore, represent areas of interest.

This environmental assessment (EA) has been prepared to disclose and analyze the environmental consequences of leasing seven parcels located in the Dillon Field Office that are currently leased but under suspension. The parcels are located in southwest Montana in the southern part of Beaverhead County near the Idaho-Montana border. They are located on both sides of Interstate 15 just north and west of Monida. See Map 1 in Appendix B.

The majority of parcels are located in the southwest portion of the Red Rock Lima Watershed Assessment Area. In 2007, the BLM Dillon Field Office (FO) conducted a watershed assessment for the public lands located in the Red Rock Lima Watershed (BLM 2007). Much of the information referred to in this EA document was taken from that Red Rock Lima Watershed Assessment Report and subsequent EA which is available at http://www.blm.gov/mt/st/en/fo/dillon_field_office/redrock.html. In addition, some of the eastern oil and gas parcels lie within the western portion of the Centennial Watershed Assessment Area. A watershed assessment report was completed in 2004 and the Centennial Watershed EA followed in 2005. A copy of this document is available by contacting the Dillon FO.

1.2 Purpose and Need for the Proposed Action

The purpose of offering parcels for competitive oil and gas leasing is to allow private individuals or companies to explore for and develop oil and gas resources for sale on 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 substantial 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.

Because all the parcels addressed in this EA are already leased but are currently under suspension, the decision to be made is whether the conditions under which they have been leased are still valid and in conformance with the land use plan and whether the lease suspensions should be lifted.

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 and its associated environmental impact statement. 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 Resource Management Plan (BLM 2006:43-46, Appendices K to M) and in the Proposed Dillon Resource Management Plan/Final EIS (BLM 2005:319-320, 326-327).

The parcels being addressed are within areas open to oil and gas leasing. Site-specific analysis was conducted by Dillon Field Office resource specialists who relied on professional knowledge of the areas involved, review of existing databases and file information, and site visits to ensure that appropriate stipulations had been attached to specific parcels. Alternatives considered in this EA, including stipulations and mitigation measures, are consistent with management decisions in the Dillon RMP (BLM 2006).

At the time of this review it is unknown whether a particular parcel will be developed. It is unknown when, where, or if future well sites, roads, and facilities might be proposed. Assessment of projected activities and impacts was based on potential well densities discerned from the Reasonably Foreseeable Development (RFD) Scenario developed and documented in conjunction with the Dillon RMP. Detailed site-specific analysis of activities associated with any particular parcel would occur when/if a lease holder submits an application for permit to drill (APD).

The proposed project 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 posting on the Dillon FO website NEPA notification log. Scoping was conducted from May 25, 2010, through June 21, 2010. Several letters pertaining to overall issues and concerns from oil and gas leasing within the Montana/Dakotas BLM were received; however, no comments were received that were specific to this EA planning area during the 2010 scoping period.

Issues identified through public scoping in 2008 and 2010 include green-house gas (GHG) emissions and impacts on climate change, protection of wildlife and fisheries habitat and corridors, protection of greater sage-grouse habitat, preservation of wildlands and pristine landscapes, protection of viewsheds and scenic quality, protection of cultural areas, minimization of surface soil disturbance, and mitigation measures to minimize impacts from oil and gas operations. One comment specifically suggested considering a no leasing alternative. Refer to Section 5.2 of this EA for a more complete summary of the comments received.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Alternative A - No Action

For EAs on externally initiated proposed actions, the No Action alternative generally means that the proposed action would not take place. In the case the No Action alternative would maintain seven parcels in the Dillon FO in suspension, and would subject to cancellation. 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 - Proposed Action

The Proposed Action is to lift oil and gas lease suspensions on seven parcels of federal minerals covering 6,994.71 acres administered by the Dillon FO. The parcels are located in southern Beaverhead County just north of the Idaho-Montana border, near Monida. Parcel number, size, and detailed locations and associated stipulations are listed in Appendix A. Map 1 in Appendix B shows the general location of each parcel.

Of the 6,994.71 acres of federal mineral estate that are considered in this EA, 3,350.67 acres are public surface with federal mineral estate and 3,644.04 are split estate (private surface with federal mineral estate). Table 1 shows the parcel ownership status. All parcels would be subject to leasing stipulations, as per the oil and gas leasing decisions in the Dillon RMP, that would protect identified resources or resource uses that otherwise might be jeopardized by the proposed action.

Approximately 3,644 acres in the seven parcels are private surface overlying federal mineral estate. The BLM provided courtesy notification to private landowners that their lands were being included in this analysis. In the event of activity 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, conditions, and operating procedures, as well as additional stipulations as listed in Appendix A would apply to these parcels. Standard operating procedures in oil and gas fields include measures to protect resources, including groundwater, air, wildlife, archaeological sites, paleontological fossils, and others as mentioned in the Dillon RMP, Appendix M at pages 155 through 168.

Table 1 Lease Parcel Ownership Status (Federal Mineral Estate)			
Parcel	*Total Acres*	*Split Estate*	*Public Surface*
7U	763.41	763.41	0
7T	1,918.28	960.00	958.28
7R	957.36	40.00	917.36
7S	1,600.00	1,280.00	320.00
7Q	360.00	360.00	0
7P	995.03	80.00	915.03
7O	400.63	160.63	240.00
TOTAL	**6,994.71**	**3,644.04**	**3,350.67**

Standard operating procedures, best management practices and required conditions of approval and the application of lease stipulations change over time to meet overall RMP objectives. 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.

If lease suspensions are lifted, oil and gas leases would be in effect 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 lease 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 as specified at 43 CFR 3162.

3.0 AFFECTED ENVIRONMENT

This chapter describes the affected existing environment (i.e., the physical, biological, social, and economic values and resources) that could be affected by implementation of the alternatives described in Chapter 2.

Elevations of the parcels range from approximately 6,600 feet to above 7,700 feet AMSL (above mean sea level). Topography varies from nearly level sagebrush/grassland flats to moderate sloping hills. The area receives 10 to 24 inches of annual precipitation. Vegetation reflects the diversity of ecological conditions across the landscape. A wide variety of vegetation is found, from wetland and riparian species dependent on water and moist soils, to sagebrush and grass-dominated plant communities that thrive on drier upland sites. The area provides habitat and structural niches for a wide variety and abundance of wildlife. The historical and current use of the rural area is livestock grazing. It is also used as a transportation corridor since Interstate 15 transects the area.

Specific components of the environment that may be affected by this project are discussed below. Only those aspects of the affected environment that are potentially impacted by this project are described in detail.

The following aspects of the affected environment were determined to not be present, or not potentially impacted by this project: Lands with Wilderness Characteristics, Cave/Karst Resources, Forest Products, Wilderness Study Areas, Watchable Wildlife Areas, Wild & Scenic Byways, National Historic/Scenic Trails, Scenic Byways, and Areas of Critical Environmental Concern (ACEC). These resources and resource uses will not be discussed further in this EA.

3.1 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 (EPA) 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.

3.1.1 Air Quality

Project area air quality is very good. The EPA air quality index (AQI) is an index used for reporting daily air quality (http://www.epa.gov/oar/data/geosel.html). 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. EPA 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, EPA 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 EPA 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.

In the context of ozone, all areas throughout Montana and the Dakotas are currently meeting federal standards. Light and dark blue circles in Figure 1 indicate standards being met in 2008. Open circles in Figure 2 indicate static trends.

For haze, trends appear to be improving for the clearest days (Figure 3), while there are no apparent trends for the haziest days (Figure 4).

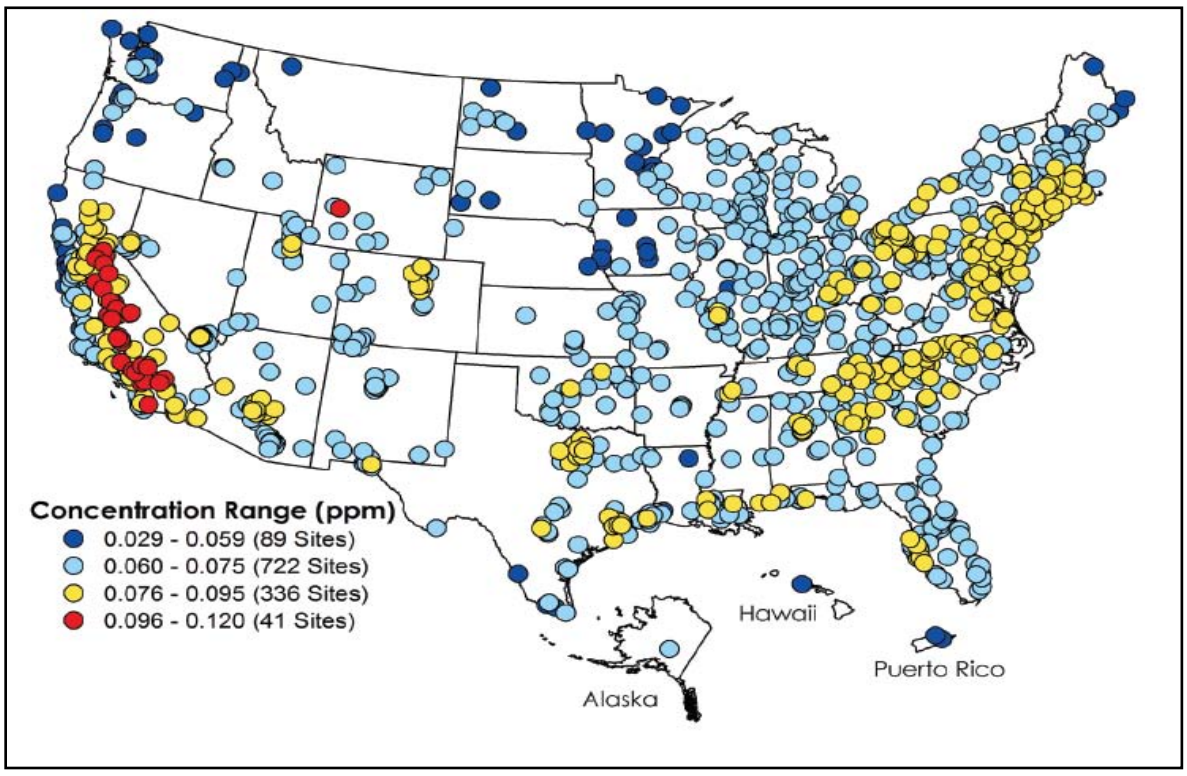


Figure 1. Ozone concentrations in ppm, 2008 (fourth highest daily maximum 8-hour concentration).

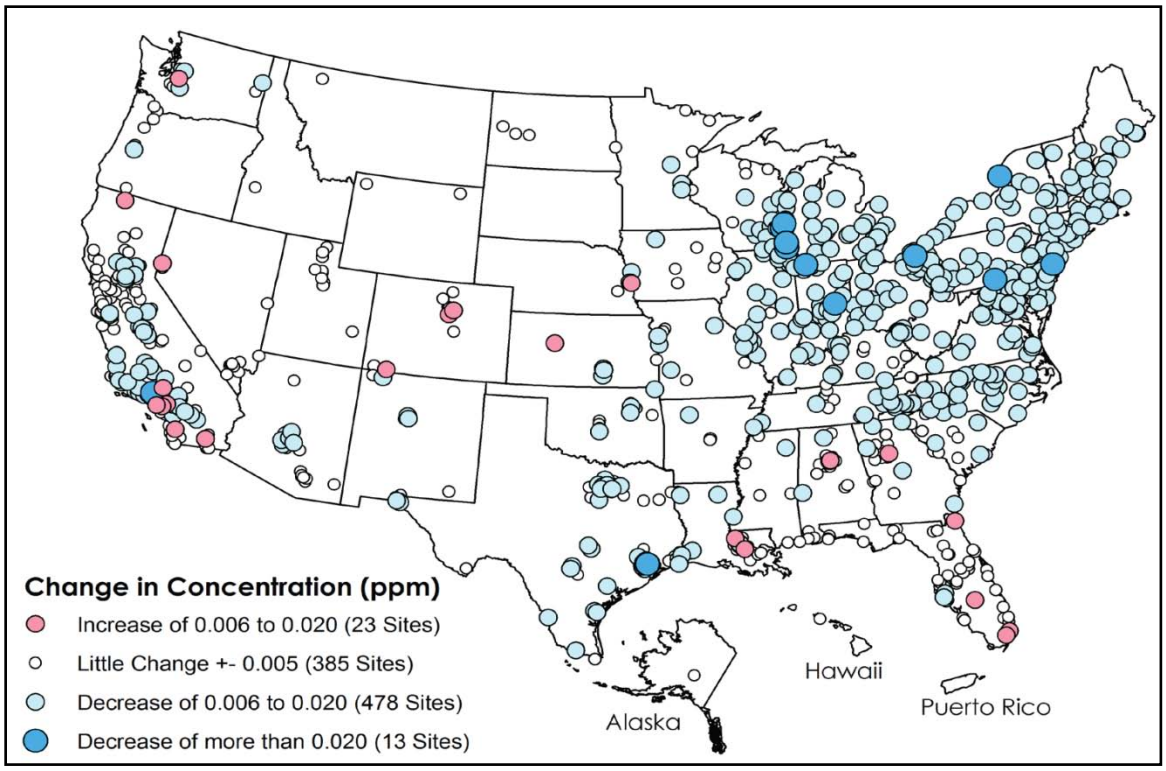


Figure 2. Change in ozone concentrations in ppm, 2001-2003 vs. 2006-2008 (three-year average of the annual fourth highest daily maximum 8-hour concentrations).

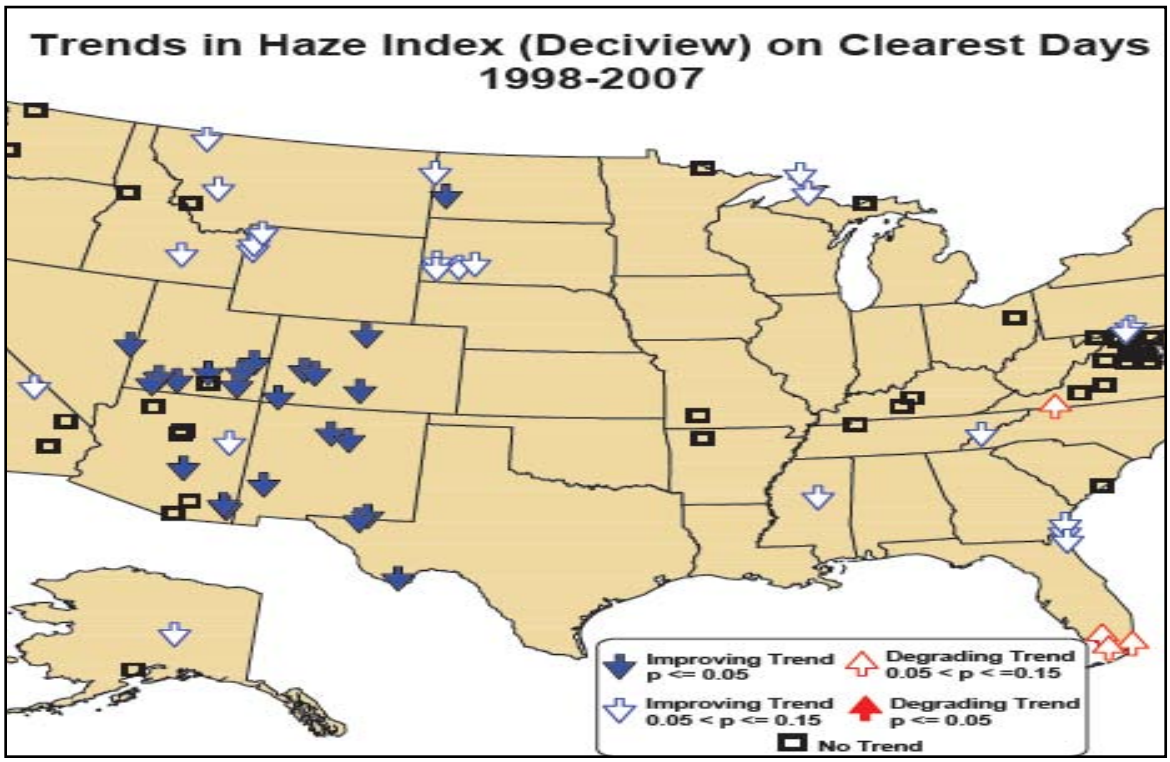


Figure 3. Trends in haze index (deciview) on clearest days, 1998-2007.

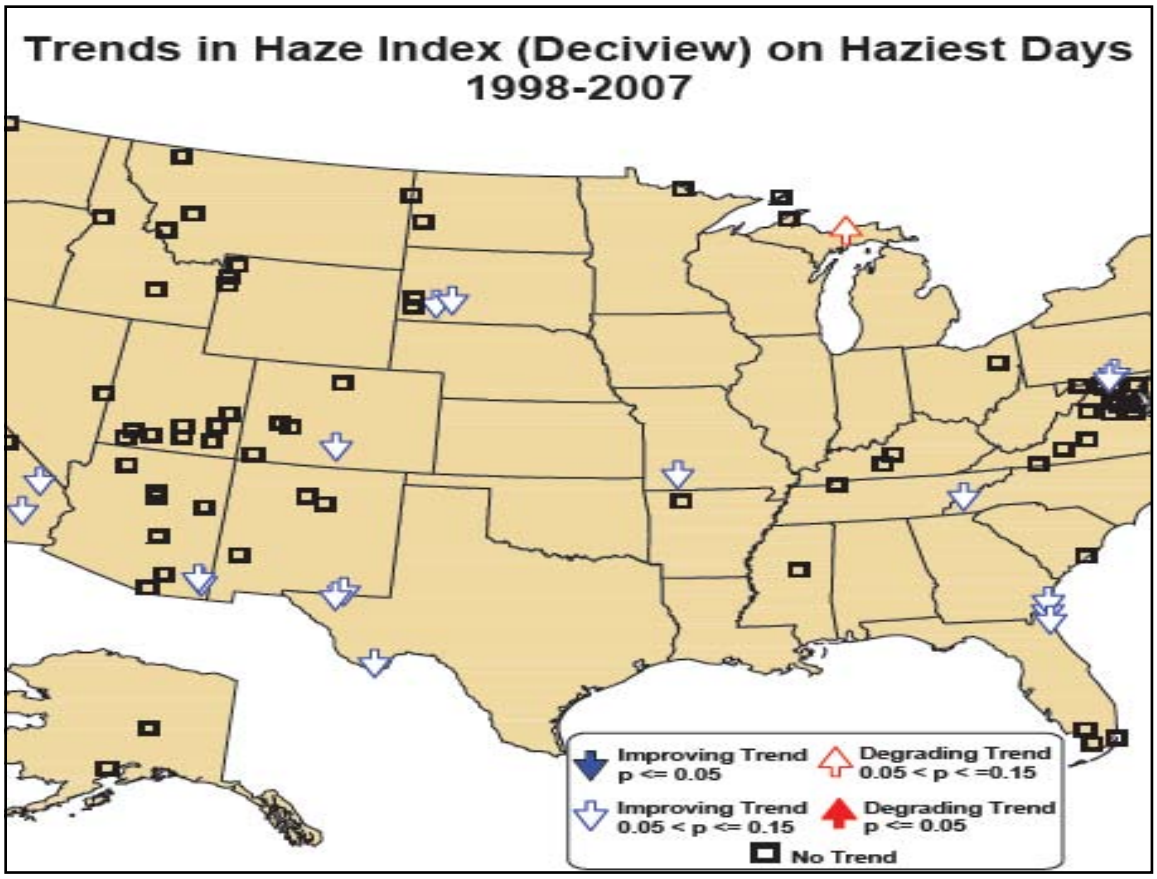


Figure 4. Trends in haze index (deciview) on haziest days, 1998-2007.

While there is limited data for the Dillon Field Office, air quality appears to be very good based on the Madison County AQI Report for 2001 to 2003. The AQI data (Table 2**)** shows that there's little risk to the general public from degraded air quality. Between 2001 and 2003, 98 percent of the monitored days were rated "good" with two percent rated "moderate." The monitoring data showed that particulate matter (PM_{10}) was the primary pollutant in Madison County. It is likely that particulate matter is also the primary pollutant in Beaverhead County given its close proximity to Madison County.

In 2003 (the last year with monitoring data) lands within the Dillon Filed Office were in compliance with all air quality standards. While the data is from Madison County, it is the only station within the Field Office Boundary. At this time, PM_{10} reached 40.7% of the standard and monitoring was discontinued. This indicates that current air quality is very good, falling well below applicable standards.

The main sources of PM_{10} are fugitive dust (56 percent), miscellaneous combustion (20 percent), mineral products (13 percent), and agriculture and forestry (9 percent). It is important to note that the presence of a source does not automatically mean that air quality is impaired. As shown above, these emissions do not necessarily lead to impaired air quality. This section is simply intended to identify those sectors which have the greatest likelihood to influence current and future air quality for this project area.

Air quality issues for the lease parcel area develop predominantly during wildfire season. PM_{10} and $PM_{2.5}$ are pollutants of concern. Wildfires generate most $PM_{2.5}$ emissions. The primary sources of $PM_{2.5}$ are miscellaneous combustion (57 percent), fugitive dust (20 percent), mineral products (9 percent), agriculture and forestry (4 percent), and residential wood combustion (4 percent). $PM_{2.5}$, because of its small size, can travel hundreds, even thousands of miles. A $PM_{2.5}$ emission is a pollutant level of concern, and the State of Montana is charged with developing a strategy to address $PM_{2.5}$ emissions.

The closest population at risk in the vicinity is the small community of Lima, located approximately 15 miles north of the lease parcels. The population of Lima is 231 people (U.S. Census 2000), and in Beaverhead County the population is 9,202 people (U.S. Census 2000). The 1977 Amendments to the Clean Air Act resulted in the development of Air Quality Classes under the provisions of Section 160, Prevention of Significant Deterioration. The majority of the project area is Class II; however, the Red Rock Lakes National Wildlife Refuge, located about 20 miles east of the lease parcels, is Class I. Particulate emissions are strictest in Class I areas. The closest Ambient Air Quality monitoring site to the oil and gas lease parcel area is located south of the project area in Idaho Falls. Butte is the closest Montana State PM_{10} Non-Attainment Area.

Table 2
U.S. EPA - AirData Air Quality Index (AQI) Report
Field Office Summary (2001-2003)
Madison County, Montana

Year	*# Days with Data*	*# Days Rated Good*	*Percent of Days Rated Good*	*# Days Rated Mod*	*# Days Rated Unhealthy for Sensitive Groups*	*# Days Rated Unhealthy*
2003	46	45	98	1	0	0
2002	61	60	98	1	0	0
2001	15	15	100	0	0	0
Total	122	120	98%	2	0	0

3.1.2 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. It refers to any change in climate over time, whether due to natural variability or as a result of human activity." (IPCC 2007a). Climate change and climate science are discussed in detail in the Climate Change Supplementary Information Report for Montana, North Dakota, and South Dakota, Bureau of Land Management (Climate Change SIR 2010). This document is incorporated by reference into this EA.

The Intergovernmental Panel on Climate Change (as cited in the Climate Change SIR 2010) states that "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level." Global average temperature has increased approximately 1.4°F since the early 20th century (NOAA 2010a as cited in the Climate Change SIR 2010).

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). Other indications of global climate change described by IPCC 2007b (as cited in the Climate Change SIR 2010) include:

- Rates of surface warming increased in the mid-1970s and the global land surface has been warming at about double the rate of ocean surface warming since then;
- Eleven of the last 12 years rank among the 12 warmest years on record since 1850;
- Lower-tropospheric temperatures have slightly greater warming rates than the earth's surface from 1958-2005.

As discussed and summarized in the Climate Change SIR (2010), earth has a natural greenhouse effect wherein naturally occurring gases such as water vapor, CO_2, methane, and N_2O absorb and retain heat. Without the natural greenhouse effect, earth would be approximately 60°F cooler (USGCRP, 2009, cited in the Climate Change SIR 2010). Current ongoing global climate change is believed by scientists to be 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 (summarized in the Climate Change SIR 2010). The buildup of GHGs such as CO_2, methane, N_2O, 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 carbon dioxide and methane) from fossil fuel development, large wildfires and activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will 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, CO_2 proper may last 50 to 200 years in the atmosphere while methane has an average atmospheric life time of 12 years (USEPA 2010a, as cited in the Climate Change SIR 2010).

North Dakota, Montana and South Dakota are all in the lower third of GHG emitting states (by volume). North Dakota ranks 37, Montana ranks 42, and South Dakota ranks 43. Only Hawaii and Idaho have lower emissions than Montana and South Dakota among western states (http://assets.opencrs.com/rpts/RL34272_20071205.pdf, Ramseur 2007). Montana, North Dakota, South Dakota combine for 1.8 percent of the United States' (U.S.) greenhouse gas emissions.

Some information and projections of impacts beyond the project scale are becoming increasingly available. Chapter 3 of the Climate Change Supplementary Information Report for Montana, North Dakota, and South Dakota (Climate Change SIR 2010) describes impacts of climate change in detail at various scales, including the state scale when appropriate. The following bullet points summarize potential changes identified by the EPA (EPA, 2008) that are expected to occur at the regional scale, where the proposed action and its alternatives are to take place.

The EPA identifies this area as part of the Mountain West and Great Plains (http://www.epa.gov/Region8/climatechange/pdf/ClimateChange101FINAL.pdf):

- 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.

Projected and documented broad-scale changes within ecosystems of the U.S. are summarized in the Climate Change SIR (2010). Some key aspects include:

- Large-scale shifts have already occurred in the ranges of species and the timing of the seasons and animal migrations. These shifts are likely to continue (United States Global Change Research Program [USGCRP] 2009, as cited in the Climate Change SIR 2010). Climate changes include warming temperatures throughout the year and the arrival of spring an average of 10 days to two weeks earlier through much of the U.S. compared to 20 years ago. Multiple bird species now migrate north earlier in the year.
- Fires, insect epidemics, disease pathogens, and invasive weed species have increased and these trends are likely to continue. Changes in timing of precipitation and earlier runoff increase fire risks.
- Insect epidemics and the amount of damage that they may inflict have also been on the rise. The combination of higher temperatures and dry conditions have increased insect populations such as pine beetles, which have killed trees on millions of acres in the western U.S. and Canada. Warmer winters allow beetles to survive the cold season, which would normally limit populations, while concurrently, drought weakens trees, making them more susceptible to mortality due to insect attack.

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

- Temperature increases in Montana are predicted to be between 3 to 5°F at mid-21st century and between 5 to 9°F at the end of the 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 five to 10 percent increases.
- For most of Montana, annual median runoff is expected to decrease between two and five 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.

While long-range regional changes might occur within this project area, it is impossible to predict precisely when they could occur. The following example summarizing climate data for the West North Central Region (MT, ND, SD, WY) illustrates this point at the regional scale. A potential regional effect of climate change is earlier snowmelt and associated runoff. This is directly related to spring-time temperatures. Over a 112-year record, overall warming is clearly evident with temperatures increasing 0.21 degrees per decade (Figure 5). This would suggest that runoff may be occurring earlier than in the past. However, data from 1991-2005 indicates a 0.45 degree per decade cooling trend (Figure 6). This example is not an anomaly, as several other 15-year windows can be selected to show either warming or cooling trends. Some of these year-to-year fluctuations in temperature are due to natural processes, such as the effects of El N as, and the eruption of large volcanoes (summarized in the Climate Change SIR 2010). This information illustrates the difficulty of predicting actual regional or site-specific changes or conditions which may be due to climate change during any specific time frame.

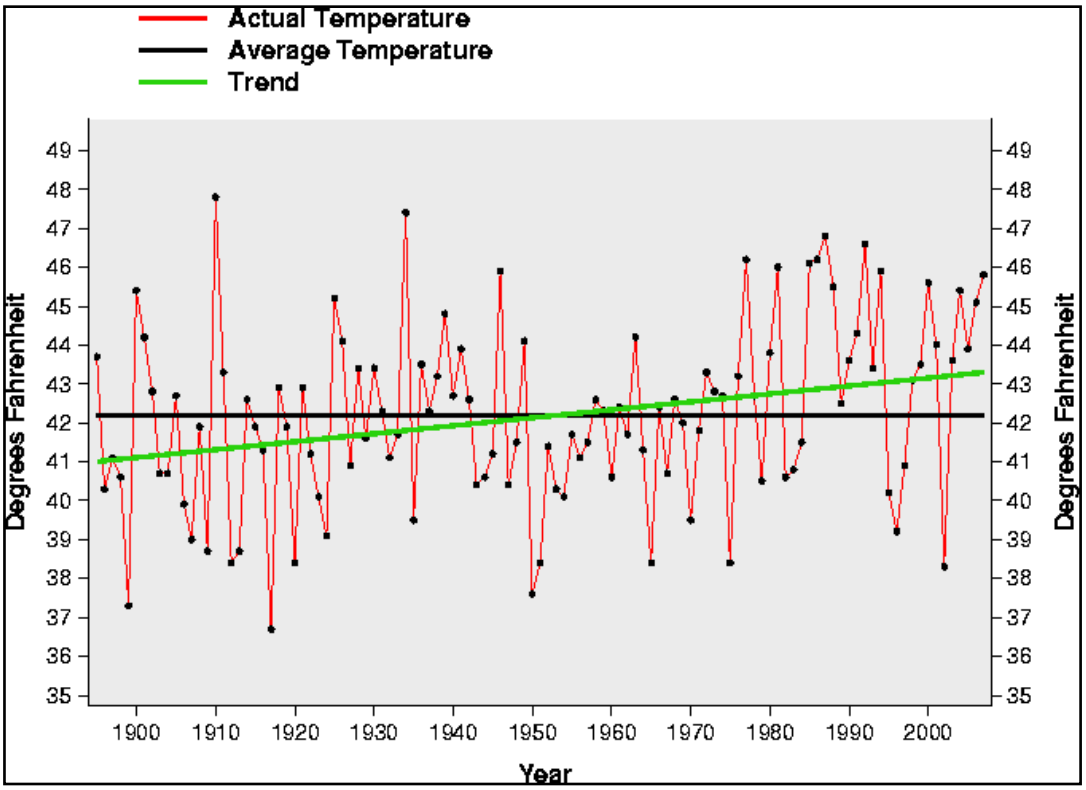


Figure 5. Regional climate summary of spring temperatures (March-May) for the West North Central Region (MT, ND, SD, WY), from 1895-2007. (Source: NOAA website – http://www.ncdc.noaa.gov/oa/climate/research/cag3/wn.html**)**

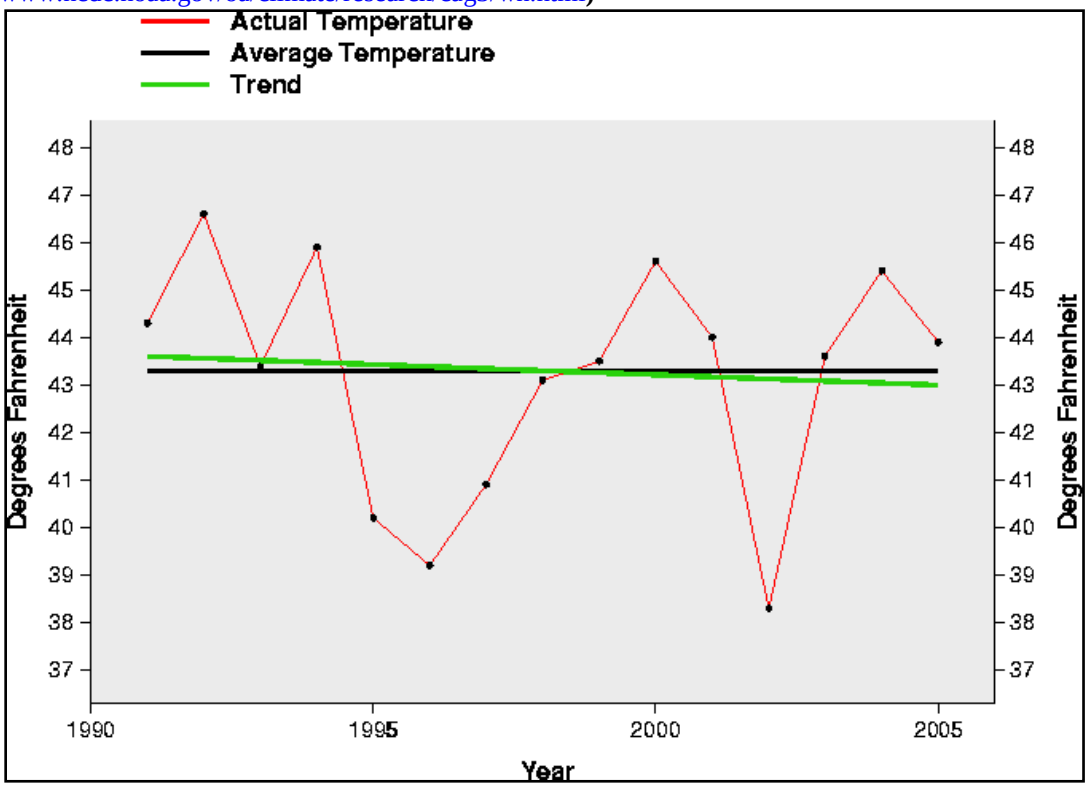


Figure 6. Regional climate summary of spring temperatures (March-May) for the West North Central Region (MT, ND, SD, WY), from 1991-2005. (Source: NOAA website – http://www.ncdc.noaa.gov/oa/climate/research/cag3/wn.html**)**

3.2 Soil Resources

Soils in the lease area include many soil types and complexes. They are affected by climate (temperature and precipitation), topography (slope and aspect), and parent material (geology and geomorphology). Some soil types are sensitive and could be adversely impacted by oil and gas-related activities. This includes soils that have high erosion ratings, have formed on steep slopes, and those with limitations related to construction activities and reclamation.

The soil mapping for the lease parcel area, referred to as the Horse Prairie-South Valley Area of Beaverhead County, is incomplete. The absence of accurate information on type and extent of soils is an obvious disadvantage. A geographic information system (GIS) layer was used to identify steep slopes to help overcome some of these disadvantages and color infrared (CIR) photography was used to help identify hydric soils. However, some soil polygons have been mapped within the project area. The soils are in the Frigid (generally below 6,400 feet elevation) and Cryic (generally above 6,400 feet elevation) soil temperature regimes. Several of these map units are hydric soils, including Map Unit 38D and E. Phillipsburg loam, and 98B (Crookedrun-Gapo complex). It appears likely that map unit 644G (Foolhen–Bearmouth-Finn Complex) also containing hydric soils and shown upstream in MT605, extends downstream and adjacent to the westernmost lease parcels near Junction and Big Beaver Creeks. Hydric soils are mostly found in depressions, drainageways, and marshes and are frequently associated with floodplains. This is consistent with the CIR information.

3.3 Water Resources

Hydrology – Surface Water Quality

The Montana Department of Environmental Quality (DEQ) is responsible for making beneficial use determinations on water quality and is in the process of assessing the condition of streams, establishing reference sites and developing water quality restoration plans. The Dillon FO shares assessment findings with DEQ to support its efforts.

The foundation for Montana Water Quality Law is the Federal Clean Water Act. The goal of the Clean Water Act is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." To meet that goal, waters of Montana are required to support beneficial uses. Several of the creeks and rivers that are in the Red Rocks Lima Watershed, near the lease parcels, are not supporting their beneficial uses because of non-point source pollution. According to Montana's 2006 integrated 303d/305b Water Quality Report, non-point source pollution accounts for 90 percent of the stream and 80 percent of the lake impairments statewide. The leading cause of impairment to lakes in Montana is atmospheric deposition. For Montana's streams, pollutants resulting from land-uses are responsible for most non-point source pollution.

Montana DEQ has no reference sites in the lease parcel area or in the Red Rocks Lima Watershed (RRLW). However, there are two such sites located east of the assessment area in the Blacktail Valley as described in the 2006 Blacktail Watershed Assessment EA (http://www.blm.gov/mt/st/en/fo/dillon_field_office/_watershed_assessments.html).

The Red Rock River is the receiving water for streams and wetlands in the Red Rock/Lima Watershed area and is listed as water quality impaired. Most of the streams in the area of the parcels are named or unnamed tributaries of Big Beaver and Junction Creeks. Montana DEQ has not typically assessed headwater streams, because headwater streams were not generally

nominated for 303d listing. Table 3 provides the Montana DEQ 303d Listed Stream in the RRLW Assessment Area.

Table 3
Montana DEQ 303-D Listed Streams Near the Lease Parcel Area

Name	*Beneficial Uses*	*Probable Sources of Impairment*	*Probable Causes of Impairment*
Red Rock River, Lima Dam to Clark Canyon Reservoir	Agriculture, Aquatic Life, Cold Water Fishery, Drinking Water, Industrial, Primary Contact Recreation	Grazing in Riparian or Shoreline Zones, Loss of Riparian Habitat, Impacts from Abandoned Mine Lands, Impacts from Hydrostructure Flow Regulation and/or modification, Irrigated Crop Production	Alteration in Streamside or Littoral Vegetative Cover, Low Flow Alterations, Physical Substrate Habitat Alterations, Sedimentation/Siltation, Temperature, Lead, Zinc

The BLM understands that non-point source pollution needs to be addressed for waters of the state regardless of whether they are or are not meeting water quality standards and that non-degradation rules apply to waters that are meeting state water quality standards.

Hydrology – Ground Water
The quality and availability of ground water varies greatly across the three-state region (Montana, North Dakota, South Dakota). Aquifers in western Montana are typically in unconsolidated, alluvial valley-fill materials within intermontane valleys. The intermontane valley aquifers often yield relatively large quantities of high-quality water to relatively shallow water wells.

Information from the Montana Bureau of Mines Groundwater Information Center (GWIC) website helped to determine whether any specific characterization studies are available within the assessment area. Eight characterization studies have been completed in Montana; however, none were found in the vicinity of the assessment area. Looking at the Red Rock River drainage basin, 28 records were found. The limited number of wells and their dispersion over such a vast expanse, Horse Prairie to Centennial Valley, would not be sufficient to characterize conditions within the assessment area. Many of the parcels are in areas where there are or may be fresh water aquifers.

3.4 Vegetation Resources
Vegetation in the project area is characteristic of Northern Rocky Mountain Valleys (MLRA (major land resource areas) 44S) in the 15 to 19-inch precipitation zone. The analysis area is dominated by a sagebrush/grassland community, which primarily consists of very low sagebrush cover (5-14 percent shrub and 25-100 percent grass) to moderate sagebrush cover (25-34 percent shrub) with some intermixed xeric and mesic shrubs and grasslands, based on SIMPPLLE (Simulating Patterns and Processes at Landscape Scales) satellite imagery (Table 4).

Table 4 Summary of General Vegetative Cover Type by Acreage of Proposed Lease Parcels		
Cover Type	*Acres*	*% of Acres*
Douglas fir	30	< 1
Sagebrush / Xeric shrub	6333	90
Mesic shrub	59	< 1
Grassland	518	7
Riparian/Wetlands	55	< 1
TOTAL	**6995**	**100**

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 (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.

3.4.1 Shrublands

Shrublands are defined as plant associations where shrubs compose at least 5 percent of the canopy cover. Shrublands comprise about 91 percent of the acreage within the proposed lease parcels.

The mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*)/Idaho fescue (*Festuca idahoensis*) shrubland is the most common shrub type. It occurs 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 percent.

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 percent canopy cover. Grass canopy cover is generally 40-70 percent. 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 percent, 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.

The three-tip sagebrush (*Artemisia tripartita*)/Idaho fescue shrubland is common on gentle to moderate slopes and ridges at 6,300-7,500 feet AMSL. Three-tip sagebrush canopy cover is typically 10-30 percent, and grass cover is generally high, 60-80 percent in most stands. Idaho fescue is the dominant grass, but thickspike wheatgrass (*Elymus lanceolatus*), bluebuch wheatgrass, and prairie junegrass (*Koeleria macrantha*) are also common. Forb cover and diversity is moderate; common species include western yarrow (*Achillea millefolium* var.

occidentalis), prairie smoke (*Geum triflorum*), lupine (*Lupine* spp.), phlox, common dandelion (*Taraxacum officinale*), and pussy-toes (*Antennaria* spp.).

3.4.2 Grasslands

Grasslands are defined as plant associations where shrub canopy cover is less than 5 percent and perennial graminoids constitute at least 50 percent of the total herbaceous canopy cover. Grasslands comprise about 7 percent of the acreage within the proposed lease parcels.

The bluebunch wheatgrass/Sandberg bluegrass grasslands are common on moderate to steep slopes and alluvial fans with a warm aspect at elevations ranging from 5,800-7,500 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.

The Idaho fescue/bluebunch wheatgrass grasslands occur on moderate to steep, predominantly south-facing slopes at 6,000-7,500 feet. Forbs are diverse and abundant, and typically include western yarrow, phlox, and sandwort. Mosses and especially lichens may also be common.

3.4.3 Wetlands, Floodplains and Riparian Areas

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.

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 utriculata*), or Nebraska sedge (*Carex nebrascensis*). The baltic rush (*Juncus balticus*)/clustered field sedge (*Carex praegracilis*) wetland association occurs along three streams within the lease parcels, and another stream is dominated by beaked sedge. 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 (*Antenaria* spp.), common yarrow (*Achillia millefolium*) mountain golden bean (*Thermopsis montana*) and Canada thistle (*Cirsium arvense*).

The remaining three stream reaches found within the lease parcels are more shrub-dominated and exhibit the shrubby cinquefoil (*Dasiphora fruticosa*)/tufted hairgrass (*Deschampia cespitosa*), Booth willow (*Salix boothii*)/beaked sedge, and quaking aspen (*Populus tremuloides*)/red osier dogwood (*Cornus sericea*) plant associations. Coyote willow (*Carex exigua*) is a pioneer species that is often found on sites subject to frequent disturbance and/or flooding.

Color infrared photography was used to remotely identify streams and wetlands in the lease parcel area. This was especially valuable in assessing the nature and extent of wetland and

stream resources located on private land. Streams, wetlands, and areas with high moisture content tend to have a red signature on CIR. Using the CIR signature and local knowledge, areas were delineated as having a high probability of being wet. Approximately 11.5 miles of stream/riparian habitat occur on or sufficiently close to the affected parcels to potentially be directly or indirectly affected by the project.

3.4.4 Noxious Weeds

Two noxious weeds of concern, spotted knapweed and houndstongue, are found in the lease parcel area. 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 area, 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.

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 and 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 County. Private landowners 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 control or eradicate existing populations. Due to the small size of the knapweed infestations, the harshness of the climate and the elevation of the valley, no biological controls have been released.

3.5 Special Status Species

3.5.1 Special Status Animal Species

Greater sage-grouse populations and sagebrush habitats have declined throughout the West due to suitable land losses from habitat conversion for agricultural needs, urbanization, livestock grazing, and wildland fire. The recent candidate species' designation to the endangered species list 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 greater sage-grouse but for all sagebrush obligate species. Important greater 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 percent sagebrush. The *Management Plan and Conservation Strategies for Sage Grouse in Montana* completed by the Montana Sage Grouse Working Group will be used as a guideline for future management of sagebrush habitat.

Greater sage-grouse are found throughout the analysis area year-long with leks located around Lima Reservoir and the Snowline area. The Snowline lek generally supports 15-20 males while the Lima reservoir leks support 25-45 males during breeding season. Many of the greater sage-

grouse remain in this habitat year-round although movements into seasonal habitats up to five to ten miles away have been documented as well as winter migration into Idaho. Flocks of several hundred birds have been observed on the Snowline allotment during winter and early spring months. Radio telemetry data reveals that female and male grouse from Sage Creek and the Lower Centennial Valley move through Junction Creek and Shineberger Creek areas on the way to southeast Idaho during the winter and return through the area in the spring.

The analysis area lies in the biological corridor between the central Idaho wilderness areas and the Greater Yellowstone Ecosystem. The relative lack of development and human disturbance between Spencer, Idaho, and Lima Peaks enhances the likelihood that wolves, grizzly bears, wolverine, and other large predator use this area. These predators are occasionally documented in the Centennial Mountains and in the Snowline area Potential wildlife movement may be inherently limited by relatively little forested habitat interspersed with expansive open sagebrush habitat and roads. Traffic in the I-15 corridor further inhibits movement.

Since the de-listing of the gray wolf, the Montana Department of Fish, Wildlife and Parks (MFWP) is the lead agency for wolf management activities in Montana. There are established packs in the area, and wolves are sighted frequently around Snowline and in the Centennial Valley and are transitory within the analysis area.

Grizzly bear use outside the Yellowstone Primary Conservation Area is expanding, and sightings have been reported nearby in the Centennial Mountains and Lima Peaks. The habitat along the Continental Divide serves as a corridor for dispersal and gene flow between the Greater Yellowstone Ecosystem and the Bitterroot Ecosystem.

Suitable habitat for wolverine exists in Lima Peaks and the Centennial Mountains, but no intensive inventory for use has been completed. Given the wide-ranging movements of wolverine, it is possible that occasional, undocumented wolverine use is occurring through this area. The nearest known occupied wolverine habitat is on the Caribou Targhee National Forest in Idaho. See Appendix C for a complete list of all special status wildlife species in the analysis area.

3.5.2 Special Status Plant Species

There are no known threatened or endangered plant species in the project area. However, nine plant species identified on the Montana Plant Species of Concern list have been recorded in or near the lease parcels (MNHP 2010). Eight species, including silvery primrose (*Primula incana*), Idaho sedge (*Carex idahoa*), white-stemmed globemallow (*Sphaeralcea munroana*), ballhead ipomopsis (*Ipomopsis congesta* ssp. *crebrifolia*), alpine meadow-rue (*Thalictrum alpinum*), Railroad Canyon wild buckwheat (*Eriogonum soliceps*), bluedome primrose (*Primula alcalina*), and Platte River cinquefoil (*Potentilla plattensis*) are designated as sensitive species by the BLM in Montana (Table 5). While not considered BLM sensitive species, Hooker's balsamroot (*Balsamorhiza hookeri*) is known from only two locations in southwest Montana, and quill fleabane (*Erigeron gracilis*) is a potential species of concern within the state because current information suggests potential vulnerability. The following species-specific information was obtained from the Montana Natural Heritage Program website (MNHP 2010).

Silvery primrose has been found in saturated, often calcareous wetlands in southwestern Montana. This species is vulnerable to activities that alter the hydrology of the wetlands it occupies.

Idaho sedge often occupies ecotonal areas between wet meadows and sagebrush steppe (Lesica 1998) and appears to be restricted to nearly level sites in the high valleys of southwest Montana. It is commonly found on terraces of headwaters streams above 6,000 feet elevation. Small populations may occur at lower elevations or along larger streams. Soils tend to be silty, with high organic content and little or no coarse material (Lesica 1998). Most documented Montana populations are in areas with calcareous parent material; however, a few occupy non-calcareous sites. Idaho sedge consistently occurs in subirrigated soils associated with low-gradient streams or springs and seeps. These soils are wet early in the growing season but are only moist later in the summer.

White-stemmed globemallow is found on the open, often calcareous soil of sagebrush grasslands in the valley and foothill zones. It is known from only five small occurrences clustered in an area of Beaverhead County in southwest Montana.

Hooker's balsamroot occupies sagebrush steppe and is known from only two areas in Montana; in the vicinity of Monida and within the Mount Haggin Wilderness Management Area (WMA).

Ballhead ipomopsis is found on the open, often eroding sandy soil of the sagebrush steppe in the foothill zone.

Alpine meadow-rue typically grows in moist montane and lower subalpine areas. In southwestern Montana, it occurs in moist alkaline meadows and sometimes along stream channels. The substrate varies from peat to marl, calcareous silt, silty clay or clay loam, often of limestone parent material.

Railroad Canyon wild buckwheat occupies gentle southern slopes on coarse alkaline clay, derived from calcareous slate, and open slopes and ridgetops with dry stony or shallow soil, often from limestone. Soils are typically dry and sparsely vegetated.

Bluedome primrose is found in moist to wet alkaline meadows at 6,300 to 7,200 feet elevation. The soil surface often displays hummock-hollow topography. Soils in the meadows are alluvial, alkaline, fine-textured, light-colored soils are derived from outwash of predominantly carbonate rocks. Bluedome primrose occurs in the lowest topographic positions in the meadows, where subirrigated soils are saturated to the surface throughout the growing season. Plants occur on low, relatively level benches immediately adjacent to creeks and spring heads, often on the inside of meander loops, and also on low benches with hummocky topography. Bluedome primrose is often most abundant of the tops and sides of hummocks where the density of graminoids is lowest.

Quill fleabane is found in meadows and on rocky slopes and talus in the subalpine and alpine zones.

Platte River cinquefoil is found on mesic grasslands and sagebrush steppe in the valley and montane zones.

Table 5
Special Status Plant Species Known to Occur On or Near Proposed Lease Parcels

Common Name	*Scientific Name*	*BLM Sensitive*	*Species of Concern*	*State Rank**	*Regional Endemic*	*Leases Near Known Pop-ulations*
silvery primrose	*Primula incana*	Yes	Yes	S2	No	7S
Idaho sedge	*Carex idahoa*	Yes	Yes	S3	Yes	7S
white-stemmed globemallow	*Sphaeralcea munroana*	Yes	Yes	S1	No	7S, 7U
Hooker's balsamroot	*Balsamorhiza hookeri*	No	Yes	S1	No	7T
ballhead ipomopsis	*Ipomopsis congesta* ssp. *crebrifolia*	Yes	Yes	S1	Yes	7Q
alpine meadow-rue	*Thalictrum alpinum*	Yes	Yes	S2	No	7S
Railroad Canyon wild buckwheat	*Eriogonum soliceps*	Yes	Yes	S2	Yes	7Q, 7R, 7S, 7T
bluedome primrose	*Primula alcalina*	Yes	Yes	S2	Yes	7S
quill fleabane	*Erigeron gracilis*	No	Potential	S3	No	7Q
Platte River cinquefoil	*Potentilla plattensis*	Yes	Yes	S2	No	7Q, 7S

***S1** = At high risk because of **extremely limited** and/or **rapidly declining** population numbers, range and/or habitat, making it highly vulnerable to extirpation in the state.
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.

3.6 Fish and Wildlife

The BLM coordinates with MFWP and the U.S. Fish and Wildlife Service (FWS) to manage 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 wildlife is factored into project planning at multiple scales and begins early in the planning process. Evaluating wildlife values at the landscape scale is the first step to understand potential impacts of a project. Wildlife values, including terrestrial conservation species, richness, and game quality, and aquatic conservation connectivity, conservation species, and game species, have been mapped at the landscape level for Montana by MFWP through their Crucial Areas Planning System (CAPS: http://fwp.mt.gov/gis/maps/caps/). The oil and gas lease parcels were reviewed in the CAPS GIS website 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.

Fish

There are no known fishery concerns related to the proposed lease parcels. The three streams (Big Beaver, Junction, and Warm Springs) found adjacent to the lease parcels are not considered to be fisheries.

Wildlife

The analysis area includes several diverse habitat mosaics. The habitat is primarily made up of a relatively contiguous area of big sagebrush and/or grassland habitat with limited riparian habitat as described above under section 3.4.3. The analysis area provides seasonal and yearlong habitat for a wide variety of sagebrush/grassland-dependent species such as pronghorn antelope, greater sage-grouse and pygmy rabbits. The habitat also supports considerable seasonal wildlife movements.

Extensive sagebrush habitat within the analysis area supports pygmy rabbit use. Pygmy rabbits and Richardson's ground squirrels serve as a prey base for raptors in the area.

The lease parcels are within the Lima Foothills key raptor management area. This area was designated through Fish and Wildlife 2000 and the Dillon RMP because of the concentrated nesting density of ferruginous hawks, prairie falcon, golden eagles and other raptors. From 1985 through 1995, this area supported one of the three densest breeding populations of ferruginous hawks known in the world. Key area habitat management objectives for this region include maintaining the existing interspersion of sagebrush and grassland habitat types and physical features that support and enhance ferruginous hawk nesting.

Antelope are found throughout the analysis area year-round. The highest concentrations are generally found in the area around Snowline just north of the lease parcel area. Smaller numbers can be found scattered in sagebrush habitats throughout the analysis area. Small groups of wintering antelope are found on the east side of Interstate 15 around Snowline as well as in agricultural fields within the area. This is also a major migration corridor for antelope moving out of the Centennial Valley to winter habitat further north.

The analysis area provides limited habitat for migratory and resident elk. Elk winter habitat occurs at lower elevations depending on winter snow pack conditions. Elk calving and summer use occurs at higher elevation habitats in the Lima Peaks to the west or in the Centennial Mountains to the east.

Mule deer use is limited within the analysis area although some deer are yearlong residents. Mule deer typically spend the summer and fall in the higher elevations, with most migrating to lower elevation winter habitat.

Moose can be found in the vicinity of lease parcel MTM 79010-7O yearlong, making use of riparian habitats and surrounding sagebrush grasslands.

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

3.7 Cultural Resources

The lease parcels fall within the traditional territories of the Shoshone, Salish, Blackfeet, and Nez Perce (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 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. The area was used as a travel corridor and for ranching during historic times. The town of Monida was an important stage stop along the Corrine Road (later called Great Beaverhead Wagon Road) which connected Corrine, Utah, with Virginia City, Montana, by 1863. In 1877, the Utah and Northern Railroad (Union Pacific Railroad) reached the Montana border at Monida. Travelers coming from Utah and going to Yellowstone National Park took the train to Monida and then endured a two-day stagecoach ride through the Centennial Valley to access the park (Graetz and Graetz 2003:242). Wagon roads, railroads, stage stations, homesteads, and trash dumps are the types of historic sites common to this region.

A total of 1,520 acres that involve portions of Parcels 7Q, 7S, 7T, and 7U have been inventoried for cultural resources. Parcels 7O, 7P, and 7R have not been inventoried for cultural resources. These inventories have been completed for land exchanges and gravel pit operations. A file search for previously recorded cultural resources was completed for all parcels. No cultural resources have been recorded in Parcels 7T or 7U; however, the other five parcels contain a total of 16 cultural resources. The types of cultural resources found in these five parcels include two pre-contact habitation sites with numerous tipi rings, two prehistoric quarries, several lithic scatters (N=5), a trash dump, an historic foundation, sheepherder's cairn, a stage station, two historic roads, and the Utah and Northern Railroad. Parcels 7O, 7P, 7Q, 7R, and 7S contain cultural resources that are eligible to the National Register of Historic Places (NRHP). 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 RMP (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, the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act, Executive Order 13007, and other statutes, as applicable, will be met.
In addition, No Surface Occupancy (NSO) Stipulation 11-22 will apply to portions of lease parcels 7O, 7Q, 7S, 7P, and 7R to meet Goals 1 and 3 of the Dillon RMP (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.

3.8 Paleontology

Paleontological resources in southwestern Montana are primarily from the Cenozoic Era (Age of Mammals) based on the ages of the geologic formations (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 seven 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). Fossils from the Cretaceous Period (Age of Dinosaurs) have also been found in the immediate region; portions of some of the parcels are located in Cretaceous Period formations.

No known paleontological resources occur within the lease parcels. However, in order to meet Paleontological Resources Goal 2 of the Dillon RMP (2006:50), Lease Notice 14-5 will apply to all lease parcels and controlled surface occupancy (CSU) 12-9 (Appendix A) will apply to parcels 7O, 7P, 7Q, 7R, and 7S. The lease parcels lie within geologic units that have moderate to high potential (Potential Fossil Yield Classification System; IM 2008-009) for paleontological resources. These units contain sedimentary rocks ranging from Eocene to Miocene in age, Cretaceous Chisana Formation, and Quaternary terrace deposits that are known to contain fossils. Since these lease parcels occur in geological formations with moderate to high potential, a paleontological survey will be required for most of the parcels in order to preserve and protect significant fossils. In addition, all paleontological resources discovered as a result of the lessee's operations will be brought immediately to the attention of the Dillon FO, and all such discoveries will be left intact and undisturbed until directed to proceed by the Dillon FO. Paleontological Goal 2 ensures that proposed land uses authorized by the BLM avoid inadvertent damage to federal and non-federal paleontological resources.

3.9 Native American Religious Concerns

The BLM sent letters containing a description of the oil and gas lease sale and maps showing parcel locations to the tribal historic preservation officers (THPO) of the Blackfeet Nation and the Confederated Salish and Kootenai Tribes and the cultural representatives of the Shoshone-Bannock Tribes in July 2010. 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. The mailing list is provided in Section 5. No concerns have been expressed by these groups or individuals concerning traditional gathering areas or traditional cultural properties (TCPs). A TCP is 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 RMP (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, the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act, Executive Order 13007, and other statutes as applicable will be met.

3.10 Visual Resources

The project area is characterized primarily by sagebrush-covered hillsides with one isolated tract of timber that is visible from the interstate. Small powerlines, primitive roads, a railroad track, and barbed-wire fences in the foreground add some linear elements to the view--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 RMP, which allows for moderate changes to the landscape that may attract attention, but should not dominate the view of the casual observer. The key observation point(s) for analysis should be Interstate 15, from which most observers would view project activities.

3.11 Livestock Grazing

Of the seven parcels identified for lease, five are entirely or partially within BLM grazing allotments. Parcel 7O is located on BLM surface in the Snowline Isolated Tracts #20719 Allotment and intermingled unfenced private lands. Parcel 7P is located on BLM surface in the Snowline AMP #30029 and Snowline AMP Custodial #20607 Allotments and on adjacent deeded property that is separated by a fence. Parcel 7R is located entirely on BLM surface within the Snowline AMP #30029, Snowline AMP Custodial #20607, and Pinetop Hill #03192 Allotments. Parcel 7S is located on BLM surface in the Snowline AMP #30029 and Pinetop Hill #03192 Allotments and on adjacent deeded property that is separated by a fence. Parcel 7T is located on BLM surface in the Snowline AMP #30029 Allotment and on adjacent deeded property that is separated by a fence. The remaining two parcels (7Q and 7U) are not located within grazing allotments.

The Snowline AMP Custodial #20607 and Snowline Isolated Tracts #20719 are custodial (C) category allotments that are permitted for cattle from June 1 to October 31. The Snowline AMP #30029 Allotment is an improve (I) category allotment that is permitted for cattle from June 6 to October 21. All three of these allotments have a single, common grazing lessee. The Pinetop Hill #03192 Allotment is a custodial (C) category allotment and is currently unleased.

In addition to numerous cross-fences within these parcels, a well, two pipelines, and three water troughs are located on BLM surface in T. 14 S., R. 6 W., Sections 30 and 31 (7R and 7T), and a spring development is located in T. 15 S., R. 6 W., Section 7 (7P). There may be additional livestock water developments and fences within lease parcels that are located on deeded property outside the grazing allotments.

3.12 Recreation and Travel Management

Recent efforts through the Theodore Roosevelt Conservation Partnership (TRCP) identified high quality hunting and fishing opportunities. More specifically, a geographic area was identified as

the TRCP Sportsmen Area, which covers lands in Phillips, Valley, Fergus, Petroleum, Garfield and McCone counties. Based on a review of the information, none of the proposed oil and gas lease parcels are located within the TRCP Sportsmen Area.

None of the lease parcels fall within special recreation management areas (SRMA). 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 three 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 antelope and greater sage-grouse.

3.13 Lands and Realty

The lands proposed for competitive leasing of the federal mineral estate are a nearly even mixture of full fee estate (BLM surface and federal mineral estate) and split estate (private surface overlying federal minerals) under the jurisdiction of BLM. None of the seven proposed lease parcels are completely full fee estate. Two of the seven parcels are entirely split estate parcels consisting of a total of 1,123.41 acres. For the split estate parcels, the United States owns the minerals in the land as well as any surface entry rights. Five parcels (5,871.30 acres) have a combination of full fee and split estate ownership.

Parcel MTM 79010 7U is entirely split estate (private surface overlying the federal minerals) located equidistant between Interstate 15 and the western portion of Lima Reservoir in the Monida area. There are several dirt roads in and around this parcel. There are BLM lands adjacent to this only on a portion of the south side. Physical, but not legal, general public access exists to this parcel via the graveled Snowline Stock Drive Road adjacent to Interstate 15 and a designated-open BLM road. No BLM-issued rights-of-way or other land use authorizations exist on this parcel.

Parcel MTM 79010 7T contains a mixture of both full fee estate and split estate. It's located immediately south of and adjacent to parcel MTM 79010 7U and just to the immediate north of Interstate 15. There are several dirt roads in and around this parcel. There are BLM lands west of and adjacent to the parcel as well as BLM lands along a portion of the south boundary of the parcel. Legal and physical general public access to the eastern portion of the parcel is provided by the Monida-Centennial Valley County Road and a BLM road over private lands via exclusive road easements that the United States has obtained.

A public water reserve withdrawal exists for the SW¼NE¼ of Sec. 30, T. 14 S., R. 6 W., PMM (MTM 79010 7T). The purpose of this 40-acre withdrawal is to protect a public spring or watering hole at this location by withdrawing this land from the operation of laws governing surface disposal and non-metalliferous mining, but not those involving metalliferous mining and mineral leasing. A stock driveway withdrawal exists on the following described public land: Lots 3, 4, and the E½SW¼ of Sec. 30, T. 14 S., R. 6 W., PMM. The purpose of this withdrawal is to protect the lands described as a stock driveway by withdrawing these lands from surface disposal, but not from mining or mineral leasing. The Montana Department of Transportation's intent of the stock driveway is for moving livestock only and not general legal access, including moving oil and gas equipment.

There is a right-of-way on parcel MTM 79010 7T for a reservation to the BLM on several dirt roads on certain lands that are full fee estate. There is also a relatively short segment of a utility right-of-way for a powerline in the extreme southwestern portion of the parcel. The BLM has an exclusive easement on a road that passes through split estate in the extreme northeastern portion of this parcel.

Parcel MTM 79010 7R is predominantly full fee estate, but does contain a relatively small portion (40 acres) of split estate. It is bisected by Interstate 15 in a northwest to southeast direction. The parcel is located about two miles northwest of Monida. BLM lands lie adjacent to the entire north boundary and a portion of the south boundary of the parcel. Quite a number of linear facilities (rights-of-way) occur in this parcel dominated primarily by the interstate highway and the Union Pacific Railroad line. There are several utility rights-of-way as well as the same road right-of-way reservation to the BLM as mentioned for parcel MTM 79010 7T discussed above. Legal and physical general public access exists to the southern portion of this lease parcel via a county road that heads briefly south and then in a northwesterly direction from the I-15 exit at Monida.

Parcel MTM 79010 7S is predominantly a split estate parcel with only 320 acres of it being full fee estate. It is located east of and adjacent to parcel MTM-79010 7R and about a quarter of a mile north of Monida. BLM public lands abut only a portion of the western boundary of the subject parcel. Interstate 15 and the Union Pacific Railroad line pass through the southwestern portion of the parcel in a northwest to southeast direction along with a couple of utility line rights-of-way paralleling the highway and railroad line. There are also a couple of utility line rights-of-way in the extreme eastern portion of the parcel over split estate lands. The Monida-Centennial Valley County Road provides legal and physical general public access to this parcel from I-15 and passes through the eastern portion of the parcel. The BLM has acquired an exclusive easement on a road which connects with this county road on the subject parcel and proceeds in a westerly and northwesterly direction across its eastern half. A county road also provides legal and physical general public access to that portion of this parcel lying south of the interstate.

Parcel MTM 79010 7Q actually consists of two separate parcels, both of which are entirely split estate. The two parcels are located just south of Interstate 15 near Monida and very close to the Montana-Idaho state line. Only a relatively short segment of the boundary of the westernmost of these two parcels is adjacent to other BLM lands. There are no BLM-issued rights-of-way or other land use authorizations on these parcels. Legal and physical general public access exists to the westernmost (larger) parcel via a county road. There is no known legal access to the smaller, easternmost parcel.

Parcel MTM 79010 7P is predominantly full fee estate with only 80 acres being split estate. It is located just south of Interstate 15 and about three miles west of Monida. Portions of the east, west, and south parcel boundaries abut other BLM lands. Several dirt roads exist on and around the parcel, but there is no known legal general public access to it. No BLM- issued rights-of-way or other land use authorizations exist on the parcel. However, the extreme southern portion of this parcel is within a BLM designated multimodal utility corridor for the preferred location of major future utility lines. In addition, the agency tentatively preferred routing option of the proposed Mountain States Transmission Intertie 500 kV electric transmission line would pass

through the extreme southern portion of this parcel. No final decision approving this proposed electric transmission line has been made.

Parcel MTM 79010 7O consists of three separate parcels located from about one to several miles south of Interstate 15 and about seven to nine miles west of Monida. Two of the parcels are full fee estate, while the remaining one is split estate. While there are several dirt roads on and around these parcels, there is no known legal general public access to these parcels. There are no BLM-issued rights-of-way or similar land use authorizations on the parcel. However, the extreme southern portion of the larger of the two full fee estate parcels falls within the same multimodal utility corridor as referenced in the paragraph above.

It should be noted that all of the split estate lands lying within the proposed lease parcels have a reservation to the United States for ditches and canals constructed by the authority of the United States.

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. The development of 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.

3.14 Minerals

3.14.1 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.

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

Currently there are 67 oil and gas leases covering approximately 99,505 acres in the Dillon FO. There is no existing production activity on or adjacent to this lease acreage. Historical drilling activity includes 43 oil and gas test wells within the Dillon FO from 1927 to 1987. Information on numbers and status of wells on these leases and well status and numbers of private and state wells within the external boundary of the field office is displayed in Table 6. 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 environmental document to consider specific proposals and site-specific resource concerns.

Table 6
Existing Development Activity

	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

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

	Beaverhead County
Number of Townships Containing Lease Parcels	4
Total Acres Within Applicable Township(s)	78,256
Federal Oil and Gas Minerals	48,382
Percent of Township(s)	61.8
Leased Federal Oil and Gas Minerals	15,875
Percent of Township(s)	20.3
Leased Federal Oil and Gas Minerals Suspended	7,023
Percent of Township(s)	9
Federal Wells	0
Private and State Wells	0

3.14.2 Solid Minerals

Locatables

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 abandoned, in any of the parcels. A check of LR2000 on June 17, 2010, found no active claims but did find previously staked claims in T. 14 S., R. 6 W., Sections 31, 32 and 33 and T. 15 S., R. 6 W., Sections 6 and 7. All of these claims were staked in 1984 and dropped in 1986. All of the parcels and the area in general are considered to have low potential for locatable minerals.

Salable Minerals
Salable 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. They are sold to companies and private individuals either competitively or non-competitively depending on the volumes of material involved and the 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.

3.15 Social and Economic Conditions

3.15.1 Economic Conditions

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. The affected local economy is made up of two counties in Montana (Beaverhead and Madison) within the BLM Dillon Field Office boundaries. The distribution of economic effects is based on acres leased and levels of production as well as business patterns.

The two-county local economy had an estimated 2007 population of 16,230 people. Total employment was estimated to be 11,540 full and part-time jobs; there were an estimated 6,730 households; there were 151 North American Industry Classification System (NAICS) industrial sectors represented in the local economy; average income per household was $88,072; and total personal income was $593 million (IMPLAN, 2007). The city of Dillon is the largest population and business center in the two-county area. Within this local economy, there were 1.41 people per job.

Local economic effects of leasing federal minerals for oil and gas exploration, development, and production are influenced by the leased acres, number of wells drilled, and estimated levels of production. These activities influence local employment, income, and public revenues (indicators of economic impacts).

In 2010, 99,505 acres of federal minerals were leased for oil and gas in the Dillon Field Office. Since no acres are held by production, annual lease rental is paid on all 99,505 acres of federal leases. Total annual lease and rental revenues to the federal government were an estimated $194,000.

Federal oil and gas leases generate a one-time lease bid as well as annual rents. The minimum lease bid is $2.00 per acre; lease rental is $1.50 per acre per year for the first five years and $2.00 per acre per year thereafter. Typically, oil and gas leases expire after 10 years unless held by production. Annual lease rents continue until one or more wells are drilled that result in production and associated royalties. None of the leases in the field office are held by production. Forty-nine percent of these federal leasing revenues are distributed to the state. The state distributes a portion back to the counties with leases and production. Of the $194,000 the federal government collects in lease bids and rent, an estimated $95,000 is distributed to the state and 25 percent of the state funds (about $24,000) are distributed from the state to local governments (Title 17-3-240, MCA).

In the nine year period between 2000 and 2008, no oil and gas drilling or production occurred in either county within the field office boundaries. Statewide average wellhead prices were $64.64 per barrel (bbl) for crude oil and $5.72 per thousand cubic feet (MCF) for natural gas (Independent Petroleum Association of America [IPAA], 2008). Statewide average output per producing well was 7,144 bbls of crude oil and 14,314 MCF for natural gas (IPAA, 2008). The statewide average cost of drilling and equipping each well was $4,507,413 for oil wells, $552,867 for gas wells, and $1,311,719 for dry holes (IPAA, 2008).

No oil and gas production from federal minerals in the Dillon FO occurs at this time. Note that federal oil and gas production in Montana is subject to production taxes or royalties. These federal oil and gas royalties generally equal 12.5 percent of the value of production (43 CFR 3103.3.1). Forty-nine percent of these royalties are also distributed to the state. In Montana, 25 percent of the royalty revenues that the state receives are redistributed to the counties of production (Title 17-3-240, MCA).

The economic contribution to a local economy is measured by estimating the employment and labor income generated by 1) payments to counties associated with the leasing, rent, and production of federal minerals, 2) local royalty payments associated with production of federal oil and gas, and 3) economic activity generated from 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. 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 35 total jobs and $3.7 million in total employee compensation and proprietor income in the local economy (IMPLAN, 2007). (IMPLAN is an economic model used in the Input-Output analysis that allows the assessment of change in overall economic activity as a result of some corresponding change in one or several activities.)

Total average federal revenues from federal oil and gas leasing and rents are an estimated at $194,000 annually. Average federal revenues distributed to the state of Montana amount to an estimated $95,000 per year. The state redistributes an estimated average $24,000 to the counties with federal leases. These revenues help fund traditional county functions such as law enforcement, justice administration, tax collection and disbursement, provision of orderly elections, road and highway maintenance, fire protection, and/or record keeping. Other county functions that may be funded include primary and secondary education administration and the

operation of clinics/hospitals, county libraries, county airports, local landfills, and county health systems.

The estimateed average annual local economic contribution associated with federal leases and rents support less than one local job and less than $10,000 in total local labor income, respectively (IMPLAN, 2007). This amounts to less than one-tenth of one percent of the total local employment and local labor and proprietor's income.

3.15.2 Social and Environmental Justice

The social section focuses on the area in the immediate vicinity of the leases being examined. The leases being examined are very close to the unincorporated community of Monida which is located on Interstate-15 close to the Montana/Idaho state line. The incorporated communities closest to the area are Lima, about 15 miles to the north, and Dillon (Beaverhead county seat), about 60 miles north. There are no incorporated communities in Idaho immediately to the south of the leasing area. Lima and Dillon had 2009 populations of 231and 4,226, respectively. Beaverhead County's population density (persons per square mile) is 1.6 compared to a statewide figure of 6.7 and a national figure of 90. The area in the vicinity of the leases is home to large ranches. No oil and gas production development has taken place, but there are other leases in the immediate area. Approximately 50 percent of the acreage being considered is split-estate (private surface with federal mineral estate). In 2008, nearly two percent of the population in Beaverhead County was American Indian or Alaska Native, and 16 percent of the population was living below the poverty level. There are no American Indian reservations located in Beaverhead County. The social environment of Beaverhead County is described in detail in the Dillon RMP.

4.0 ENVIRONMENTAL IMPACTS

Assumptions and Reasonably Foreseeable Development (RFD) Scenario Summary
At this stage of the leasing process, the act of lifting suspensions on lease parcels would not result in any activity that might affect various resources. Even if parcels are leased, it remains unknown whether development would actually occur, and if so, where specific facilities would be placed. This would not be determined until the BLM receives an application for permit to drill (APD) in which more detailed information about proposed activities and facilities would be clarified for particular lease parcels. Therefore, this EA discusses potential effects that could occur in the event of development.

Upon receipt of an APD, the BLM would initiate a more site-specific NEPA analysis 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 best management practices 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 Conditions of Approval, 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.

After discussion of assumptions associated with the reasonably foreseeable development (RFD) and alternatives, 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 of the proposed action are identified by resource below.

The following assumptions are from the RFD developed for the Dillon RMP. The BLM administers approximately 1,209,278 acres of federal minerals (for fluid minerals) within the Dillon Field Office. The RFD forecasts the following level of development in the Dillon planning area.

The RFD scenario for the Dillon RMP forecast includes a total of six wildcat wells in the planning area during the life of the plan (10 to 15 years). Of these six wells, the RFD projects that four would be dry holes. Dry holes would be plugged and abandoned shortly after completion. The remaining two wells are expected to be producing gas wells with a low chance that one or both might be oil wells. One producer would be federal. For analysis purposes, a total of four step-out wells (two per wildcat discovery) were forecast in the RFD scenario. The following surface disturbance represents figures for all wells and infrastructure, including pipelines necessary to move product to existing crude oil or natural gas pipelines, regardless of mineral ownership (Table 8). Total disturbance forecast for the unsuccessful wildcats was 82 acres. For the productive wells, total disturbance was 441 acres before any reclamation and 52.2 after interim reclamation. This includes well sites, access roads, and pipelines (Map 2 in Appendix B).

The context of alternatives considered in this EA relative to these assumptions is described below.

Table 8
RFD Projected Direct Cumulative Surface Disturbance

	Unsuccessful Wildcat Wells		*Productive Wells*	
	Acres Disturbed Pre-Site Reclamation	Post-Site Reclamation	Acres Disturbed Pre-Site Reclamation	Post-Site Reclamation
	Conventional Oil and Gas			
Well Sites	14	0	21	7.2 (2 years)
Access Roads	68	0	102	48 (2 years)
Pipelines	0	0	318	0 (2 years)
Total Acres Disturbed	82	0	441	52.2 (2 years)

Alternative A (No Action Alternative)
Under the No Action Alternative, the proposed parcels would remain in suspension and would be subject to cancellation. There would be no new impacts from oil and gas production on the parcel lands. No additional natural gas or crude oil would enter the public markets and no royalties would accrue to the federal or state treasuries. The No Action Alternative would result in the continuation of the current land and resource uses on the parcels.

Unless specifically indicated by resource area, no further analysis of the No Action alternative is presented in the following sections.

Alternative B (Proposed Action) Assumptions
The act of lifting suspensions on lease parcels would, by itself, have no impact on any natural resources in the area administered by the Dillon Field Office. Standard terms and conditions as well as special stipulations would apply to the lease parcels. All impacts would link to as yet undetermined future levels of lease development.

If the lease parcels are developed, short-term impacts would be stabilized or mitigated rapidly (within two to five years), and long-term impacts are those that would substantially remain for more than five years.

There are seven parcels in the Dillon FO being addressed in this EA. All parcels are located in T. 14 S., R. 6 and 7 W. and T. 15 S., R 6 and 7 W. These townships are either in or immediately adjacent to a drilling area projected in the RFD scenario named "Lima." The RFD projects two wildcat wells for this area, one dry hole and one producer. The RFD further predicts a three-well gas field as a result of the single discovery well. The Dillon RMP includes assumptions for this type of development activity. The following is a brief summary of these assumptions.
Drilling depth would be about 13,500 feet. The field would be about three square miles based on statewide spacing. Transportation of gas would most likely be to Dillon approximately 45 miles to the north. 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. Field life could be up to 25 years.
The maximum area cleared per well pad would be about 380 ft. x 400 ft. (3.5 acres), and 2.3 acres would be stabilized in about two years. The maximum area cleared per access road per well would be about 40 ft. x 18480 ft. and nine acres would be stabilized in about two years. All field gathering pipelines (2-4 inch diameter) would follow existing or new access roads and no additional disturbance would result.

The seven parcels under consideration are located in four different townships. Active (not currently suspended) federal oil and gas leases occur on approximately 17 percent of these four townships. The suspended parcels total about 6,995 acres, approximately 7.6 percent of the four- township area and 3.4 percent of the Lima Development Area identified in the Dillon RMP.

4.1 Air Resources

4.1.1 Direct and Indirect Effects Air Quality

As discussed in Chapter 3, the closest population center to the project area is Lima, Montana with a 2000 estimated population of 231. The census bureau had no statistics on Monida. Lifting lease suspensions on the subject parcels would have no direct impacts on air quality. Any potential effects on air quality from activities on these lease parcels would occur at such time that the leases were developed.

Recent monitoring data show that the criteria pollutants fall well below applicable air quality standards, indicating very good air quality. The potential level of development and mitigation (section 4.1.2.) is expected to maintain this level of air quality by limiting emissions. In addition to the limited level of development, pollutants would be regulated through the use of state-issued air quality permits or air quality registration processes developed to maintain air quality below applicable standards

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, as well as 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.

Greenhouse Gas Emissions at the Dillon FO and Project Scales

Sources of greenhouse gases associated with development of lease parcels may include construction activities, operations, and facility maintenance in the course of oil and gas exploration, development, and production. Estimated GHG emissions are discussed for these specific aspects of oil and gas activity because the BLM has direct involvement in these steps. However, the current proposed activity is to lift suspensions on already leased parcels. No specific development activities are currently proposed or potentially being decided upon for any parcels being considered in this EA. Potential development activities would be analyzed in a separate NEPA analysisffort if the BLM receives an Application for Permit to Drill on any of the parcels considered here.

Anticipated greenhouse gas emissions presented in this section are taken from the Climate Change Supplementary Report for Montana, North Dakota, and South Dakota (Climate Change SIR 2010). Data are derived from emissions calculators developed by Air Quality specialists at the BLM National Operations Center in Denver, CO, based on methods described in the Climate Change SIR (2010). Based on the RFD assumptions summarized above for the Dillon Field Office, Table 9 discloses projected annual greenhouse gas source emissions from BLM-permitted activities associated with the RFD.

Table 9. BLM projected annual emissions of greenhouse gases associated with oil and gas exploration and development activity in the Dillon Field Office.

Source	BLM Projected Greenhouse Gas Emissions in tons/year from Dillon FO RFD			Emissions (metric tons/yr)
	CO_2	CH_4	N_2O	CO_2e
Conventional Natural Gas	271.3	39.7	0.0	1,002.8
Coal Bed Natural Gas (none forecasted in RFD)	0.0	0.0	0.0	0.0
Oil	799.0	2.2	0.1	778.7
Total	**1,070.3**	**41.9**	**0.1**	**1,781.5**

Under Alternative A, there would be no greenhouse gas emissions resultant from this project because under this alternative the suspended lease parcels would remain under suspension and would be subject to cancellation.

To estimate potential GHG emissions associated with the action alternative, the following approach was used:

1. The proportion of each project level action alternative relative to the total RFD was calculated based on total acreage of parcels under consideration for leasing (and/or lifting of lease suspensions), relative to the total acreage of federal mineral acreage available for leasing in the RFD.
2. This ratio was then used as a multiplier with the total estimated GHG emissions for the entire RFD to estimate GHG emissions for that particular alternative.

Under Alternative B, approximately 6,994.71 acres of lease parcels with federal minerals would have lease suspensions lifted. These acres constitute 0.58 percent of the total federal mineral estate of 1,209,278 acres identified in the Dillon RMP. Therefore, based on the approach described above to estimate GHG emissions, 0.58 percent of the Dillon RFD total estimated BLM emissions of 1,781.5 metric tons/year would be approximately 10.3 metric tons/year of CO_2e if the parcels within Alternative B were to be developed.

Climate Change

The assessment of GHG emissions and climate change is in its formative phase. As summarized in the Climate Change SIR (2010), climate change impacts can be predicted with much more certainty over global or continental scales. Existing models have difficulty reliably simulating and attributing observed temperature changes at small scales. On smaller scales, natural climate variability is relatively larger, making it harder to distinguish changes expected due to external forcings (such as contributions from local activities to GHGs). Uncertainties in local forcings

and feedbacks also make it difficult to estimate the contribution of GHG increases to observed small-scale temperature changes (IPCC 2007b, as cited in the Climate Change SIR 2010).
It is currently not possible to know with certainty the net impacts from developing lease parcels on climate. The inconsistency in results of scientific models used to predict climate change at the global scale coupled with the lack of scientific models designed to predict climate change on regional or local scales, limits the ability to quantify potential future impacts of decisions made at this level. It is therefore beyond the scope of existing science to relate a specific source of greenhouse gas emission or sequestration with the creation or mitigation of any specific climate-related environmental effects. Although the effects of greenhouse gas emissions in the global aggregate are well-documented, it is currently impossible to determine what specific effect greenhouse gas emissions resulting from a particular activity might have on the environment (for additional information on environmental effects typically attributed to climate change, please refer to the cumulative effects discussion below).

While it is not possible to predict effects on climate change of potential GHG emissions discussed above in the event of lease parcel development for alternatives considered in this EA, the act of leasing does not produce any GHG emissions in and of itself. Releases of GHGs would occur at the exploration/development stage.

4.1.2 Mitigation

The BLM encourages industry to incorporate and implement Best Management Practices (BMPs), to reduce impacts to air quality by reducing emissions, surface disturbances, and dust from field production and operations. Measures may also be required as conditions of approval on permits by either the BLM or the applicable state air quality regulatory agency. The BLM also manages venting and flaring of gas from federal wells as described in the provisions of Notice to Lessees (NTL) 4A, Royalty or Compensation for Oil and Gas Lost.

Some of the following measures could be imposed at the development stage:

- flare or incinerate hydrocarbon gases at high temperatures to reduce emissions of incomplete combustion;
- install emission control equipment of a minimum 95 percent efficiency on all condensate storage batteries;
- install emission control equipment of a minimum 95 percent efficiency on dehydration units, pneumatic pumps, produced water tanks;
- vapor recovery systems where petroleum liquids are stored;
- tier II or greater, natural gas or electric drill rig engines;
- secondary controls on drill rig engines;
- no-bleed pneumatic controllers (most effective and cost effective technologies available for reducing volatile organic compounds (VOCs));
- gas or electric turbines rather than internal combustions engines for compressors;
- nitrogen oxides (NOx) emission controls for all new and replaced internal combustion oil and gas field engines;
- water dirt and gravel roads during periods of high use and control speed limits to reduce fugitive dust emissions;
- interim reclamation to re-vegetate areas of the pad not required for production facilities and to reduce the amount of dust from the pads.
- collocate wells and production facilities to reduce new surface disturbance;

- directional drilling and horizontal completion technologies whereby one well provides access to petroleum resources that would normally require the drilling of several vertical wellbores;
- gas-fired or electrified pump jack engines;
- install velocity tubing strings;
- cleaner technologies on completion activities (i.e. green completions), and other ancillary sources;
- centralized tank batteries and multi-phase gathering systems to reduce truck traffic;
- FLIR technology to detect fugitive emissions; and
- air monitoring for NOx and ozone (O3).

More specific to reducing greenhouse gas emissions, Section 6 in the Climate Change SIR (2010) identifies and describes in detail commonly used technologies to reduce methane emissions from natural gas, coal bed natural gas, and oil production operations. Technologies discussed in the Climate Change SIR (2010) and as summarized below in Table 10 (reproduced from Table 6-2 in the Climate Change SIR (2010)) display common methane emission technologies reported under the USEPA Natural Gas STAR Program and associated emission reduction, cost, maintenance and payback data.

Table 10. Selected Methane Emission Reductions Reported Under the USEPA Natural Gas STAR Program [1]

Source Type / Technology	Annual Methane Emission Reduction [1] (Mcf/yr)	Capital Cost Including Installation ($)	Annual Operating and Maintenance Cost ($)	Payback (Years or Months)	Payback Gas Price Basis ($/Mcf)
Wells					
Reduced emission (green) completion	7,000 [2]	$1K – $10K	>$1,000	1 – 3 yr	$3
Plunger lift systems	630	$2.6K – $10K	NR	2 – 14 mo	$7
Gas well smart automation system	1,000	$1.2K	$0.1K – $1K	1 – 3 yr	$3
Gas well foaming	2,520	>$10K	$0.1K – $1K	3 – 10 yr	NR
Tanks					
Vapor recovery units on crude oil tanks	4,900 – 96,000	$35K – $104K	$7K – $17K	3 – 19 mo	$7
Consolidate crude oil production and water storage tanks	4,200	>$10K	<$0.1K	1 – 3 yr	NR
Glycol Dehydrators					
Flash tank separators	237 – 10,643	$5K – $9.8K	Negligible	4 – 51 mo	$7
Reducing glycol circulation rate	394 – 39,420	Negligible	Negligible	Immediate	$7
Zero-emission dehydrators	31,400	>$10K	>$1K	0 – 1 yr	NR

Table 10. Selected Methane Emission Reductions Reported Under the USEPA Natural Gas STAR Program [1]

Source Type / Technology	Annual Methane Emission Reduction [1] (Mcf/yr)	Capital Cost Including Installation ($)	Annual Operating and Maintenance Cost ($)	Payback (Years or Months)	Payback Gas Price Basis ($/Mcf)
Pneumatic Devices and Controls					
Replace high-bleed devices with low-bleed devices					
End-of-life replacement	50 – 200	$0.2K – $0.3K	Negligible	3 – 8 mo	$7
Early replacement	260	$1.9K	Negligible	13 mo	$7
Retrofit	230	$0.7K	Negligible	6 mo	$7
Maintenance	45 – 260	Negl. to $0.5K	Negligible	0 – 4 mo	$7
Convert to instrument air	20,000 (per facility)	$60K	Negligible	6 mo	$7
Convert to mechanical control systems	500	<$1K	<$0.1K	0 – 1 yr	NR
Valves					
Test and repair pressure safety valves	170	NR	$0.1K – $1K	3 – 10 yr	NR
Inspect and repair compressor station blowdown valves	2,000	<$1K	$0.1K – $1K	0 – 1 yr	NR
Compressors					
Install electric compressors	40 – 16,000	>$10K	>$1K	>10 yr	NR
Replace centrifugal compressor wet seals with dry seals	45,120	$324K	Negligible	10 mo	$7
Flare Installation	2,000	>$10K	>$1K	None	NR

Source: Multiple USEPA Natural Gas STAR Program documents. Individual documents are referenced in the Climate Change SIR (2010).
[1] Unless otherwise noted, emission reductions are given on a per-device basis (e.g., per well, per dehydrator, per valve, etc).
[2] Emission reduction is per completion, rather than per year.
K = 1,000
mo = months
Mcf = thousand cubic feet of methane
NR = not reported
yr = year

In the context of the oil sector, additional mitigation measures to reduce GHG emissions include methane reinjection and CO_2 injection. These measures are discussed in more detail in Section 6.0 in the Climate Change SIR (2010).

4.2 Soil Resources

4.2.1 Direct and Indirect Effects

While the act of leasing a tract would produce no impacts, the development of the leases would result in reasonably foreseeable disturbances to soils. Construction and operation of well pads, access roads, pipelines, powerlines, reserve pits, and other facilities would result in the exposure of mineral soil, soil compaction, loss of soil productivity, and increased susceptibility to wind and water erosion. The likelihood and magnitude of these occurrences is dependent upon local site characteristics, climatic events, and the specific mitigation applied.
Potential impacts would be addressed in more detail at the APD stage.

4.2.2 Mitigation

In the event of exploration/development, a number of measures would be taken to prevent, minimize, or mitigate impacts to soil resources. The operator would stockpile the topsoil from the surface of well pads which would be used for surface reclamation. Once this topsoil is applied and vegetation is reestablished, the impacts would be remediated.

Reserve pits would be recontoured and reseeded as described in attached conditions of approval. Upon abandonment of wells and/or when access roads are no longer in service, the authorized officer would issue instructions and/or orders for surface reclamation/restoration of the disturbed areas as described in attached conditions of approval.

Road construction requirements and regular maintenance would alleviate potential impacts to access roads from water erosion damage. Lease stipulations regarding steep slopes are intended to avoid, minimize and mitigate potential impacts. Additional mitigation measures and/or best management practices would be assigned once a site-specific plan of development is proposed.

Controlled Surface Use (CSU) Stipulation 12-1 would be applied prior to surface disturbance on slopes over 30 percent to maintain soil productivity, provide necessary protection to prevent excessive soil erosion on steep slopes. CSU Stipulation 12-1 (BLM 2006: Appendix H, page 115) establishes the following special operating constraints:

Development and approval of an engineering/reclamation plan prior to surface disturbance on slopes over 30 percent which addresses the following constraints:

1. Restoration of site productivity.
2. Control of surface runoff.
3. Protection of off-site areas from accelerated soil erosion.
4. Surface-disturbing activities will not be conducted during extended wet periods.

4.3 Water Resources

4.3.1 Direct and Indirect Effects

The action of leasing the parcel itself would not have any impact on surface or groundwater resources. The subsequent development of the leases could result in reasonably foreseeable impacts. The Natural Resources Law Center of the University of Colorado School of Law on its website: Intermountain Oil and Gas BPM Project, lists areas of concern to water quality under the heading Water Issues. Some of these areas include stormwater runoff, pit pollution, and hydraulic fracturing. Existing BMPs and State of Montana Storm Water Prevention and Protection Plans (SWPP) would minimize and/or mitigate some of these potential impacts.

Surface Water

Impacts associated with the development of the lease (construction and operation of well pads, access roads, pipelines, powerlines, reserve pits, and other facilities) would depend upon the specific location. While there would be NSO in the wetlands and drainages, runoff could occur from activity in the uplands.

The topography in the vicinity of the parcels is dissected by 11.5 miles of ephemeral, intermittent and perennial streams. There is potential for non-point source pollution associated with soil disturbance. The direct and indirect effects of the proposed action would be limited to the

localized area of the 11.5 miles of stream/riparian because of the protection measures discussed in the Mitigation section below. By implementing standard operating procedures for oil field practices, BLM best management practices, and state of the art BMPs (University of Colorado Law School), most direct impacts to surface water quality would be mitigated. Since most direct and indirect effects to water quality would be mitigated as a result of the proposed action, there should be no measurable cumulative effects to water surface resources. Furthermore, any oil field construction project 1.0 acre or greater in size would be subject to the provisions of Montana DEQ's Storm Water Construction Activity regulations and would require a Storm Water Prevention and Protection Plan (SWPP).

Groundwater

As discussed above in Chapter 3, baseline information regarding groundwater hydrology is nearly nonexistent due to the sparse population and number of existing drilled wells. Characterization of groundwater hydrology has been a requirement for oil and gas production in association with coalbed methane oilfields. Should the leases move to exploration and discovery and applications to drill, this may be a requirement here as well. Protection of groundwater would be required. The use of hydraulic fracturing in association with oil and gas production has become a source of concern.

The EPA is in the process of studying hydraulic fracturing (HF). Hydraulic fracturing is used by gas producers to stimulate wells and recover natural gas from sources such as coalbeds and shale gas formations. Hydraulic fracturing is also used for other applications including oil recovery. Over the past few years, several key technical, economic, and energy policy developments have spurred increased use of HF for gas extraction over a wider diversity of geographic regions and geologic formations. It is projected that shale gas will comprise over 20 percent of the total US gas supply by 2020. Along with the expansion of HF, there has been increasing concerns about its potential impacts on drinking water resources, public health, and environmental impacts in the vicinity of these facilities. The HF study could result in additional guidance, BMPs, and regulations to address impacts coming out of the research.

The Intermountain Oil and Gas BMP Project at the University of Colorado Law School, of which the Bureau of Land Management and the State of Montana are members, has developed a searchable database of Oil and Gas BMPs in association with coalbed methane production. Many of these BMPs address groundwater impacts and include such requirements as drilling of monitoring wells to characterize groundwater hydrology and to address specific areas or issues of concern and isolation of freshwater aquifers. Such BMPs would very likely be applicable to the lands being evaluated by this EA should the leases move forward to oil and gas production.

While the results of the above-referenced studies may be available if and when APDs are submitted for the subject leases, the findings may not be applicable across the board to the parcels being evaluated in this EA due to the sparse population and small number of wells.

4.3.2 Mitigation

The lifting of the suspension of the leases does not result in impacts which would require mitigation. Wetlands, floodplains, and riparian areas would be protected from direct and indirect effects by an NSO stipulation applied to the riparian features themselves. On a case-by-case basis, standard lease terms, which allow for adjusting locations of activities to avoid or mitigate impacts, would also be applied to ensure avoidance of non-point source sediment input to

streams as a result of disturbance. Incorporating the findings of the University of Colorado, EPA, future studies, use of state of the art technology, monitoring of wells, and the development and use of BMPs which address groundwater impacts are the types of mitigation that would be used at the APD stage of development.

4.4 Vegetation Resources

At this stage (lease sale) there are no impacts. Impacts (both direct and indirect) would occur when/if the lease is developed in the future. The potential impacts would be analyzed on a site-specific basis prior to oil and gas development and during the APD stage of development.

Noxious Weeds

At this stage (lease sale) there are no impacts. Impacts (both direct and indirect) would occur when/if the lease is developed in the future due to increased soil disturbance and human activity. The potential impacts would be analyzed on a site-specific basis prior to oil and gas development and during the APD stage of development and mitigation would be developed. Noxious weed prevention and mitigation are included as standard operating procedures, and any cost would be assigned to the applicant.

4.4.1 Direct and Indirect Effects

There should be no direct or indirect impacts to streams, wetlands, or their associated flood-prone areas due to the NSO stipulations, along with standard lease term options.

Impacts to native vegetation depends on the native vegetation type and the topography of the lease parcels. The lease parcels contain, primarily, grassland and shrubland vegetative communities, with only a minor woodland component. Habitat disturbance in grasslands generally has less of an impact than disturbance in shrublands and woodlands since shrubs and trees take longer to become reestablished. The impacts associated with well pads and roads would be very site-specific and are not expected to significantly affect vegetation resources at the community scale. The footprint of the disturbance is also expected to be a small proportion of the analysis area.

Topography can play a role in the amount of surface disturbance that results from well and road construction. Flat areas would require little or no cut and fill, and road routes are not constrained by topography. In hilly areas, cut and fill may be required which disturbs additional land. Road routes may be longer to meet engineering requirements and may also require cut and fill. Areas lacking roads near potential drilling sites would have more disturbance, because the entire access route would need to be constructed rather than just a short spur route from an existing road.

Potential impacts to plants include direct mortality from earth excavation or crushing by vehicles. Adverse impacts could also result from soil erosion resulting in loss of the supporting substrate for plants or from soil compaction resulting in reduced germination rates. Impacts to plants occurring after seed germination but prior to seed set could be particularly harmful as both current and future generations would be adversely affected. Weeds which are introduced and/or promoted by soil-disturbing activities compete against and displace native vegetation.

Development associated with oil and gas activities has the potential to affect rare plants. Soil-disturbing activities directly affect species by destroying habitat, churning soils, impacting biological crusts, disrupting seedbanks, burying individual plants, and generating sites for

undesirable weedy species. Weeds may be introduced during construction and operation of the lease. Roads generate weedy habitat along their edges, as well as avenues for weed invasion into unoccupied territory. Dust generated by construction activities and travel along dirt roads can affect nearby plants by depressing photosynthesis, disrupting pollination, and reducing reproductive success. Oil or other chemical spills could contaminate soils so as to render them temporarily unsuitable for plant growth until cleanup measures were fully implemented. If cleanup measures were less successful, longer term impacts could be expected.

4.4.2 Mitigation

Rehabilitation and/or restoration generally take longer in shrublands than in grasslands. Grassland habitats may resemble their pre-project conditions in two to five years, while shrublands may require five to 30 years. The parcels are generally grassland and shrubland habitats that return to their pre-project composition and structure relatively easily and quickly.

To protect biological and hydrological features associated with wetland, floodplains, and riparian areas, activity is prohibited within these areas as indicated by the NSO stipulation. This stipulation would also protect riparian vegetation in these areas. Standard lease terms may also be applied (based on site-specific conditions) to provide additional protection if needed.

Mitigation would be addressed at the site-specific APD stage of development. Needed stipulations and conditions of approval would be identified and addressed during planning at the APD stage.

4.5 Special Status Species

4.5.1 Direct and Indirect Effects

All eight of the BLM sensitive plants identified as occurring or having the potential to occur are perennial species, which facilitates the identification of existing population boundaries and reduces the possibility that development may inadvertently destroy existing but unidentified sensitive plant habitat and populations. Impacts would be dependent on the location of the disturbance relative to populations of the species in question. The construction of roads, well pads, and similar development could destroy plants or disrupt continuity between populations. New weedy species could be introduced, and weeds would benefit from the additional moisture generated by runoff from roads and pads. To minimize impacts to BLM sensitive species, mitigation measures would consider the type of impact, the rareness of the species, the population size and distribution, and the species' response to disturbance. The habitat disturbance that may result if these parcels are developed and the avoidance measures may result in negligible to moderate impacts to BLM sensitive plants at the site-specific scale. Depending on the distributions and abundance of the plant populations, the impacts would be negligible to moderate at the population and landscape scales.

No federally-listed threatened or endangered wildlife species would be impacted under the proposed action. Effects to BLM sensitive status wildlife species would depend on the location of wells and level of development within these lease parcels. Currently 5,315 acres (76 percent) of the analysis area has NSO stipulations that would preclude development. The remaining 1,680 acres (24 percent) has timing limitations that would restrict drilling activity during the time periods of December 1 to August 31, depending on the lease parcel. Therefore, only 1,680 acres could potentially be developed unless new data is found during review if an application for

permit to drill is submitted. Although NSO and timing limitation stipulations are resource-specific, there are compensatory benefits to all species using the associated habitat.
All seven lease parcels fall within greater sage-grouse core habitat. For greater sage-grouse and other sagebrush obligate song birds, the direct loss of sagebrush would be localized and not lead to a downward trend in the overall population. The infrastructure associated with development includes roads and well pads directly impacts individual species by removing hiding cover for greater sage-grouse broods and can indirectly impact them by making mammalian predators more efficient. Likewise, utility poles create raptor perches that would likely increase efficiency of avian predators.

There is not a high population density of pygmy rabbits in the Dillon FO, and effects would depend on the level of development and amount of habitat removed or impacted as a direct result of development by loss of burrow complexes and sagebrush habitat. Increased traffic would result in direct mortality, and human disturbance can result in displacement. Indirect effects are caused by the infrastructure that is built during oil and gas production that creates raptor perches and nesting structures which in turn increases the predation on pygmy rabbits as well as other small mammals.

As stated earlier, this infrastructure is beneficial to raptors by creating new perches to hunt from and increasing the efficiency of predation. Timing restrictions during the breeding season would limit the disturbance associated with human activity related to drilling for all avian and mammalian species. Once the parcel is developed, these timing restrictions do not apply; therefore, depending on the level of development and human disturbance, breeding success could be reduced.

The Dillon RMP states that full field development in the DFO would consist of 10 wells in the entire field office with a well density of one well per section within 10-15 years (see RFD Scenario and Table 10 in Section 4.0 above). The disturbance associated with this scenario is not expected to be more than 441 acres during development and 52 acres post site reclamation. This low level well density would have local impacts to wildlife habitat and local populations but would not lead toward listing of any BLM special status species.
Refer to Appendix C, Biological Evaluation for Special Status Fish and Wildlife Species, for a list of the special status species that occur within the analysis area and which species may be impacted. Full disclosure of impacts to special status wildlife cannot be fully evaluated until an APD is submitted at which time these parcels would undergo further analysis.

4.5.2 Mitigation

In order to protect and conserve rare plants, associated plant communities, and the habitat that supports them, NSO 11-24 and CSU 12-11 stipulations would be applied to parcels within 0.5 miles of known plant populations. Additionally, CSU 12-11 would be applied to those parcels with high-probability habitat for sensitive plant species. Please refer to Appendix A of this document for special status plant and wildlife stipulation requirements and the parcels to which they apply. Also refer to attachment Lease Notice No. 3 for Greater Sage Grouse Habitat.

Mitigation would also be addressed at the site-specific APD stage of development. Any necessary stipulations and conditions of approval would be identified and addressed during planning at the APD stage.

4.6 Fish and Wildlife

4.6.1 Direct and Indirect Effects

Potential impacts of development to wildlife include direct mortality or injury, loss of dens or burrows, displacement, and human disturbance. Direct mortality or injury could result from vehicle strikes or from collapsed dens and burrows resulting in animals being crushed or entombed. Burrows and dens could be destroyed or damaged by vehicle traffic, particularly heavy equipment. Animals could be displaced during project activities. Such displacement of animals into unfamiliar areas could increase the risk of predation and increase the difficulty of finding required resources such as food and shelter. Human disturbance could result in displacement of animals, even though dens and burrows may not be directly impacted. Human disturbance also might alter the behavior of animals (e.g., activity periods, space use) resulting in increased predation risk, reduced access to resources, and reduced breeding success.
Roads and large areas of disturbance can be a barrier to movement for some animal species. However, it is not uncommon to find big game species using roads or crossing roads. This tendency does expose these animals to vehicle strikes and lowers security during hunting seasons by increasing motorized travel and road density. This habitat is not currently roadless because it does have low-level maintained dirt roads that experience traffic during hunting season. Development of these parcels would likely result in increased road densities which would result in habitat loss in addition to loss of habitat due to well pads.

Energy exploration and development on public lands could n cause obvious changes in big game habits and habitat structure such as the replacement of native vegetation with well pads, roads, and pipelines. These direct losses may be the subtle or indirect habitat losses caused by behavioral avoidance of areas in and around structures associated with development. Behavioral changes may result from increased levels of traffic, noise, pollution, or human activity.

Structures such as utility poles, buildings, and pumping units may provide perches for raptors. Addition of such structures in flat terrain may increase predation rates on small mammals and other prey species. Introducing nesting structures can have a greater impact on prey species since much more prey is taken by raptors that are rearing young, and the nest site is continuously occupied for the season, which increases the duration and frequency of the predation effect. The effect of introducing structures that would only serve as perches is not expected to be significant because such perches are likely to only occasionally be used for hunting.

As stated above in 4.5.1, these parcels are heavily stipulated. Only 18 percent of the parcels do not have NSO stipulations and this, combined with timing limitations, leaves only a very small window of operational period. A small period of operations would minimize the anticipated effects to all wildlife species. Full disclosure of impacts to wildlife cannot be fully evaluated until/unless an APD is submitted at which time these parcels would undergo further analysis.

4.6.2 Mitigation

Refer to Appendix A of this document for pertinent parcel-specific lease stipulations as needed.

Mitigation would also be addressed at the site-specific APD stage of development. Any necessary stipulations and conditions of approval would be identified and addressed during planning at the APD stage.

4.7 Cultural Resources

4.7.1 Direct and Indirect Effects

Leasing a nominated parcel gives a basic right to the operator to develop the lease. Leasing would not, however, result in effects to cultural resources. It is only when the lease is developed that there would be a potential for cultural resources to be affected by the proposed action. That is when the drilling location is known and cultural resource investigations would be centered on that location and other related developments such as roads, transmission lines, and pipelines. Direct and indirect impacts are not anticipated from leasing nominated parcels. It is at the APD stage of development that specific impacts can be correctly assessed. Potential direct impacts to cultural resources at the APD stage include damage to archaeological sites through construction activities (e.g., pad construction, road building, well drilling), increased erosion from surface activities, and increased travel and vandalism resulting from improved access to the area. Potential indirect impacts include abrasive dust and vibrations from drilling equipment and damage to rock art sites from gas emissions. Conversely, cultural resource investigations associated with development adds to our understanding of the prehistory and history of the area under investigation.

At the APD stage when specific oil and gas development actions are proposed, the area of potential effect (APE) will be defined and assessments of the impacts on cultural resources will be undertaken in order to comply with Section 106 of the National Historic Preservation Act (NHPA) and BLM's 8100 Manual Series. A Class III cultural resource inventory would be necessary for those parcels not previously surveyed and for those parcels which have been judged inadequately surveyed in the past. Lease Notice 14-5 would apply to all parcels (Appendix A). In the event that cultural resources are identified within the APE, an evaluation of National Register eligibility would occur for each identified cultural resource. Mitigation measures for cultural resources determined to be eligible to the National Register of Historic Places (NRHP) would have to be followed for those cultural resources directly and/or indirectly impacted by the proposed development.

As stated previously, portions of Parcels 7Q, 7S, 7T, and 7U have been inventoried for cultural resources at the Class III complete coverage field survey level. Parcels 7O, 7P, and 7R have not been inventoried for cultural resources at the Class III complete coverage field survey level. No cultural resources have been recorded in Parcels 7T or 7U; however, 16 cultural resources have been recorded in Parcels 7O, 7P, 7Q, 7R, and 7S.

Climate change may have an effect on cultural resources by changing the frequency and severity of natural events, such as heavy rain and wildfires (Agee 1993; Maslin 2004). Heavy rain increases the likelihood of flooding and soil erosion which could impact an archaeological site by exposing, removing, and displacing archaeological materials. Wildfires can affect the morphology of artifacts through fracturing and discoloration which can reduce an artifact's ability to render information about the past (Winthrop 2004). Wildfires can also destroy organic materials such as bone, wood, and pollen that provide information about past environments and subsistence. Furthermore, fire suppression activities (e.g., fire retardant and fire line construction) and increased artifact exposure from vegetation burn-off can also have an adverse impact on archaeological sites.

4.7.2 Mitigation

Specific mitigation measures, such as site avoidance or data recovery through excavation, would have to be determined when site-specific development proposals are received. However, given the small number of acres to be disturbed by the anticipated development it is unlikely that it would be necessary to mitigate archaeological sites by data recovery. In almost all situations, direct impacts to cultural resources could be avoided by relocating well sites and pipelines. It should be noted that BLM has discretional control over mitigation stipulations measures imposed on a project. Although a lessee has a right to develop a lease, BLM may require development activities to be moved up to 300 feet in any direction (per NSO stipulation). This should allow nearly all sites to be avoided. Should development uncover subsurface sites, the lessee is required to halt all work until the site can be evaluated and proper mitigation measures can be implemented.

Based on existing information, 16 cultural resources located in the parcels of 7O, 7P, 7Q, 7R, and 7S could be potentially impacted by parcel specific development proposals. Four cultural resources, located in Parcels 7O, 7P, 7R, and 7S, have been determined eligible for listing in the NRHP, and five cultural resources, located in Parcels 7Q and 7S, are potentially eligible for listing in the NRHP. An NSO stipulation (11-22) would apply to those portions of Parcels 7O, 7P, 7Q, 7R, and 7S containing these recorded cultural resources as part of the lease agreement (Appendix A). 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 the significant cultural resources and to avoid unintentional impacts to these resources.

4.8 Paleontology

4.8.1 Direct and Indirect Effects

No known paleontological resources occur within the lease parcels. The act of leasing a nominated parcel would not impact paleontological resources; however, subsequent development could have impacts on paleontological resources not yet identified. The lease parcels lie within geologic units that have moderate to high potential (Potential Fossil Yield Classification System; IM 2008-09) for paleontological resources. These units include sedimentary rocks ranging from Eocene to Miocene in age, Cretaceous Chisana Formation, and Quaternary terrace deposits that are known to contain fossils. Since these lease parcels occur in geological formations with moderate to high potential, a paleontological survey will be required in order to preserve and protect significant fossils.

Climate change could have an effect on paleontological resources by changing the frequency and severity of natural events, such as heavy rain and wildfires (Agee 1993; Maslin 2004). Heavy rain increases the likelihood of flooding and soil erosion which could impact a paleontological site by exposing and displacing paleontological materials. Wildfires could affect the morphology of fossils through discoloration which can reduce a specimen's ability to render important information (Benton and Reardon 2006). Furthermore, fire suppression activities (e.g., fire retardant and fire line construction) and increased visibility from vegetation burn-off can also have an adverse impact on fossil locales.

4.8.2 Mitigation

Specific mitigation measures could include, but are not limited to, site avoidance or excavation. These measures would be determined when site specific development proposals are received. Controlled Surface Use stipulation 12-9 will apply to lease parcels 7O, 7P, 7Q, 7R, and 7S, and Lease Notice 14-5 would apply to all parcels (Appendix A) in order to preserve and protect significant fossils.

4.9 Native American Religious Concerns

4.9.1 Direct and Indirect Effects

Based on existing data, the lease parcels are not known to contain TCPs and/or properties of religious and cultural importance (e.g., ceremonial gathering areas, sacred springs) to the Native American community. Nonetheless, the leasing of nominated parcels would not have an impact on TCPs and/or areas of religious or cultural importance to tribes. A lease sale would not interfere with the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act (AIRFA) or Executive Order 13007. It would not prevent tribes from visiting sacred sites or prevent possession of sacred objects. A specific development authorized through the APD process may, however, have an impact on Native American religious practices and TCPs. Noise, traffic activity, and smells can affect the quality and continued use of TCPs.

4.9.2 Mitigation

Cultural Resources Lease Stipulation 16-1 would apply to all lease parcels (Appendix A). The application of Stipulation 16-1 to all lease parcels ensures that BLM's obligations under NHPA, the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act, Executive Order 13007, and other statutes as applicable will be met. At the APD stage when specific oil and gas development actions are proposed, the area of potential effect (APE) will be defined and federally recognized tribes will be consulted if necessary. Additional NSO stipulations could be necessary if TCPs or properties of religious and cultural importance are identified at the APD stage.

4.10 Visual Resources

4.10.1 Direct and Indirect Effects

The parcels fall into VRM Class III, which allows for moderate changes to the existing landscape that may attract attention, but would not dominate the view of the casual observer. While the act of leasing federal minerals produces no visual impacts, subsequent development of a lease would result in some new development and modifications to the existing landscape. Through the use of best management practices and mitigation guidelines for visual resources, impacts to visual resources would be minimal because the potential new development/modifications are expected to favorably blend with the form, line, color, and texture of the existing landscape, and/or be located to avoid the view of the majority of the prospective observers traveling along Interstate 15.

4.10.2 Mitigation

All new development would implement, as appropriate for the site, BLM Best Management Practices for VRM in Oil and Gas Development. These include (but would not be limited to) proper site selection, minimizing disturbance, selecting color(s)/color schemes that blend with the background, and reclaiming areas that are not in active use. Wherever practical, no new development would be allowed on ridges or mountain tops, and would avoid locations along the

interstate when possible. Overall, the goal is to not reduce the visual qualities that currently exist.

4.11 Livestock Grazing

4.11.1 Direct and Indirect Effects

At this stage (lease sale) there would be no impacts to livestock grazing. Impacts (both direct and indirect) would occur if a lease is developed in the future. The potential impacts would be analyzed on a site-specific basis prior to oil and gas development and during the APD stage of development.

Impacts possible at the APD stage of development could include a loss of forage and damage to range improvement projects as a result of drill-site development which could include a pad, reserve pit, earthen pit, roads, surface facilities, pipelines, powerlines, and herbicide use. Depending on the size of the surface disturbance and the loss of available forage, there may be a temporary reduction in animal unit months (AUMs).

4.11.2 Mitigation

Mitigation would be deferred to the site-specific APD stage of development. Best management practices would be incorporated into conditions of approval.

Fencing of facilities would be considered as needed to minimize conflicts between oil and gas exploration/development and livestock grazing. Prior to development, existing range improvement projects would be identified and site-specific mitigation measures developed to maintain the functionality of the projects.

4.12 Recreation and Travel Management

4.12.1 Direct and Indirect Effects

While the act of leasing federal minerals itself produces no impacts to recreation, subsequent development of a lease would cause some impacts to recreation activities.

Recreation impacts may occur where oil and gas development and recreational uses overlap. Minor recreational impacts would occur due to conflicts between motorized recreationists and hunters and the oil and gas/industrial activities. The intensity of these impacts is low due to the relatively light recreational use in the area and limited seasons of use. Also, the area that would be occupied by oil and gas activities is a very small percentage of the lands in the area that offer similar recreation opportunities. In all likelihood, recreational activities normally occurring on these isolated tracts of public lands would be displaced to other nearby lands with similar opportunities. These impacts would persist in both the short-term (exploration and construction phases of oil and gas development) and the long-term (producing wells, maintenance of facilities, etc.).

4.13 Lands and Realty

4.13.1 Direct and Indirect Effects

An impact of the proposed leases on lands and realty is that they become an encumbrance on the public lands described in the leases. For instance, if future land use authorizations such as rights-of-way, leases, permits, etc., are sited on the leased areas, they would need to be issued subject to these oil and gas lease rights.

Any actual future oil and gas development of these proposed leased lands must first be analyzed and approved by the BLM. Generally speaking, however, such development has the potential to impact existing facilities or improvements authorized or acquired by various land use authorizations or easements respectively. An example would be a right-of-way or acquired easement for a facility such as a road (like the ones mentioned in the Lands and Realty portion of Chapter 3) that might sustain additional traffic and wear as a result being used to haul personnel and heavy equipment. Another example would be possible damages to buried utility lines existing on some of these proposed lease parcels. The damage could occur as a result of drilling, installation of pipelines, or related development activities.

Leasing can sometimes cause conflicts with other surface uses. This is especially possible if the leased lands are split estate. Surface owners are often not aware of the federal ownership of the mineral estate or are not aware of the implications of the federal ownership. The surface landowners have been be notified that the federal mineral estate underneath their surface is proposed for oil and gas competitive leasing.

Along with the ownership of the minerals, the federal government retains the right to use any part of the surface for exploration or development. These "surface entry rights" can cause distress for private surface owners who do not wish to see new roads and well pads on their land. Adjacent private lands could also be impacted due to leasing, because new road access to the leased areas is sometimes necessary. Although the responsibility for obtaining access to leased areas is the lessee's and not BLM's, leasing can sometimes cause an indirect impact to adjacent lands due to the need for road access.

Any surface-disturbing activity requires BLM approval. For those parcels that are split estate, the BLM requires the lessee/operator to make a good faith effort to obtain an agreement with the private surface owner prior to access to the leased parcel.

4.13.2 Mitigation

To minimize possible conflicts between potential oil and gas development and existing land use authorizations and withdrawals, Lease Notice 14-1 would apply to those leases identified in Appendix A.

4.14 Minerals

Fluid Minerals

Stipulations applied to various areas with respect to occupancy, timing limitation, and control of surface use would have the greatest effects on oil and gas exploration and development. Leases issued with major constraints (NSO stipulations) may decrease some lease values, increase operating costs, and to a lesser extent require relocation of well sites and modification of field development. Leases issued with moderate constraints (timing limitation and CSU stipulations) may result in similar but reduced impacts and delays in operations and uncertainty on the part of operators regarding restrictions.

4.14.1 Direct and Indirect Effects

4.14.1.1 Fluid Minerals

Under Alternative B all of the parcels would be recommended for oil and gas leasing at this time. Approximately 76 percent of the areas would be offered for lease subject to major constraints (NSO). Approximately 24 percent would be offered for lease subject to moderate constraints.

None of the parcel areas would be offered for lease subject to standard terms and conditions only.

4.14.1.2 Solid Minerals

It is not expected that locatable or salable mineral development will change in the foreseeable future. Potential for locatable minerals is low. Demand always exists for salable minerals, mostly for road maintenance and development. However, a significant increase in demand is not expected in the foreseeable future.

Locatables

The potential for locatable minerals is low in the general area and within the parcels. The parcels have been reviewed for mining claims, and no active claims were found.

If potential mineral development conflicts arise in the future, issues would be addressed during the APD review process and/or the conflict would be resolved between the private parties through customary corporate and legal procedures.

Salables

Some potential for salable minerals exists in all of the parcels. However, disposal of salable minerals is a discretionary decision of the authorized officer. Thus, future potential resource development conflicts would be avoided either by not issuing sales contracts in oil and gas development locations or adding conditions to the APD or sand, gravel, and building stone contract to avoid conflicts between operations.

4.15 Social Conditions

4.15.1 Direct and Indirect Effects

While the act of leasing federal minerals itself would result in no social impacts, subsequent development of a lease may generate impacts to people living near or using the area in the vicinity of the proposed action. Oil and gas exploration, development or production could create an inconvenience to these people due to increased traffic and traffic delays, noise, and visual impacts. This could be especially noticeable in these rural areas where oil and gas production has not occurred previously. The amount of inconvenience would depend on the activity affected, traffic patterns within the area, noise levels, length of time and season of occurrence, etc. Creation of new access roads into an area could allow increased public access and exposure of private property to vandalism. In split estate situations, surface owner agreements, standard lease stipulations, and best management practices could address many of the concerns of private surface owners.

There would be no disproportionate effects to low income or American Indian populations. There are low income people in the county, but they do not appear to be associated with any specific BLM resources or activities. The known American Indian-related cultural resources in the area are currently protected.

4.16 Economic Conditions

4.16.1 Direct and Indirect Effects

Alternative A

Economic impacts associated with Alternative A would be similar to those described in the economic section of the Affected Environment except for impacts related to production. A

comparative summary of these effects is available in Table 11. Compared to current levels, annual average federal royalty payments would increase by an estimated $1,400. Annual distribution of these royalties to state/local governments would be an estimated $700. Average annual total local employment would increase by about one job and average total local income would increase by an estimated $17,000 per year.

Alternative B

Leasing an additional 6,995 acres of federal minerals (Alternative B) would increase average annual oil and gas leasing and rent revenues to the federal government by an estimated $14,000 (Table 11). Annual leasing and rent revenues distributed to state/local governments would increase by an estimated $7,000. The RFD scenario, the basis for economic impact analysis, predicts an annual average of 0.15 producing wells drilled, 0.03 dry holes drilled, and 2,147 MCF of natural gas production. Average annual federal oil and gas royalties would increase by an estimated $2,000 with Alternative B. Royalties distributed to the state/counties would increase by an estimated $800 annually.

Total average annual federal revenues related to leasing 106,500 acres of federal minerals and associated annual rent and royalty revenues related to annual production of federal minerals would amount to an estimated $209,000. This would be an estimated annual increase of $14,000 compared to Alternative A. Total annual revenues distributed to the state and counties would be an estimated $102,000, an estimated $7,000 more than with Alternative A.

Table 11 Summary of Estimated Annual Economic Impacts by Alternative			
Activity	*Alternative*		
	A	*B*	*Alt. B-Alt. A*
Existing Acres leased	99,505	99,505	0
Acres that would be leased based on this EA	0	6,995	6,995
Total acres leased	99,505	106,500	6,995
Acres held by production*	0	0	0
Total acres leased for which lease rents would be paid	99,505	106,500	6,995
Lease rental first 5 years ($1.50/acre)	74,629	79,875	5,246
Lease rental second 5 years ($2.00/acre)	99,505	106,500	6,995
Minimum lease bid ($2.00/ac.)	19,901	21,300	1,399
Total annual federal lease and rental revenue	194,035	207,675	13,640
Distribution to State/local government	95,077	101,761	6,684
Annual oil production (bbl)***	0	0	0
Annual gas production (MCF)	2,006	2,147	141
Federal oil royalty (bblx$64.64x0.125)	0	0	0
Federal gas royalty (MCFx$5.72x0.125)	1,434	1,535	101
Total annual Federal O&G royalties	1,434	1,535	101
Distribution to State/local government	703	752	49
Total annual Federal revenues	195,469	209,210	13,741
Total annual State/local revenues	95,780	102,513	6,733
Total annual revenue distributed to counties	23,945	25,628	1,683
***Estimated 2007 federal production level			

The estimated combined total average annual employment and income supported by federal oil and gas leasing, distributions of royalties to local governments, drilling wells, and production would amount to about one job and $28,000 within the local economy (IMPLAN 2007). Table 12 shows that average total employment would be about the same as with Alternative A; annual labor income would increase by an estimated $2,000 over levels anticipated with Alternative A. There would not be a corresponding change in local population compared to Alternative A. Total federal contribution of Alternative B (leasing an additional 6,995 acres of federal minerals and anticipated related exploration, development, and production of oil and gas) would have negligible effects on local population, total local employment, number of households, average income per household, and total personal income. The economic effects would continue to be spread unevenly among the two counties. Leasing the additional 6,995 acres and anticipated exploration, development, and production under alternative B would provide about $2,000 per

year of additional funds for county functions such as law enforcement, justice administration, collection and disbursement of tax funds, provision of orderly elections, road and highway maintenance, fire protection, and record keeping. Other county functions that may be funded include primary and secondary education administration and the operation of clinics/hospitals, county libraries, county airports, local landfills, and county health systems. Demand for these services would also increase by a negligible amount as total local employment and population increase. Leasing the additional 6,995 acres and anticipated exploration, development, and production would not change local economic diversity (as indicated by the number of economic sectors), economic dependency (where one or a few industries dominate the economy), or economic stability (as indicated by seasonal unemployment, sporadic population changes, and fluctuating income rates).

Table 12 Average Annual Employment and Income by Major Industry by Alternative						
Industry	*Total Full and Part-time Jobs Contributed*			*Total Income Contributed ($1000)*		
	Current	**Alt. A**	**Alt. B**	**Current**	**Alt. A**	**Alt. B**
Agriculture	0	0	0	$0.0	$0.1	$0.1
Mining	0	0	0	$0.2	$11.7	$12.5
Utilities	0	0	0	$0.2	$0.5	$0.5
Construction	0	0	0	$0.9	$1.3	$1.4
Manufacturing	0	0	0	$0.0	$0.1	$0.1
Wholesale Trade	0	0	0	$0.1	$0.6	$0.6
Transportation & Warehousing	0	0	0	$0.1	$0.8	$0.9
Retail Trade	0	0	0	$0.2	$0.7	$0.7
Information	0	0	0	$0.0	$0.1	$0.1
Finance & Insurance	0	0	0	$0.4	$0.9	$1.0
Real Estate & Rental & Leasing	0	0	0	$0.2	$0.5	$0.5
Prof, Scientific, & Tech Services	0	0	0	$0.3	$1.0	$1.1
Mngt of Companies	0	0	0	$0.0	$0.3	$0.3
Admin, Waste Mngt & Rem Serv	0	0	0	$0.2	$0.3	$0.4
Educational Services	0	0	0	$0.0	$0.0	$0.1
Health Care & Social Assistance	0	0	0	$0.3	$0.8	$0.9
Arts, Entertainment, and Rec	0	0	0	$0.0	$0.1	$0.1
Accommodation & Food Services	0	0	0	$0.1	$0.4	$0.4
Other Services	0	0	0	$0.1	$0.3	$0.3
Government	0	0	0	$5.2	$5.4	$5.8
Total Federal Contribution	0	1	1	$8.7	$25.9	$27.7
Percent Change from Current	---	166.8%	186.0%	---	197.7%	219.1%

IMPLAN, 2007

This alternative would have a beneficial effect on mineral exploration and development. The practical utilization of the lands would have a positive local effect in the generation of long-term jobs and revenues to the state and county. The royalties and rentals from competitive auctions are also a dependable source of long-term income for the federal government. The impacts from this particular auction may be small, including an unknown (but probably relatively small) amount of new reserves, due to the small amount of acreage offered. However, the positive action of the auction would provide the industry with increased opportunity for exploration, potentially resulting in increased stability and profitability of domestic companies.

4.17 Cumulative Impacts

Cumulative impacts are those impacts resulting from the incremental impact of an action when added to other past, present, and reasonably foreseeable actions regardless of what agency or person undertakes such other actions. This section describes the cumulative impacts on resources from this project. The ability to assess the potential cumulative impacts at the leasing stage for this project is limited for many resources due to the lack of site-specific information for potential future activities. Upon receipt of an APD for any of the lease parcels, more site-specific planning would be conducted during which the ability to assess contributions to cumulative impacts in a more detailed manner would be greater due to the availability of more refined site-specific information about proposed activities.

Unless otherwise indicated by resource, the scale of cumulative impacts analysis for this project is the Red Rock/Lima and the western portion of Centennial Watershed Assessment areas. The timeframe associated with potential cumulative effects is five years, based on the assumption that if initiated, any potential exploration/development activity on these lease parcels could potentially continue indefinitely.

Two recently-completed EAs (Red Rock/Lima Watershed and Centennial Watershed) addressed cumulative impacts associated with a broad range of proposed management actions on various resources at the watershed-scale. The seven lease parcels considered in this EA are contained within the Red Rocks/Lima Watershed and a small portion of the Centennial Watershed. Cumulative effects of past, present, and reasonably foreseeable future actions as well as management activities proposed by the BLM are discussed on pages 81-86 of the Red Rocks/Lima Watershed EA (BLM 2007). Cumulative effects are addressed in the Centennial Watershed EA (BLM 2005c on pages 94-100). These two documents still generally reflect accurate discussions of cumulative effects of activities in these watersheds and are hereby incorporated by reference into this EA.

Cumulative effects associated with all BLM programs in the Dillon Field Office, including implementation of the RFD scenario described above, are described in the Dillon RMP/Final EIS, Volume II, on pages 85-92 (Appendix H). Anticipated exploration and development activity associated with the lease parcels considered in this EA are within the range of assumptions used and effects described in this cumulative effects analysis for all resources and programs other than Air Resources. This previous analysis is hereby incorporated by reference for resources and programs other than Air Resources.

4.17.1 Past, Present and Reasonably Foreseeable Future Actions

Past, present, or reasonably foreseeable future actions that affect the same components of the environment as the proposed action are grazing, roads, wildland fires, power lines, and other items as presented in the cumulative impact section of the Dillon RMP, Volume 1 (p. 361-368)

A major reasonably foreseeable action the agency is considering is a proposed 500 kV electric transmission line referred to as MSTI (Mountain States Transmission Intertie). As proposed, this line would pass through the extreme southern portion of the parcel area. No final decision approving this proposed electric transmission line has been made. Besides the MSTI project, there are no major foreseeable future actions, and it is anticipated that the current use of the land will remain the same.

4.17.2 Cumulative Impacts by Resource

4.17.2.1 Greenhouse Gas Emissions and Cumulative Impacts on Climate Change

This section incorporates an analysis of the potential contributions to GHG emissions in the event that Alternative B lease parcels are ever developed, followed by a general discussion of potential impacts to climate change. These impacts are discussed at multiple scale including the planning area, state, national and global scales. Potential emissions relate to those derived from potential exploration and development of fluid minerals. Additional emissions beyond the control of the BLM, and outside the scope of this analysis, would also occur during any needed refining processes, as well as end uses of final products.

Projected GHG emissions for this project and the Dillon RFD are compared below with recent available inventory data at the state, national, and global scales. Greenhouse gas emissions inventories can vary greatly in their scope and comprehensiveness. State, national, and global inventories are not necessarily consistent in their methods or in the variety of GHG sources that are inventoried (Climate Change SIR 2010). However, comparisons of emissions projected by the BLM for its oil and gas production activities are made with those from inventories at other scales to provide a context for the potential contributions of GHGs associated with this project.

As discussed in section 4.1.1, total projected BLM GHG emissions from the RFD are 1,781.5 metric tons/year CO_2e over the next 20 years. Potential emissions under Alternative B would be approximately 0.58 percent of this total. Table 13 displays projected GHG emissions from non-BLM activities included in the Dillon RFD. Total projected emissions of non-BLM activities in the RFD are 1,512.3 metric tons/year of CO_2e. When combined with projected annual BLM emissions, this totals 3,293.8 metric tons/year CO_2e. Potential GHG emissions under Alternative B would be 0.31 percent of the estimated emissions for the entire RFD. Potential incremental emissions of GHGs from exploration and development of fluid minerals on parcels within Alternative B would be minor in the context of projected GHG contributions from the entire RFD for the Dillon Field Office.

Table 13. Projected non-BLM GHG emissions associated with the Dillon FO Reasonably Foreseeable Development Scenario for fluid mineral exploration and development.

Source	Non-BLM Greenhouse Gas Emissions in tons/year for Dillon FO RFD			Emissions (metric tons/yr)
	CO_2	CH_4	N_2O	CO_2e
Conventional Natural Gas	271.3	39.7	0.0	1,002.8
Coal Bed Natural Gas (none forecasted in RFD)	0.0	0.0	0.0	0.0
Oil	550.8	0.4	0.0	509.5
Total	**822.1**	**40.1**	**0.0**	**1,512.3**

Montana's Contribution to U.S. and Global Greenhouse Gases (GHGs)

Montana's GHG inventory (http://www.eia.doe.gov/oiaf/1605/archive/gg04rpt/emission.html, Center for Climate Strategies 2007) shows that activities within the state contribute 0.6 percent of U.S and 0.076 percent of global GHG emissions (based on 2004 global GHG emission data from the IPCC, summarized in the Climate Change SIR 2010). Based on 2005 data in the state-wide inventory, the most pronounced source of Montana's emissions is combustion of fossil fuels to generate electricity, which accounts for about 27 percent of Montana's emissions. The next largest contributors are the agriculture and transportation sectors (each at approximately 22 percent) and fossil fuel production (13.6 percent).

Greenhouse gas emissions from all major sectors in Montana in 2005 totaled approximately 36.8 million metric tons of CO_2e (CCS (Center for Climate Science) 2007). Potential emissions from development of lease parcels in Alternative B of this project represent approximately 0.00028 percent of the state-wide total of GHG emissions based on the 2005 state-wide inventory (CCS 2007).

The EPA (EPA 2010, as summarized in the Climate Change SIR 2010) published an inventory of U.S. GHG emissions, indicating gross U.S. emissions of 6,957 million metric tons and net emissions of 6,016 million metric tons (when CO_2 sinks were considered) of CO_2e in 2008. Potential annual emissions under Alternative B of this project would amount to approximately 0.00000015 percent of gross U.S. total emissions. Global GHG emissions for 2004 (Intergovernmental Panel on Climate Change [IPCC] 2007, summarized in the Climate Change SIR 2010) indicated approximately 49 gigatonnes (10^9 metric tons) of CO_2e emitted. Potential annual emissions under Alternative B would amount to approximately 0.000000021 percent of this global total.

As indicated in Section 4.1.1 above, although the effects of greenhouse gas emissions in the global aggregate are well-documented, it is currently not credibly possible to determine what specific effect GHG emissions resulting from a particular activity might have on climate or the environment. If exploration and development occur on the lease parcels considered under Alternative B, potential GHG emissions described above would incrementally contribute to the total volume of GHGs emitted to the atmosphere, and ultimately to climate change.

Mitigation measures identified in Section 4.1.2 above may be in place at the APD stage to reduce GHG emissions from potential oil and gas development on lease parcels within Alternative B. This is likely because many operators working in Montana, South Dakota, and North Dakota are

currently EPA Natural Gas STAR Program Partners, and future regulations may require GHG emission controls for a variety of industries, including the oil and gas industry (Climate Change SIR 2010).

4.17.2.2 Cumulative Impacts of Climate Change

As previously discussed in section 4.1.1, it is difficult to impossible to identify specific impacts of climate change on specific resources within the project area. As summarized in the Climate Change SIR (2010), climate change impacts can be predicted with much more certainty over global or continental scales. Existing models have difficulty reliably simulating and attributing observed temperature changes at small scales. On smaller scales, natural climate variability is relatively larger, making it harder to distinguish changes expected due to external forcings (such as contributions from local activities to GHGs). Uncertainties in local forcings and feedbacks also make it difficult to estimate the contribution of GHG increases to observed small-scale temperature changes (IPCC 2007b, as cited in the Climate Change SIR 2010). Effects of climate change on resources are described in Chapter 3 of this EA and in the Climate Change SIR (2010).

4.17.3 Cumulative Impacts on Other Resources

Soil Resources

Contamination of soil from drilling and production wastes and/or spills could cause a long-term reduction in site productivity. Some of these impacts can be reduced or avoided through proper design, construction, and maintenance and implementation of BMPs.

Given the need for site-specific locations, development techniques, and mitigation, a specific description of effects is not possible at this time.

Water Resources, Wetlands, Floodplains and Riparian Areas

Surface Water, Wetlands, Floodplains and Riparian Areas

The combination of the NSO stipulation along with standard leasing terms on an as-needed basis on ephemeral, intermittent, and perennial streams, along with BMPs, should mitigate impacts such as non-point source sediment input. Possible leaks from reserve and evaporation pits could degrade surface and ground water quality. These impacts can be reduced or avoided through proper project design, construction, and maintenance activities and implementation of BMPs.

Groundwater

As described above, some BMPs are available for use in the protection of groundwater including characterization of groundwater hydrology and monitoring wells, but new questions are being raised regarding hydraulic fracturing. As results of these studies become available, the new information will be included in analyzing cumulative impacts to groundwater.

Authorization of the proposed projects would require full compliance with BLM directives and stipulations that relate to surface and groundwater protection as well as EPA and Montana DEQ regulations and guidance, both existing and forthcoming. Given the need for site-specific locations, development techniques, and mitigation, a specific description of effects is not possible at this time.

Fish and Wildlife

The proposed MISTI powerline in conjunction with potential oil and gas development could have irreversible effects on greater sage-grouse in the area. Currently, telemetry data collected by DFO and Idaho Fish and Game Department confirmed that greater sage-grouse migration

occurs between MT and ID. These grouse also migrate across the I-15 Corridor to seasonal habitats. A combination of the MISTI powerline and a direct loss of habitat associated with oil and gas development in the same location could result in the loss of the Snowline lek and a significant decline in the Lima Reservoir leks; depending on the level of well development in the area and timing in conjunction with the proposed MISTI line.

Realty
Potential oil and gas development together with the possible future location of major utility lines in the designated multimodal utility corridor in parcels MTM 79010 7O and 7P (including the already proposed Mountain States Transmission Intertie 500 kV electric transmission line through 7P) could increase the likelihood of land use conflicts in these locations.

Cultural and Paleontological Resources
Long-term oil and gas exploration and extraction activities could compound the effects of vandalism of archaeological and paleontological materials due to increased visibility and easier access to such localities.

Social and Economic Resources
The cumulative effects of federal mineral leasing within the local economy, as well as the specific effects of leasing 6,995acres under Alternative B, are presented in the previous analysis. These effects are summarized in Tables 11 and 12. The total demographic and economic characteristics of the local economy would change very little with the economic activity associated with leasing 6,995acres of federal minerals.

5.0 CONSULTATION AND COORDINATION

5.1 Persons, Agencies, and Organizations Consulted

Table 14 lists persons, agencies, and organizations were consulted during development of this EA along with the findings and conclusions associated with consultations.

Table 14
List of individuals, agencies and organizations consulted regarding on this EA

Name	*Purpose & Authorities for Consultation or Coordination*	*Findings & Conclusions*
Carolyn Boyer Smith	Coordinator, Cultural Resource Program, Shoshone-Bannock Tribes Environmental Program	No comments received to date.
Yvette Tuell	Manager, Environmental Department, Shoshone-Bannock Tribes	No comments received to date.
John Murray	Tribal Historic Preservation Officer, Blackfeet Nation	No comments received to date.
Marcia Pablo	Tribal Historic Preservation Officer, Confederated Salish and Kootenai Tribes	No comments received to date.
Bob Brannon Craig Fager	Montana Department of Fish, Wildlife and Parks	Comments Received

5.2 Summary of Public Participation

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 Dillon Field Office website NEPA notification log. Scoping began May 25, 2010; however, scoping comments were received through June 21, 2010. Surface owner notification letters were also distributed which briefly explained 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 BLM sent 325 surface owner notification letters for the oil and gas leasing analysis process in the entire Montana/Dakotas BLM. Ten of those surface owner letters (about three percent) were geographically specific to the Dillon Field Office.

The BLM received a 14 written comment letters and 23 phone/verbal comments. The written and verbal communication resulted in a total of 108 individual scoping comments pertaining to oil and gas leasing in the Montana/Dakotas. Of the 108 scoping comments, none were from surface owners in the Dillon Field Office.

Of the 108 comments, about 20 were 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. Other

comments ranged from the need to address GHG emissions and cumulative impacts to climate change; concerns about impacts to wildlife and fisheries habitat and the fragmentation of wildlife corridors; and concerns related to wilderness, pristine landscapes and scenic viewsheds/quality. Other comments provided specific information pertaining to cultural areas, suggestions for mitigation measures from surface disturbance, and compliance with the NEPA process, including allowing for public comment, addressing a no leasing alternative and addressing direct, indirect, and cumulative impacts.

Table 15. 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, & Air; Riparian
Brian Thrift	Rangeland Management Specialist	Vegetation, TES plants, livestock grazing
Kelly Bockting	Wildlife Biologist	TES wildlife
Michael Mooney	Range Technician (IWM Program Manager)	Noxious weeds
Rick Waldrup	Outdoor Recreation Planner	Visual Resources, Recreation and Travel Management
Shannon Gilbert	Archaeologist	Cultural Resources, Paleontology, Native American Religious Concerns
Jeff Daugherty	Realty Specialist	Lands
Laurie Blinn	GIS Specialist	Maps and Data
Pat Fosse	Supervisory Natural Resource Specialist	Review
Joan Trent	Sociologist	Social Conditions
John Thompson	Planning & Environmental Specialist	Economic Conditions
Mike Philbin	Hydrologist	Air Quality
John Bown	Minerals Planner & Environmental Specialist	Oil and Gas
Tim LaMarr	Planning & Environmental Specialist	NEPA Review
Tim Bozorth	Field Manager	

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APPENDICES

APPENDIX A – LEASE PARCEL STIPLUATIONS

Parcel Number	Acres	Legal Description	Proposed Stipulations
MTM 79010 7U	763.41	T. 14 S, R. 6 W, PMM, MT Sec. 19 LOTS 1,2,3,4; 19 N2NE,E2W2,S2SE; 20 N2N2,S2SW,SWSE; Beaverhead County (001) PD	CSU 12-1 Sec. 20 NWNE; CSU 12-10 Sec. 19 LOTS 1,2,3,4; 19 N2NE,E2W2,S2SE; 20 N2N2,S2SW,SWSE; CSU 12-11 Sec. 19 LOTS 1,2,3,4; 19 N2NE,E2W2,S2SE; 20 N2N2,S2SW, SWSE; Cultural Resources 16-1 (All Lands) Lease Notice 14-5 (All Lands) Lease Notice 14-11 (All Lands) NSO 11-24 Sec. 19 N2NE,E2NW,NESW; TES 16-2 (All Lands) TL 13-13 Sec. 19 LOTS 1,2,3,4; 19 N2NE,E2W2,S2SE; 20 N2N2,S2SW,SWSE; TL 13-14 Sec. 19 LOTS 1,2,3,4; 19 N2NE,E2W2,S2SE; 20 N2N2,S2SW,SWSE;
MTM 79010 7T **MTM 79010 7T (continued)**	1918.28	T. 14 S, R. 6 W, PMM, MT Sec. 28 ALL; 29 ALL; 30 LOTS 1,2,3,4; 30 E2,E2W2; Beaverhead County (001) PD	CSU 12-1 Sec. 28 SENE,E2SE; 29 N2NE; CSU 12-10 Sec. 28 ALL; 29 ALL; 30 LOTS 1,2,3,4; 30 E2W2,E2; CSU 12-11 Sec. 28 ALL; 29 ALL; 30 LOTS 1,2,3,4; 30 E2W2,E2; Cultural Resources 16-1 (All Lands) Lease Notice 14-1 (All Lands) Lease Notice 14-5 (All Lands) Lease Notice 14-11 (All Lands) NSO 11-17

			Sec. 28 N2,SW; 29 E2,SENW,SW; 30 LOTS 1,2,3,4; 30 E2W2; NSO 11-24 Sec. 28 SESW,SE; TES 16-2 (All Lands) TL 13-6 Sec. 28 E2; TL 13-11 Sec. 28 N2,SW; 29 E2,SENW,SW; 30 LOTS 1,2,3,4; 30 E2W2; TL 13-13 Sec. 28 ALL; 29 ALL; 30 LOTS 1,2,3,4; 30 E2,E2W2; TL 13-14 Sec. 28 ALL; 29 ALL; 30 LOTS 1,2,3,4; 30 E2,E2W2;
MTM 79010 7R **MTM 79010 7R (continued)**	957.36	T. 14 S, R. 6 W, PMM, MT Sec. 31 LOTS 1,2; 31 NE,E2NW; 32 ALL; Beaverhead County (001) PD	CSU 12-9 Sec. 31 LOTS 1, 2; 31 NE, E2NW; 32 ALL; CSU 12-10 Sec. 31 LOTS 1,2; 31 NE,E2NW; 32 ALL; CSU 12-11 Sec. 31 LOTS 1,2; 31 NE,E2NW; 32 ALL; Cultural Resources 16-1 (All Lands) Lease Notice 14-1 (All Lands) Lease Notice 14-5 (All Lands) Lease Notice 14-11 (All Lands) NSO 11-2 Sec. 31 S2NW; 32 W2SW,NESW,SE; NSO 11-17 Sec. 32 N2; NSO 11-22 Sec. 32 E2SE; NSO 11-24 Sec. 32 SENE,E2SE; TES 16-2 (All Lands) TL 13-11 Sec. 32 N2;

			TL 13-13 Sec. 31 LOTS 1,2; 31 NE,E2NW; 32 ALL; TL 13-14 Sec. 31 LOTS 1,2; 31 NE,E2NW; 32 ALL;
MTM 79010 7S **MTM 79010 7S (continued)**	1600.00	T. 14 S, R. 6 W, PMM, MT Sec. 33 ALL; 34 ALL; 35 N2; Beaverhead County (001) PD	CSU 12-1 Sec. 33 N2NE,SWNE,S2NW; 34 NWNW; CSU 12-9 Sec. 33 ALL; 34 ALL; 35 N2; CSU 12-10 Sec. 33 ALL; 34 ALL; 35 N2; CSU 12-11 Sec. 33 ALL; 34 ALL; 35 N2; Cultural Resources 16-1 (All Lands) Lease Notice 14-1 (All Lands) Lease Notice 14-5 (All Lands) Lease Notice 14-11 (All Lands) NSO 11-2 Sec. 33 W2W2,NENW,SESW,E2SE; 34 W2W2,NENW,SESW; 35 N2NW; NSO 11-17 Sec. 33 NWNW; 34 E2E2; 35 N2; NSO 11-22 Sec. 33 W2SW; 34 NESE; 35 NWNE,S2N2; NSO 11-24 Sec. 33 ALL; 34 ALL; 35 NW,SWNE; TES 16-2 (All Lands) TL 13-6 Sec. 33 E2NE; 34 ALL; 35 N2; TL 13-11 Sec. 33 NWNW; 34 E2E2,W2SE; 35 N2;

MTM 79010 7S (continued)			TL 13-13 Sec. 33 N2,N2SW; 34 N2,E2SW,SE; 35 N2; TL 13-14 Sec. 33 ALL; 34 ALL; 35 N2;
MTM 79010 7Q	360.00	T. 15 S, R. 6 W, PMM, MT Sec. 3 SESW; 4 S2NE,SENW,W2W2,NESE; Beaverhead County (001) PD	CSU 12-9 Sec. 3 SESW; 4 S2NE, SENW, W2W2,NESE; CSU 12-10 Sec. 3 SESW; 4 S2NE,SENW,W2W2,NESE; CSU 12-11 Sec. 3 SESW; 4 S2NE,SENW,W2W2,NESE; Cultural Resources 16-1 (All Lands) NSO 11-2 Sec. 3 SESW; 4 SWNE,SENW; NSO 11-22 Sec. 4 NWNW; NSO 11-24 Sec. 3 SESW; 4 S2NE,SENW,W2W2,NESE; Lease Notice 14-5 (All Lands) Lease Notice 14-11 (All Lands) TES 16-2 (All Lands) TL 13-6 Sec. 3 SESW; TL 13-14 Sec. 3 SESW; 4 S2NE,SENW,W2W2,NESE;

MTM 79010 7P	995.03	T. 15 S, R. 6 W, PMM, MT Sec. 6 LOTS 2,3,4; 6 NENE,S2NE,SENW,E2SW; 7 LOTS 1,2,3,4; 7 E2,E2W2; Beaverhead County (001) PD	CSU 12-1 Sec. 6 NENE; 7 SESW,SESE; CSU 12-9 Sec. 6 LOTS 2,3,4; 6 NENE, S2NE, SENW,E2SW; 7 LOTS 1,2,3,4; 7 E2, E2W2; CSU 12-10 Sec. 6 LOTS 2,3,4; 6 NENE,S2NE,SENW,E2SW; 7 LOTS 1,2,3,4; 7 E2,E2W2; CSU 12-11 Sec. 6 LOTS 2,3,4; 6 NENE,S2NE,SENW,E2SW;

MTM 79010 7P (continued)			7 LOTS 1,2,3,4; 7 E2,E2W2; Cultural Resources 16-1 (All Lands) Lease Notice 14-5 (All Lands) Lease Notice 14-11 (All Lands) NSO 11-2 Sec. 6 SWNE,SESW; 7 LOTS 1,2,3; 7 NENW,NESW,W2SE; NSO 11-17 Sec. 6 LOT 4; 6 SESW; 7 LOTS 1,2,3,4; 7 SENE,W2E2,E2W2,NESE; NSO 11-22 Sec. 7 LOT 4; TES 16-2 (All Lands) TL 13-6 Sec. 6 LOTS 2,3,4; 6 SESW; 7 LOTS 1,2,3,4; 7 E2W2; TL 13-11 Sec. 6 LOT 4; 6 SESW; 7 LOTS 1,2,3,4; 7 SENE,W2E2,E2W2,NESE; TL 13-13 Sec. 6 LOTS 2,3,4; 6 SENW,E2SW; 7 LOTS 1,2,3,4; 7 E2,E2W2; TL 13-14 Sec. 6 LOTS 2,3,4; 6 NENE,S2NE,SENW,E2SW; 7 LOTS 1,2,3,4; 7 E2,E2W2;
MTM 79010 7O	400.63	T. 14 S, R. 7 W, PMM, MT Sec. 33 E2E2; 34 E2NW; T. 15 S, R. 7 W, PMM, MT Sec. 6 LOT 7; 6 SESW,S2SE; Beaverhead County (001) PD	CSU 12-1 T. 15 S, R. 7 W, PMM, MT Sec. 6 LOT 7; 6 SESW; CSU 12-9 T. 14 S, R. 7 W, PMM, MT Sec. 33 E2E2; 34 E2NW; T. 15 S, R. 7 W, PMM, MT Sec. 6 LOT 7; 6 SESW, S2SE; CSU 12-10 T. 14 S, R. 7 W, PMM, MT Sec. 33 E2E2; 34 E2NW;

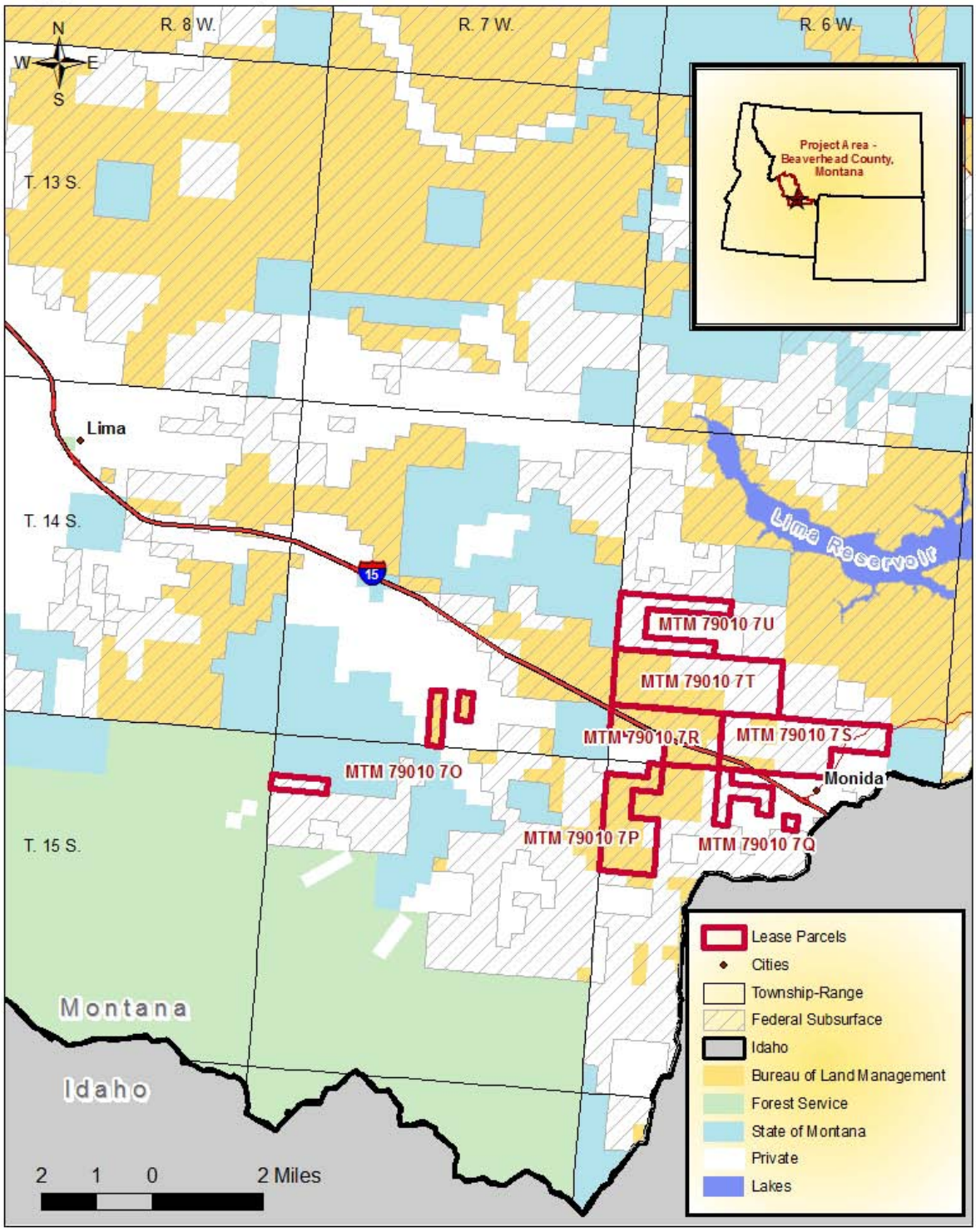
MTM 79010 7O (continued)			T. 15 S, R. 7 W, PMM, MT Sec. 6 LOT 7; 6 SESW,S2SE; Cultural Resources 16-1 (All Lands) Lease Notice 14-5 (All Lands) Lease Notice 14-11 (All Lands) NSO 11-2 T. 14 S, R. 7 W, PMM, MT Sec. 33 E2NE; 34 E2NW; T. 15 S, R. 7 W, PMM, MT Sec. 6 LOT 7; 6 SESW,SWSE; NSO 11-22 T. 14 S, R. 7 W, PMM, MT Sec. 33 E2NE,NESE; TES 16-2 (All Lands) TL 13-6 T. 14 S, R. 7 W, PMM, MT Sec. 33 E2E2; 34 E2NW; T. 15 S, R. 7 W, PMM, MT Sec. 6 SESW,S2SE; TL 13-7 T. 15 S, R. 7 W, PMM, MT Sec. 6 LOT 7; 6 SESW,S2SE; TL 13-14 T. 14 S, R. 7 W, PMM, MT Sec. 33 E2SE;

Stipulation Number	Stipulation Name/Brief Description
CSU 12-1	**CONTROLLED SURFACE USE STIPULATION** Prior to surface disturbance on slopes over 30 percent, an engineering/reclamation plan must be approved by the authorized officer.
CSU 12-9	**CONTROLLED SURFACE USE STIPULATION** A paleontological survey will be required prior to any ground disturbance in order to protect significant vertebrate fossils and paleontological locales.
CSU 12-10	**CONTROLLED SURFACE USE STIPULATION** All surface disturbing activities and construction of semi-permanent and permanent facilities in 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.
CSU 12-11	**CONTROLLED SURFACE USE STIPULATION** 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.
CSU 12-13	**CONTROLLED SURFACE USE STIPULATION** 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.
Cultural Resources 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.
Lease Notice 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 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. The rights acquired, reserved, or withdrawn by BLM for specified purposes include non-oil and gas leases, conservation easements, archeological easements, road easements, fence easements, and administrative site withdrawals. The existence of such land use authorizations shall not preclude the leasing of the oil and gas. The locations of land use authorizations are noted on the oil and gas plats and in LR2000. The plats are a visual source noting location; LR2000 provides location by legal description through the Geographic Cross Reference program.

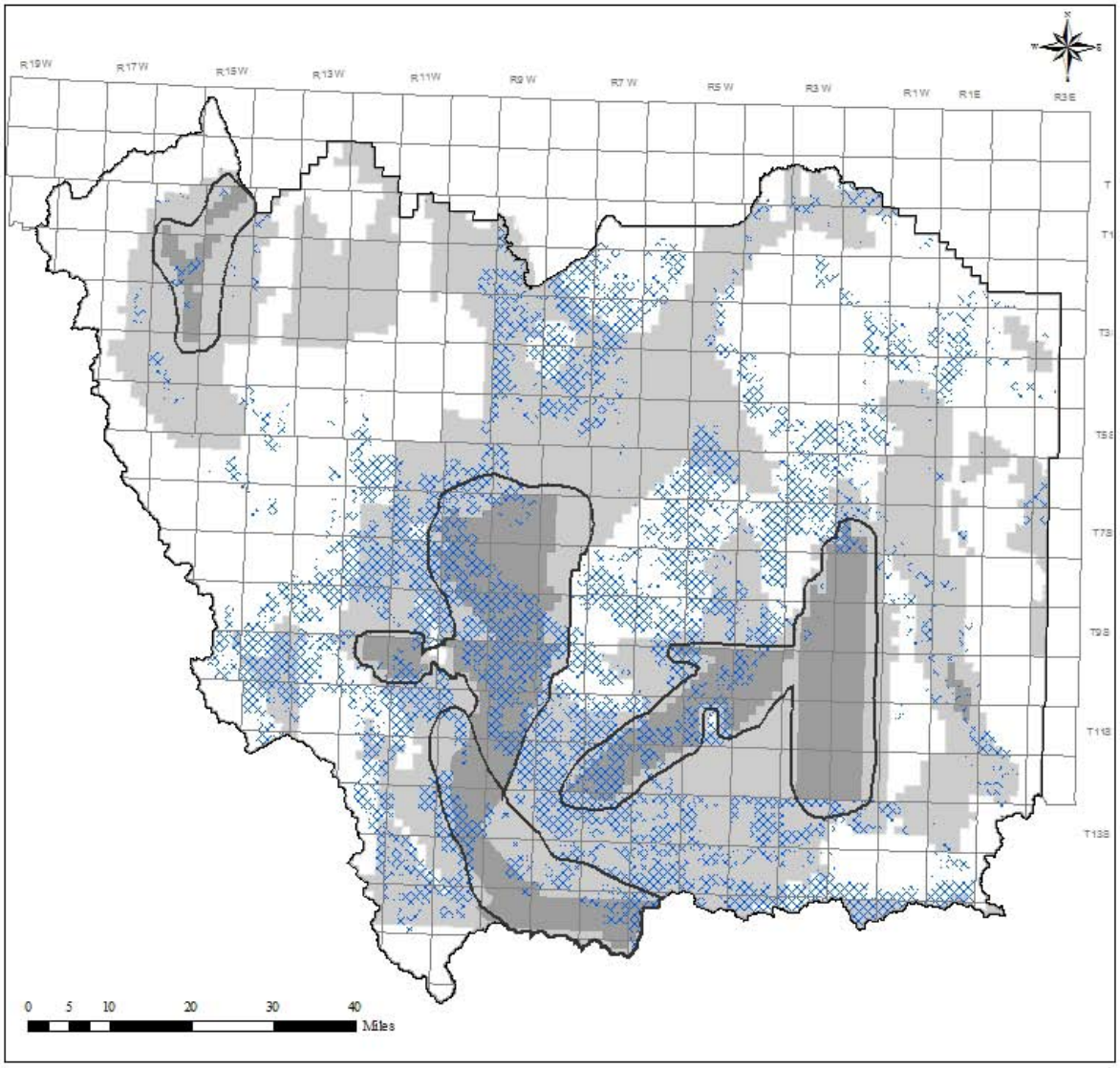
	The specifically authorized acreage for land use should be avoided by oil and gas exploration and development activities. All authorized surface land uses are valid claims to prior existing rights unless the authorization states otherwise.
Lease Notice 14-5	**LEASE NOTICE CULTURAL RESOURCES** An inventory of the lease lands may be required prior to surface disturbance to determine if cultural resources are present and to identify needed mitigation measures.
Lease Notice 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 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.
NSO 11-2	**NO SURFACE OCCUPANCY STIPULATION** Surface occupancy and use is prohibited within riparian areas, 100-year flood plains of major rivers, and on water bodies and streams.
NSO 11-17	**NO SURFACE OCCUPANCY STIPULATION** Surface occupancy and use is prohibited within one-half mile of Ferruginous Hawk nest sites.
NSO 11-22	**NO SURFACE OCCUPANCY STIPULATION** Surface occupancy and use is prohibited within, and for a distance of 300 feet from the boundaries of cultural properties and archaeological/historic districts determined to be eligible or 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. Defined archaeological districts include: Everson Creek/Black Canyon Quarry Complex; Muddy Creek Archaeological District; Lower Beartrap Canyon Archaeological District; and Beaverhead Rock.
NSO 11-24	**NO SURFACE OCCUPANCY STIPULATION** Surface occupancy and use is prohibited within one-quarter mile of special status plants or populations.
TES 16-2	**ENDANGERED SPECIES ACT SECTION 7 CONSULTATION STIPULATION** 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 13-6	**TIMING LIMITATION STIPULATION** Surface use is prohibited in nesting and early brood-rearing habitat (defined as within three miles of leks). March 1 through June 30
TL 13-7	**TIMING LIMITATION STIPULATION** Surface use is prohibited within big game winter/spring range for wildlife. December 1 through May 15
TL 13-11	**TIMING LIMITATION STIPULATION** Surface use is prohibited within one-half mile of raptor nest sites which have been active within the past five years during the following time period. March 1 through July 31
TL 13-13	**TIMING LIMITATION STIPULATION**

	Surface use is prohibited within one mile of Ferruginous Hawk nest sites that have been active within the past five years during the following time period: March 1 through August 31
TL 13-14	**TIMING LIMITATION STIPULATION** Surface use is prohibited within winter and spring range for sage grouse during the following time period: December 1 through May 15

Appendix B - Map 1 - Dillon Field Office 2010 Oil and Gas Leases



Appendix B - Map 2 - Oil and Gas Development Potential and Forecast Areas



Legend

- Forecast Areas
- Dillon Field Office
- Public Land Survey
- Federal Mineral Estate
- Very Low Development Potential
- Low Development Potential
- Moderate Development Potential

Federal minerals include those being planned for in the Dillon RMP and do not include mineral interests within National Forest Lands. Map shows development potential based on geologic and industry information. Areas where exploration is forecast are based on leasing history, economic outlook, and other factors.

(Map 83, Dillon Resource Management Plan Draft EIS, March, 2004)

APPENDIX C:
Biological Evaluation for Special Status Fish, Wildlife, and Plant Species
BLM DILLON FIELD OFFICE

Biological Evaluation for Special Status Fish and Wildlife Species

Form Revised May 2009 - Updated May 2010

Project: Oil and Gas Leasing: DOI-BLM-MT-B050-2010-17-EA

Step 1a. List of all Special Status Species that are known or suspected to occur on the DFO.	Step 1b. Current Management Status of the Species.	Step 1c. Does the species occur on this portion of the Field Office?	Step 2 Is the species or its habitat found in the surrounding area?	Step 3. Could this proposal have any effect?	Step 4. Are Irreversible or Irretrievable Resources involved?	Step 5. Alt A level of effect
Canada Lynx (L*ynx canadensis*)	Threatened	NO	YES	NO		
Grizzly Bear (*Ursus arctos horribilus*)	Threatened	NO	YES	NO		
Mammals						
Fisher (*Martes pennanti*)	Sensitive	NO	YES	NO		
Fringed myotis (*Myotis thysanodes)*	Sensitive	NO	YES	NO		
Gray Wolf *(Canis lupus*)	Sensitive	YES	YES	NO		
Great Basin pocket mouse *(Perognathus parvus)*	Sensitive	YES	YES	YES	NO	NI
Long-eared Myotis *(Myotis evotis)*	Sensitive	NO	YES	NO		
Long-legged Myotis *(Myotis volans)*	Sensitive	NO	YES	NO		
North American Wolverine (*Gulo gulo luscus*)	Sensitive	NO	YES	NO		
Pygmy Rabbit (*Brachylagus idahoensis*)	Sensitive	YES	YES	YES	NO	NI
Townsend's Big-eared Bat *(Plecotus townsedii)*	Sensitive	NO	NO			

Birds						
Bald Eagle (*Haliaeetus leucocephalus*)	Sensitive	NO	YES	NO		
Black Tern *(Chlidonias niger*)	Sensitive	NO	YES	NO		

(cont.) List of all Special Status Species that are known or suspected to occur on the DFO.	Current Management Status of the Species.	Does the species occur on this portion of the Field Office?	Is the species or its habitat found in the surrounding area?	Could this proposal have any effect?	Are Irreversible or Irretrievable Resources involved?	Alt A level of effect

Black-backed Woodpecker *(Picoides arcticus)*	Sensitive	NO	YES	NO		
Black-crowned Night Heron *(Nycticorax nycticorax)*	Sensitive	NO	YES	NO		
Bobolink *(Dolichonyx orysivorus)*	Sensitive	NO	NO			
Brewer's sparrow *(Spizella breweri)*	Sensitive	YES	YES	YES	NO	NI
Burrowing Owl (*Athene cunicularia*)	Sensitive	NO	NO			
Common Loon (*Gavia immer*)	Sensitive	NO	YES	NO		
Ferruginous Hawk (*Buteo regalis*)	Sensitive	YES	YES	YES	NO	NI
Flammulated Owl (*Otus flammeolus*)	Sensitive	NO	NO			
Franklin's Gull *(Larus pipixcan)*	Sensitive	NO	YES	NO		
Golden Eagle *(Aquila chrysaetos)*	Sensitive	YES	YES	NO		
Great Gray Owl (*Strix nebulosa*)	Senstive	NO	YES	NO		
Greater Sage Grouse (*Centrocercus urophasianus*)	Sensitive (Candidate)	YES	YES	YES	NO	NI
Harlequin Duck (*Histrionicus histrionicus)*	Sensitive	NO	NO			
Loggerhead Shrike (*Lanius ludovicianus*)	Sensitive	YES	YES	YES	NO	NI
Long-billed Curlew (*Numenius americanus)*	Sensitive	NO	YES	NO		
Marbled Godwit *(Limosa fedoa)*	Sensitive	NO	YES	NO		
McCown's longspur *(Calcarius mccownii)*	Sensitive	YES	YES	YES	NO	NI
Northern Goshawk *(Accipiter gentilis)*	Sensitive	NO	YES	NO		
(cont.) List of all Special Status Species that are known or suspected to occur on the DFO.	**Current Management Status of the Species.**	**Does the species occur on this portion of the Field Office?**	**Is the species or its habitat found in the surrounding area?**	**Could this proposal have any effect?**	**Are Irreversible or Irretrievable Resources involved?**	**Alt A level of effect**
Peregrine Falcon (*Falco peregrinus anatum*)	Sensitive	NO	YES	NO		
Sage Sparrow (*Amphispiza belli*)	Sensitive	YES	YES	YES	NO	NI
Sage Thrasher *(Oreoscoptes montanus)*	Sensitive	YES	YES	YES	NO	NI
Sedge Wren *(Cistothorus platensis)*	Sensitive	NO	NO			
Swainson's Hawk (*Buteo swainsoni*)	Sensitive	YES	YES	YES	NO	NI
Three-toed Woodpecker (*Picoides tridactylus*)	Sensitive	NO	NO			
Trumpeter Swan (*Cygnus buccinator*)	Sensitive	NO	YES	NO		

White-faced Ibis (*Plegadis chihi*)	Sensitive	NO	YES	NO		
Amphibian/reptiles						
Boreal/Western toad *(Bufo boreas)*	Sensitive	NO	YES	NO		
Plains Spadefoot (*Spea bombifrons)*	Sensitive	NO	NO			
Northern leopard frog *(Rana pipiens)*	Sensitive	NO	YES	NO		
Fish						
Westslope cutthroat trout *(Onchorhynchus clarkii lewisi)*	Sensitive	NO	NO			
Fluvial arctic grayling (*Thymallus arcticus*)	Sensitive	NO	NO			

Step 2. If "YES" go to Step 3. "NO" indicates this species does not occur in the project area or that the project would have no bearing on its potential habitat. These species were removed from detailed analysis after review of existing and potential habitats and consideration of distribution records.

Step 3. If "YES" completion of Steps 4 and 5 required. If "NO" then completion of Steps 4 and 5 are not required.
Step 4. Irreversible or Irretrievable Resources involved? Yes or No
Step 5. Level of effect abbreviations listed below.

Step 6. Are there any specific recommendations to avoid significant effects (if any)? These are mitigation measures needed to avoid determinations of: LAA, LJ, WIFV. If so, state the location of the narrative describing these recommendations:

Step 7. Documentation: This short form is intended to follow a seven-step process to provide basic biological evaluations. Judgments must not be arbitrary but should be reasoned. This form provides a "road map" of that reasoning and assumes the judgments are drawn from numerous sources. Any species-specific impacts should be discussed in the NEPA document **OR** attached to this document as a Narrative of Potential Impacts.

The signature below certifies that:

1. The wildlife biologist has reviewed the proposed action and its alternatives, but may or may not have provided input to alternative design, depending on the issues.

2. The wildlife biologist has an understanding of the specific conditions found in the affected area. Column 1a lists all possible Special Status Species in the Dillon Field Office. Column 1b identifies the species' current management status. Column 1c indicates whether there are occurrence records for the species in the analysis area. Step 2 is satisfied by field visits (or enough knowledge of local conditions from previous visits) resulting in enough information to determine if the area is suitable or potential habitat for species listed in Step 1. Extensive surveys may not be necessary if a conservative approach is taken.

3. The wildlife biologist has an understanding of the species habitat needs and other attributes important to the determination. This can be a combination of literature review, professional experience, and consultation with others.

4. The wildlife biologist has assimilated the above information in making the "determinations" (i.e. final judgments about the scientific significance of the effects).

Signed___/s/ Kelly Bockting_____**Date**__7-19-2010___ **Signed**___**/s/**_ Paul Hutchinson____**Date**_7-20-2010__

Printed Name and Title:__Kelly Bockting, Wildlife Biologist_____ Paul Hutchinson, Fisheries Biologist_____

Definitions of Abbreviations for the Short Form

FEDERALLY LISTED SPECIES
NE - No Effect
***LAA** - May Effect - Likely to Adversely Affect (formal consultation required)
NLAA - May Effect, Not Likely to Adversely Affect (informal consultation - concurrence with determination - required)
BE - Beneficial Effect (informal consultation - concurrence with determination - required)
SPECIES PROPOSED FOR LISTING

NE - No Effect
NLJ - Not likely to Jeopardize the continued existence of the species or result in the destruction or adverse modification of proposed critical habitat
***LJ** - Likely to Jeopardize the continued existence of the species or result in the destruction or adverse modification of proposed critical habitat

SENSITIVE SPECIES
NI - No Impact
MIIH - May Impact Individuals or Habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

***WIFV** - Will Impact Individuals or habitat with a consequence that the action may contribute to the need for federal listing or cause a loss of viability to the population or species.

BI - Beneficial Impact

* triggers formal consultation process

NARRATIVE of POTENTIAL IMPACTS

No ground disturbing activity is proposed during leasing until an Application for Permit to Drill (APD) is submitted. The stipulations were reviewed and lease notices are attached to the EA to mitigate impacts to wildlife. The lease parcels are heavily stipulated with 82% having NSO and 18% of the parcels having timing limitations for the drilling process. Generalized impacts to Special status species is disclosed in the EA and further analysis is required if an APD is submitted.

Biological Evaluation for
Special Status Plants Found on or Near the
Dillon Field Office 2010 Monida Oil and Gas Leases
DOI-BLM-MT-B050-2010-17-EA

Prepared by
Brian Thrift, Rangeland Management Specialist
July 2010

None of the plants currently listed as endangered or threatened under the Endangered Species Act are known from BLM lands in the Dillon Field Office. However, Ute ladies' tresses, which is listed as threatened in Montana, is known from private and state lands in Beaverhead, Madison, Gallatin, and Jefferson counties. Fifty-four sensitive plant species inhabit BLM-administered lands within the Dillon Field Office. Eight of those species are known to occur on or near the proposed lease parcels. Two other plant species, Hooker's balsamroot and quill fleabane, are not BLM sensitive species, but are listed as species of concern within Montana. The potential effects that the various alternatives may have on these species are summarized in the following table. A detailed discussion of predicted effects and potential impacts to special status plant species and their habitat is provided in Section 4.5 Special Status Species.

Definitions of Abbreviations used in the Table.

NI - No Impact

BI - Beneficial impact to populations or habitat

MIIH - May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

*** WIFV** - Will impact individuals or habitat with a consequence that the action may contribute to a trend toward federal listing or cause a loss of viability to the population or species.

***** Consultation with the U.S. Fish and Wildlife Service will be initiated if an alternative is selected that may contribute to a loss of viability to a population of species reviewed in this evaluation.

Biological Evaluation Summary of Special Status Plants for the Dillon Field Office 2010 Monida Oil and Gas Leases Environmental Assessment (DOI-BLM-MT-B050-2010-17-EA)

Common Name *Genus species*	Is the species known to occur on Public Lands within the proposed leasees?	Is the species or its habitat found in the Cumulative Impact Area?	Are irreversible or irretrievable resources involved?	What effect could this proposal have?	
				Alt. A	Alt. B
Ute Ladies' Tresses *Spiranthes diluvialis*	NO	NO	--	--	--
Cusick's Horse-mint *Agastache cusickii*	NO	NO	--	--	--
Western snakeroot *Ageratina occidentalis*	NO	NO	--	--	--
Tapertip onion *Allium acuminatum*	NO	NO	--	--	--
Sitka Columbine *Aquilegia formosa*	NO	NO	--	--	--
Sapphire Rockcress *Arabis fecunda*	NO	NO	--	--	--
Painted Milkvetch *Astragalus ceramicus var. apus*	NO	NO	--	--	--
Lesser Rushy Milkvetch *Astragalus convallarius var. convallarius = A. junciformis*	NO	NO	--	--	--
Bitterroot Milkvetch *Astragalus scaphoides*	NO	NO	--	--	--
Railhead Milkvetch *Astragalus terminalis*	NO	NO	--	--	--
Large-leafed Balsamroot *Balsamorhiza macrophylla*	NO	NO	--	--	--
Red Sage *Bassia americana*	NO	NO	--	--	--
Mojave brickellbush *Brickellia oblongifolia*	NO	NO	--	--	--
Idaho Sedge *Carex idahoa*	NO	YES	NO	NI	MIIH
Lesser Indian paintbrush *Castilleja minor* ssp. *minor*	NO	NO	--	--	--
Fendler Cat's-eye *Cryptantha fendleri*	NO	NO	--	--	--
Beavertip Draba *Draba globosa*	NO	NO	--	--	--
Wind River Draba *Draba ventosa*	NO	NO	--	--	--
Beaked spikerush *Eleocharis rostellata*	NO	NO	--	--	--
Long-sheath waterweed *Elodea bifoliata*	NO	NO	--	--	--
Idaho Fleabane *Erigeron asperugineus*	NO	NO	--	--	--

Common Name *Genus species*	Is the species known to occur on Public Lands within the proposed leasees?	Is the species or its habitat found in the Cumulative Impact Area?	Are irreversible or irretrievable resources involved?	What effect could this proposal have?	
				Alt. A	Alt. B
Linearleaf Fleabane *Erigeron linearis*	NO	NO	--	--	--
Buff Fleabane *Erigeron parryi*	NO	NO	--	--	--
Mat Buckwheat *Eriogonum caespitosum*	NO	NO	--	--	--
Railroad Canyon Wild Buckwheat *Eriogonum soliceps*	YES	YES	NO	NI	MIIH
Hiker's gentian *Gentianopsis simplex*	NO	NO	--	--	--
Many-flowered Viguirea *Heliomeris multiflora var. multiflora*	NO	NO	--	--	--
Prostrate Hutchensia *Hornungia procumbens*	NO	NO	--	--	--
Ballhead Ipomopsis *Ipomopsis congesta ssp. crebrifolia*	NO	YES	NO	NI	MIIH
Simple Bog Sedge *Kobresia simpliciuscula*	NO	NO	--	--	--
Beautiful Bladderpod *Lesquerella pulchella*	NO	NO	--	--	--
Sand Wildrye *Leymus flavescens*	NO	NO	--	--	--
Taper-tip Desert-parsley *Lomatium attenuatum*	NO	NO	--	--	--
Marsh Felwort *Lomatogonium rotatum*	NO	NO	--	--	--
Dwarf purple monkeyflower *Mimulus nanus*	NO	NO	--	--	--
Primrose monkeyflower *Mimulus primuloides*	NO	NO	--	--	--
Low northern – rockcress *Neotorularia humilis*	NO	NO	--	--	--
Meadow pennycress *Noccaea parviflora*	NO	NO	--	--	--
Meadow Lousewort *Pedicularis crenulata*	NO	NO	--	--	--
Lemhi Beardtongue *Penstemon lemhiensis*	NO	NO	--	--	--
Whipple's Beardtongue *Penstemon whippleanus*	NO	NO	--	--	--
Hoary Phacelia *Phacelia incana*	NO	NO	--	--	--

Common Name *Genus species*	Is the species known to occur on Public Lands within the proposed leasees?	Is the species or its habitat found in the Cumulative Impact Area?	Are irreversible or irretrievable resources involved?	What effect could this proposal have?	
				Alt. A	Alt. B
Slender-branched Popcorn Flower *Plagiobothrys leptocladus*	NO	NO	--	--	--
Spiny skeletonweed *Pleiacanthus spinosus*	NO	NO	--	--	--
Platte Cinquefoil *Potentilla plattensis*	NO	YES	NO	NI	MIIH
Alkali Primrose *Primula alcalina*	NO	YES	NO	NI	MIIH
Mealy Primrose *Primula incana*	NO	YES	NO	NI	MIIH
James Stitchwort *Pseudostellaria jamesiana*	NO	NO	--	--	--
Lemmon's Alkaligrass *Puccinellia lemmonii*	NO	NO	--	--	--
White-stemmed Globe-mallow *Sphaeralcea munroana*	NO	YES	NO	NI	MIIH
Silver Chicken Sage *Sphaeromeria argentea*	NO	NO	--	--	--
Rocky Mountain Dandelion *Taraxacum eriophorum*	NO	NO	--	--	--
Alpine Meadowrue *Thalictrum alpinum*	NO	YES	NO	NI	MIIH
Slender Thelypody *Thelypodium sagittatum*	NO	NO	--	--	--
Showy Townsendia *Townsendia florifera*	NO	NO	--	--	--
Hooker's Balsamroot *Balsamorhiza hookeri*	NO	YES	NO	NI	MIIH
Quill Fleabane *Erigeron gracilis*	NO	YES	NO	NI	MIIH

Cumulative Considerations:
High probability habitats will be surveyed for sensitive plants prior to any ground disturbing activities, which will reduce or mitigate impacts to sensitive plant species. Direct and indirect impacts to sensitive plants, resulting from recreation, livestock grazing, and other human-caused activities, may still occur across all ownerships. The invasion of introduced species and noxious weeds near and into special plant species habitat across all ownerships poses a direct threat to these plants through competition, habitat degradation and the potential impact of herbicides. The use of insecticides to control grasshoppers or other insects on private lands may affect pollinators that visit sensitive plant species on BLM lands.

/s/ Brian Thrift — 7-19-2010
Signature — Date

Printed Name and Title: Brian Thrift, Rangeland Management Specialist

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