

United States Department of the Interior
Bureau of Land Management

Environmental Assessment DOI-BLM-EA-MT-M010-2011-0028

~~May 09, 2011~~ July 13, 2011

Project Title: Oil and Gas Lease Parcel Sale,
October 18, 2011

Location: Malta Field Office

See attached Appendix A for lists of lease parcels by number and legal description by Alternative, and for Maps of the parcels.

The majority of the parcels include all or most of the Federal minerals in T33-34N and Range 26-29E north of Dodson and Wagner in central Phillips County, Montana. The remaining parcels are small tracts of river bed beneath the Milk River in State of Montana sections in the “Big Bend of the Milk” area north of Malta. The river bed parcels are located within the Bowdoin Natural Gas Project Area.





In Reply Refer To:

1600/3100 (MTM010)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Malta Field Office
501 South 2nd Street East
Malta, Montana 59538-0047
www.blm.gov/mt



July 20, 2011

Dear Reader:

The Bureau of Land Management (BLM) Malta Field Office has prepared an environmental assessment (EA) to analyze the potential effects from offering and issuing 25 nominated lease parcels of federal minerals for oil and gas leasing in a sale tentatively scheduled to occur on October 18, 2011.

The EA with an unsigned Finding of No Significant Impact (FONSI) is available for a 30-day public comment period. Written comments must be postmarked by June 14, 2011, to be considered. Comments may be submitted using one of the following methods:

Email: MT_Malta_FO_Lease_EA@blm.gov

Mail: Malta Field Office
Attn: Fritz Prellwitz
501 South 2nd Street East
Malta, Montana 59538-0047

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 will be updated as needed. Based on our analysis, parcels recommended for leasing in our assessment would be included as part of a competitive oil and gas lease sale tentatively scheduled to occur on October 18, 2011.

Prior to issuance of any leases, the Decision Record and FONSI will be finalized and posted for public review on our BLM website. Please refer to the Montana/Dakotas BLM website at 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 EAs, Lease Sale Notices, and corresponding information can be found on the link titled "Oil and Gas Lease Sale Information." Once there, click on 2011 and search for the October 18, 2011 lease sale to review the MaFO EA and the parcel list with recommended stipulations.

If you have any questions, or would like more information about the issuance of the updated EA, Decision Record and FONSI, please contact us at 406-654-5100.

Sincerely,

A handwritten signature in cursive script that reads "Richard E. Adams".

Richard E. Adams
Field Office Manager

**Malta Field Office Oil and Gas Lease Sale EA
DOI-BLM-EA-MT-M010-2011-0028**

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Malta Field Office Oil and Gas Lease Sale EA DOI-BLM-EA –MT-M010-2011-0028

1.0 PURPOSE AND NEED

1.1 Introduction

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

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

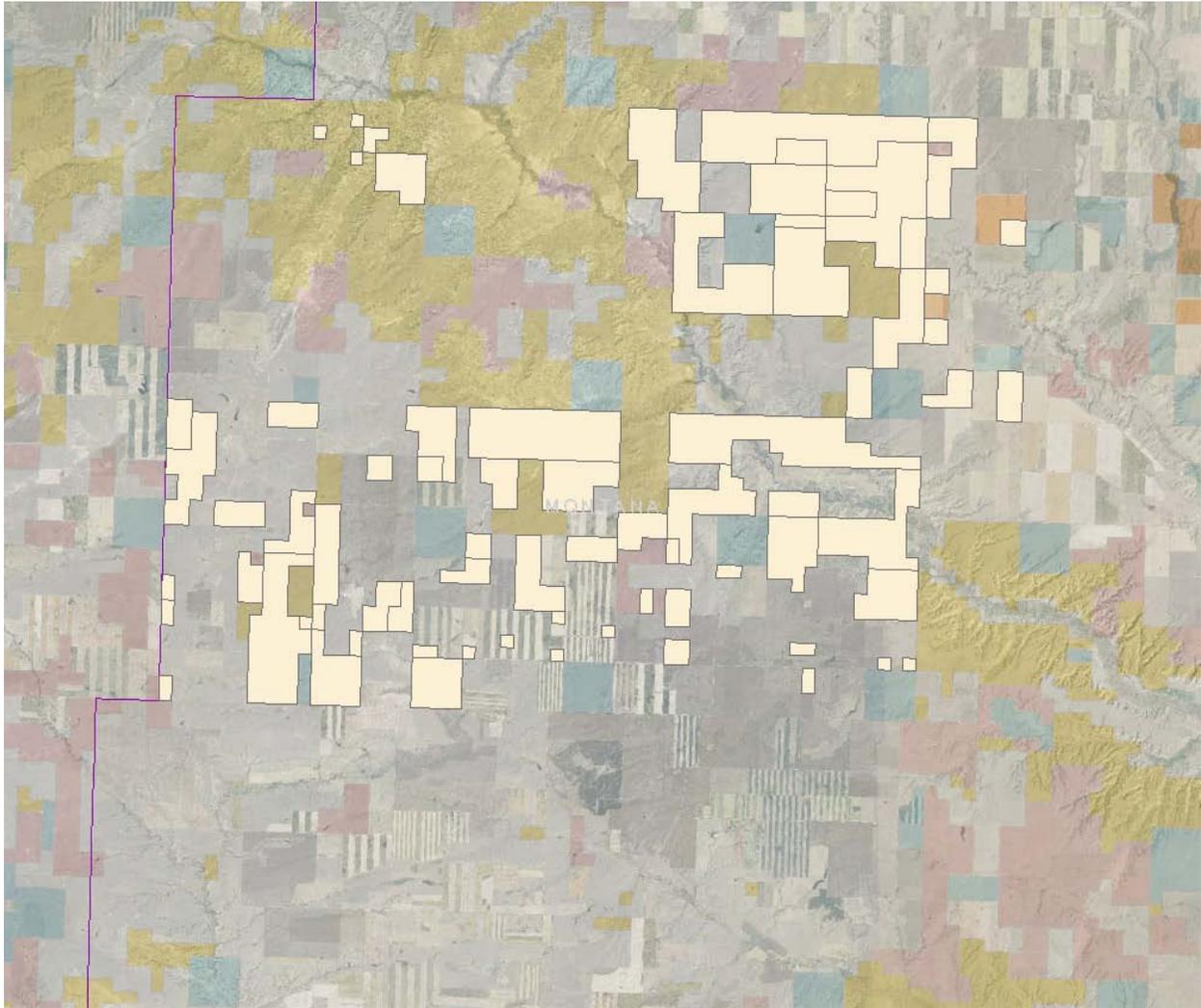
This environmental assessment (EA) has been prepared to disclose and analyze the potential environmental consequences from leasing all 25 nominated lease parcels located in the Malta Field Office (MaFO), to be included as part of a competitive oil and gas lease sale tentatively scheduled to occur in October 2011 (Maps 1 and 2).

1.2 Purpose and Need for the Proposed Action

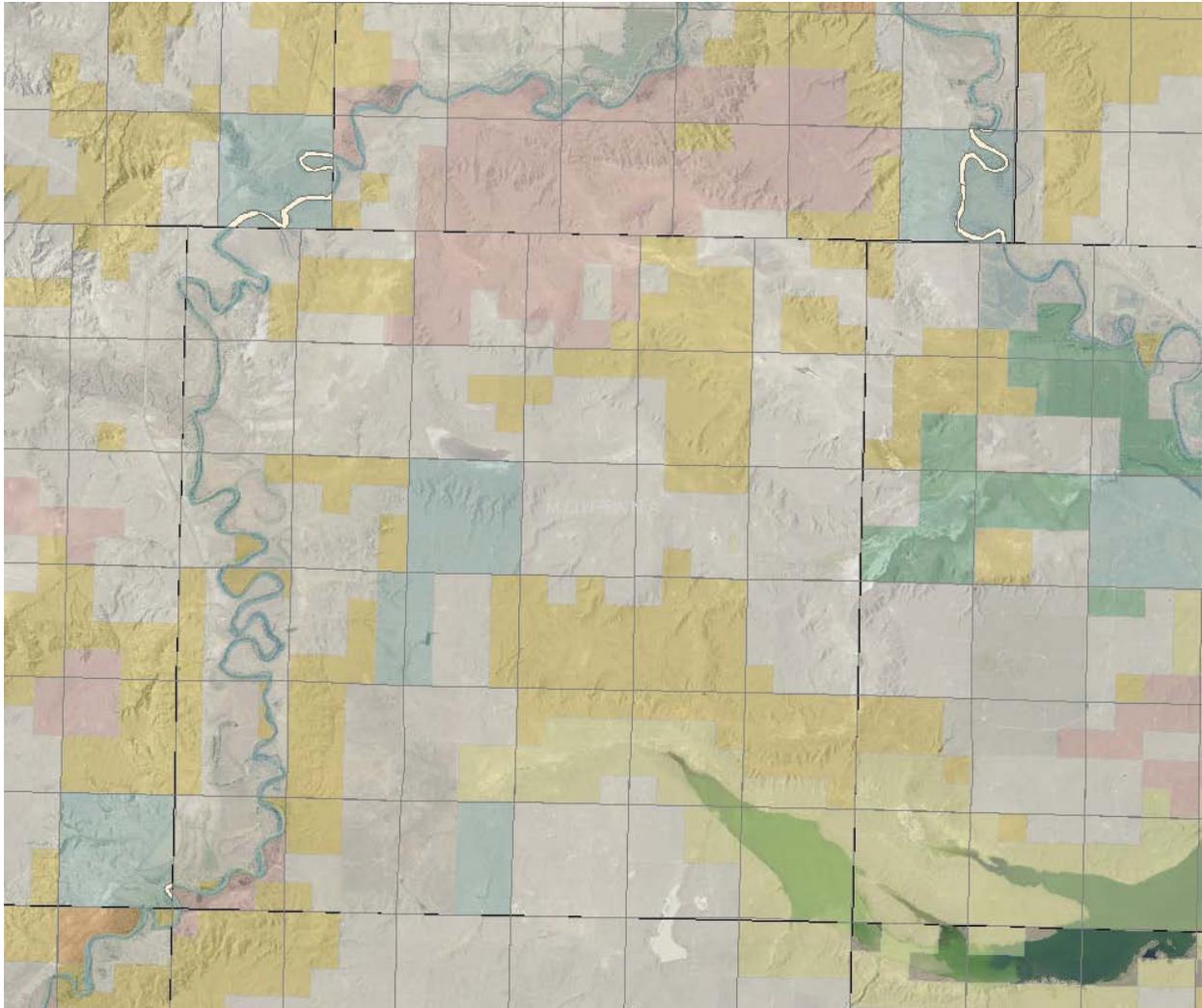
The purpose of offering parcels for competitive oil and gas leasing is to provide opportunities for private individuals or companies to explore for and develop federal oil and gas resources after receipt of necessary approvals and to sell the oil and gas in public markets.

This action is needed to help meet the energy needs of the people of the United States. By conducting lease sales, the BLM provides for the potential increase of energy reserves for the U.S., a steady source of income, and at the same time meets the requirement identified in the Energy Policy Act, Sec. 362(2), Federal Oil and Gas Leasing Reform Act of 1987, and the Mineral Leasing Act of 1920, Sec. 17.

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



Map 1—Lease parcel locations north of Dodson and Wagner in North Phillips County in T33-34N and R26-29E. See Appendix A for detailed maps.



Map 2—Lease parcel locations in Milk River channels in Section 36 of T32N, R30E; T33N, R30E; and T33N, R31E, in North Phillips County. Parcels would be leased in Alternatives B & C. See Appendix A for detailed maps.

1.3 Conformance with Land Use Plan(s)

This EA is tiered to and conforms to the information and analysis contained in the Phillips Management Framework Plan (MFP) (1977) and the Oil & Gas Environmental Assessment of the BLM Leasing Program – Lewistown District (September 1981). Although the Judith-Valley-Phillips (JVP) Resource Management Plan (RMP), as amended, was approved in 1994, to guide management of all resources within the planning area, it did not make specific decisions relative to leasing of fluid minerals due to a protest on the 1992 Final RMP. The leasing of nominated parcels not requiring special wildlife stipulations has continued in the planning area through reliance on the leasing decisions made in previous land use plans and programmatic analyses.

The parcels to be offered are within areas open to oil and gas leasing. Analysis of the 25 parcels is documented in this EA, and was conducted by Malta Field Office, HiLine District, and Montana State Office resource specialists who relied on professional knowledge of the areas involved, review of current databases and file information, and site visits to ensure that appropriate stipulations were recommended for a specific parcel. Analysis may have also identified the need to defer entire or partial parcels from leasing pending further environmental review in the HiLine District RMP that is currently being written.

At the time of this review it is unknown whether a particular parcel will be sold and a lease issued. It is unknown when, where, or if future well sites, roads, and facilities might be proposed. Assessment of potential activities and impacts was based on potential well densities discerned from the Reasonably Foreseeable Development (RFD) Scenario developed for the Malta Field Office. Detailed site-specific analysis and mitigation of activities associated with any particular lease would occur when a lease holder submits an application for permit to drill (APD). A more complete description of mitigation, BMPs, and conditions of approval related to oil and gas lease activities can be found in the Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development-The Gold Book, and online at http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices.html.

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

1.4 Public Scoping and Identification of Issues

Public scoping for this project was conducted through a 15-day scoping period advertised on the BLM Montana State Office website and posted on the Malta Field Office website National Environmental Policy Act (NEPA) notification log. Scoping was initiated on March 31, 2011; comments were received through April 15, 2011. Several split estate surface owners had general questions about access and the process of leasing and development, and one individual wanted to know who had nominated the parcels. A Phillips County Commissioner was interested in why BLM had mineral jurisdiction over the Milk River bed in several State sections. He also asked whether those parcels deferred until after completion of the HiLine RMP could receive expedited processing after the RMP was signed. Refer to Chapter 5 of this EA for a more complete summary of the scoping 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 of a lease sale, this would mean that all expressions of interest to lease (parcel nominations) would be denied or rejected.

The No Action Alternative would exclude all 25 parcels within the Malta Field Office from the lease sale. Surface management would remain the same and ongoing oil and gas development would continue on surrounding federal, private, and state leases.

2.2 Alternative B – Proposed Action

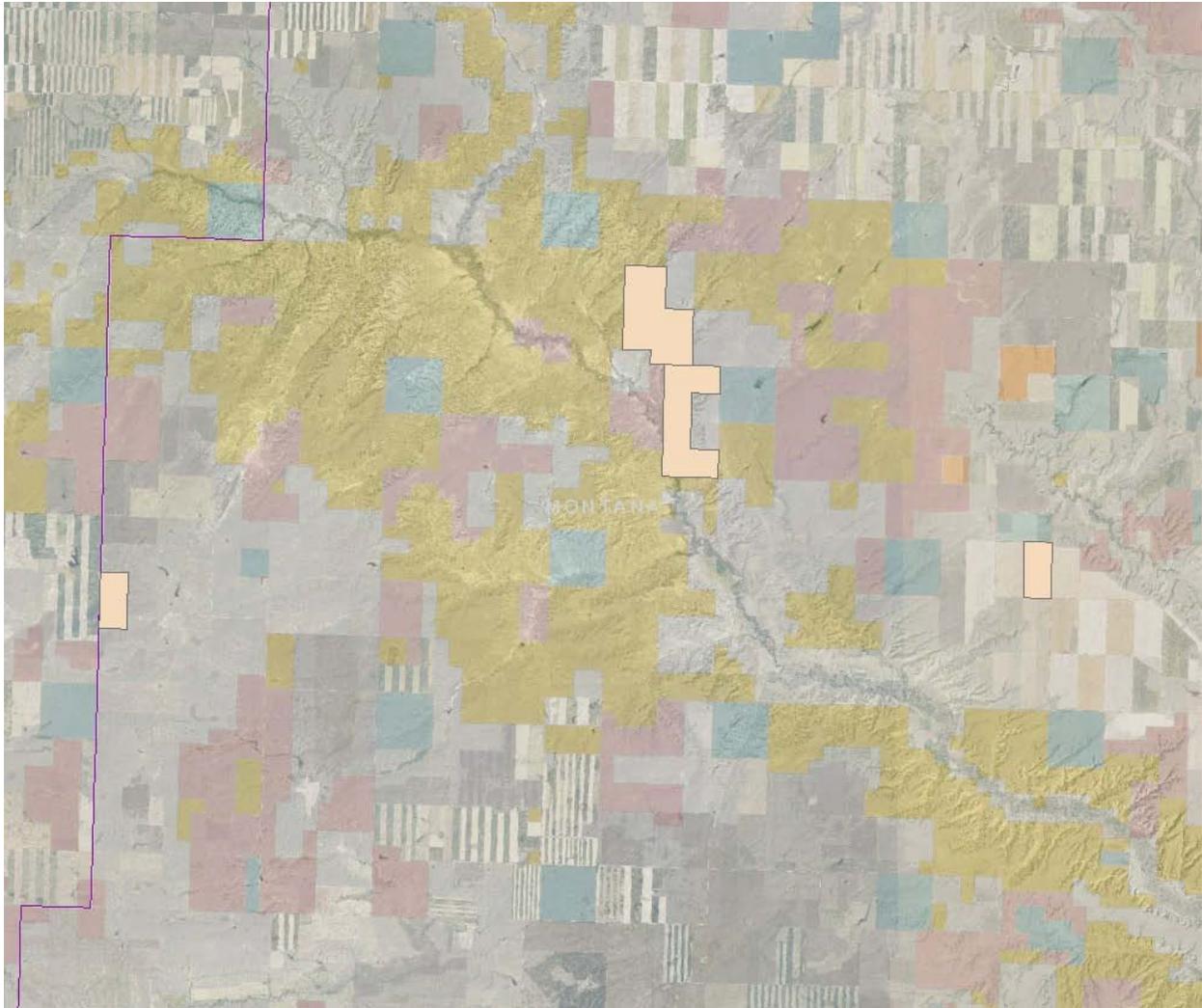
The Proposed Action Alternative would be to offer 25 parcels of federal minerals for oil and gas leasing, covering 35,275.42 acres administered by the Malta Field Office, in conformance with the existing land use planning decisions. The parcels are located in Phillips County, Montana. Parcel number, size, and detailed locations and associated stipulations are listed in Appendix A. Maps 1 and 2 indicate the detailed location of each parcel.

Of the 35,275.42 acres of federal mineral estate considered in this EA, approximately 11,271.97 acres (8 parcels) are managed by the BLM, and 88.6 acres (4 parcels) are managed by other surface management agencies (State of Montana). The remaining 13 parcels (23,914.85 acres) contain some split estate (private surface with federal mineral estate).

2.3 Alternative C - BLM Preferred Alternative

Under the BLM Preferred Alternative, 4 of the 25 lease parcels would be offered in whole and 4 in part with RMP lease stipulations and/or lease notices as necessary (Appendix A) for competitive oil and gas lease sale and lease issuance (Maps 2 and 3).

A total of 21 lease parcels (17 whole, 4 partial), containing 32,506.89 acres of federal minerals would be deferred. The 21 lease parcels (32,506.89 federal mineral acres) have been found to contain important greater sage-grouse and/or Sprague's pipit habitat. Both species are Federal candidate species for which listing by the Endangered Species Act was determined to be warranted, but precluded, due to the need to work on higher priority species. Greater sage-grouse and Sprague's pipit conservation areas are being considered in the Field Office's ongoing planning efforts; therefore, 21 lease parcels (17 whole, 4 partial) would be deferred at this time pending completion of the HiLine RMP planning effort.



Map 3—Parcels north of Dodson and Wagner that would be leased in Alternative C. See Appendix A for detailed maps.

2.4 Additional Considerations for Alternatives B and C

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

Standard operating procedures, best management practices and required conditions of approval 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.

Oil and gas leases would be issued for a 10-year period and would continue for as long thereafter as oil or gas is produced in paying quantities. If a lessee fails to produce oil and gas, does not make annual rental payments, does not comply with the terms and conditions of the lease, or relinquishes the lease, ownership of the minerals leased would revert back to the federal government, and the lease could be resold.

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

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter describes the affected existing environment (i.e., the physical, biological, social, and economic values and resources) within the analysis area, which includes the 25 nominated parcels in Phillips County (Maps 1 and 2), that could be affected by implementation of the alternatives described in Chapter 2.

The existing environment is described by the different resources found throughout the analysis area. Within each resource description, lease parcels containing the resource will be listed and analyzed further in Chapter 4. If the lease parcel does not contain the resource, then the lease parcel will be omitted from the description of that specific resource.

Lease parcels occur in upland silty, shallow clay, clayey steep, coarse clay, clayey, claypan, dense clay, overflow, and river bottom/riparian Ecological Sites in the Eastern Montana Glaciated Plains--10-14-inch Precipitation Zone. Elevations range from 2,170 feet on the Milk River (parcel MTM 97300-PD) to 3,020 feet near the Blaine County line (parcel MTM 97300-KW) mean sea level. Temperatures can vary from near minus 50°F in winter to slightly over 100°F in summer. Winds are predominantly from the west, and most of the precipitation occurs as rainfall during April to early July. The growing season is generally from May 15 to September 15 or 123 days. Surface ownership is BLM, private, or State of Montana. Much of the land has always been grazed although some of the private surface is currently cropped. The Milk River river bed tracts are located under the River and along the adjacent river bank and were committed to the Milk River Unit at the time of Unit approval.

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

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

The following resource issues are brought forward for analysis.

3.2 Air Resources

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

The Environmental Protection Agency (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.

3.2.1 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 the 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 (including near Billings Malta FO) are currently meeting federal standards in all locations. 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).

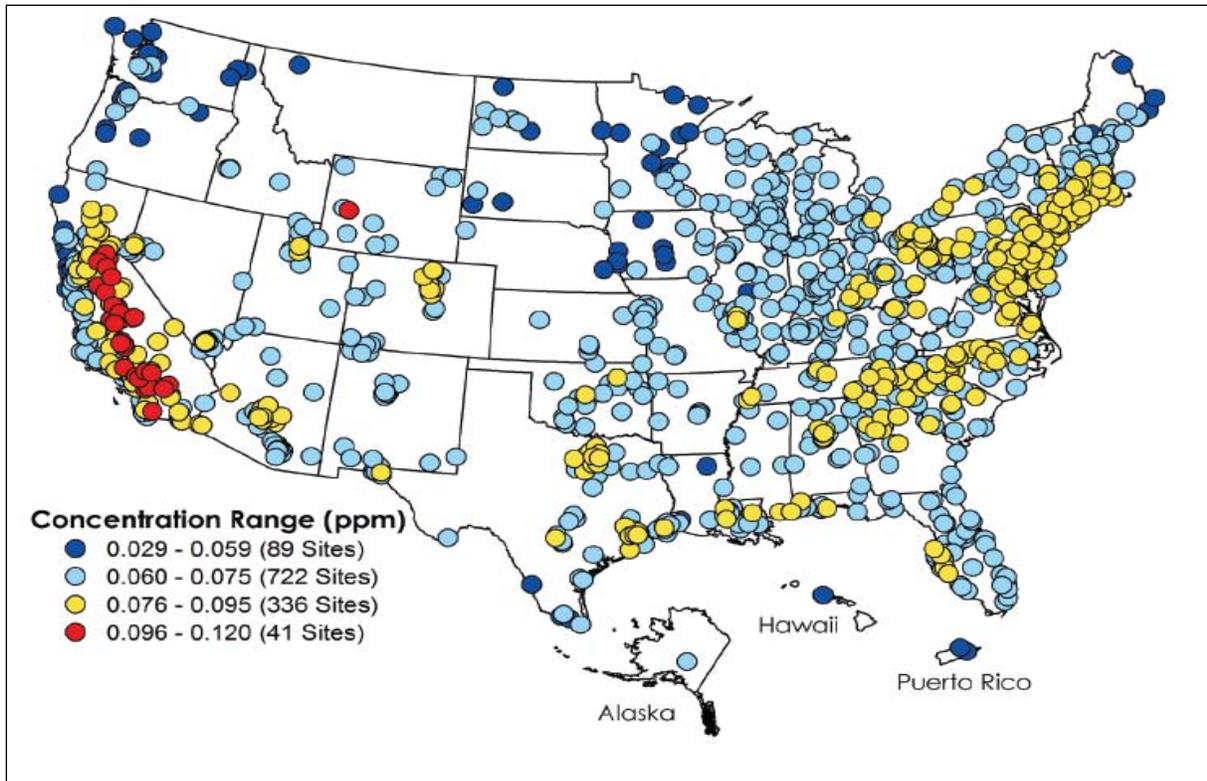


Figure 1. Ozone concentrations in ppm, 2008 (fourth highest daily maximum 8-hour concentration).

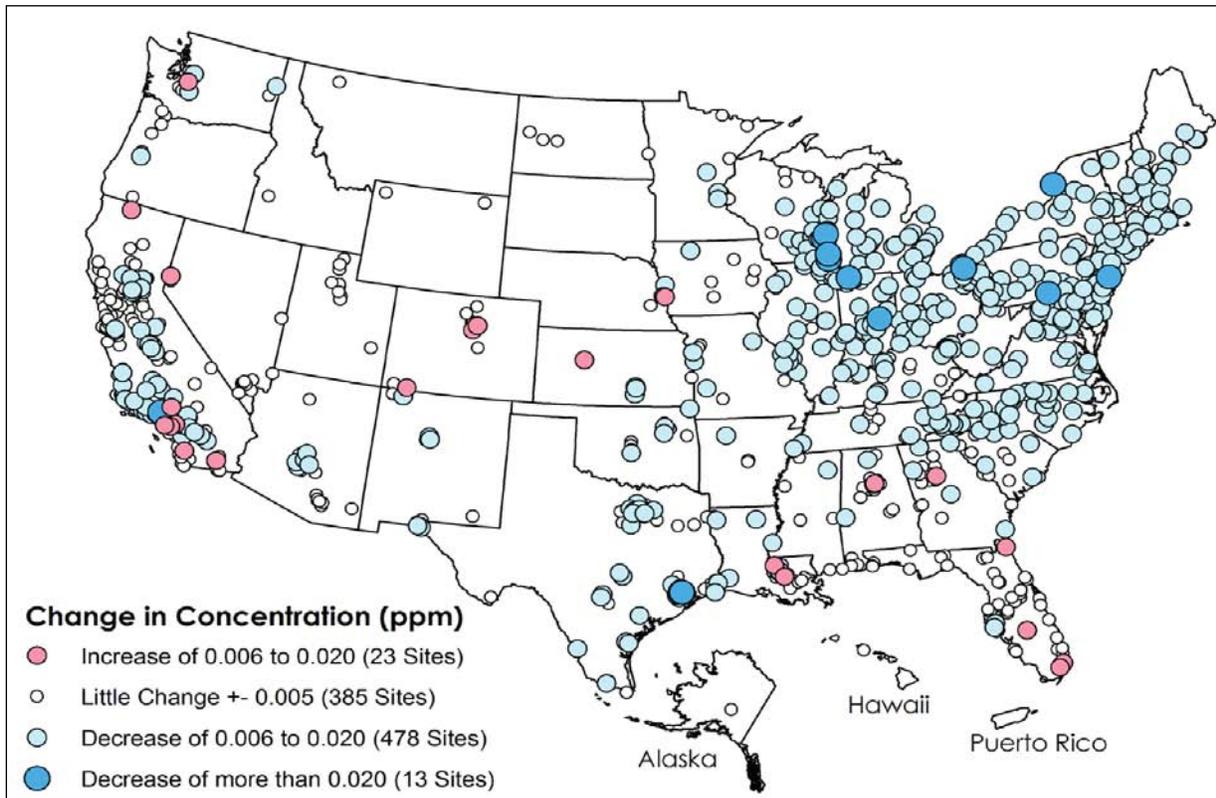


Figure 2. Change in ozone concentrations in ppm, 2001-2003 vs. 2006-2008 (three-year average of the annual fourth highest daily maximum 8-hour concentrations).

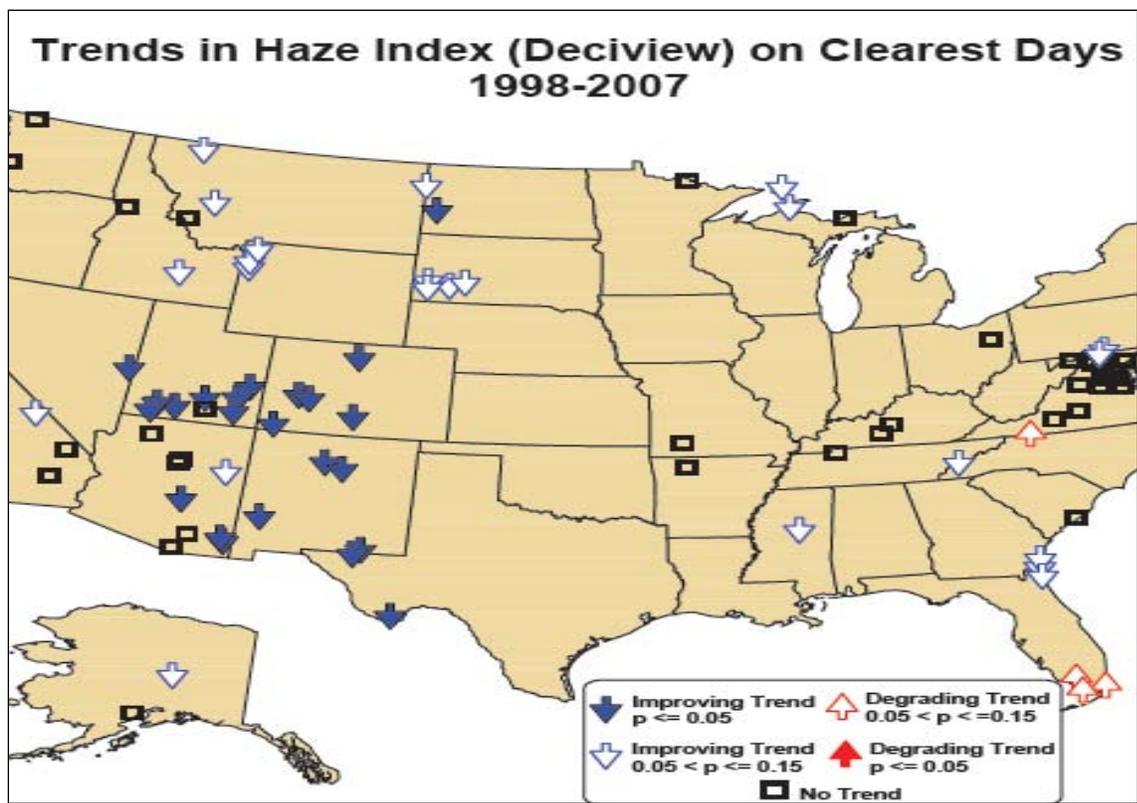


Figure 3. Trends in haze index (deciview) on clearest days, 1998-2007.

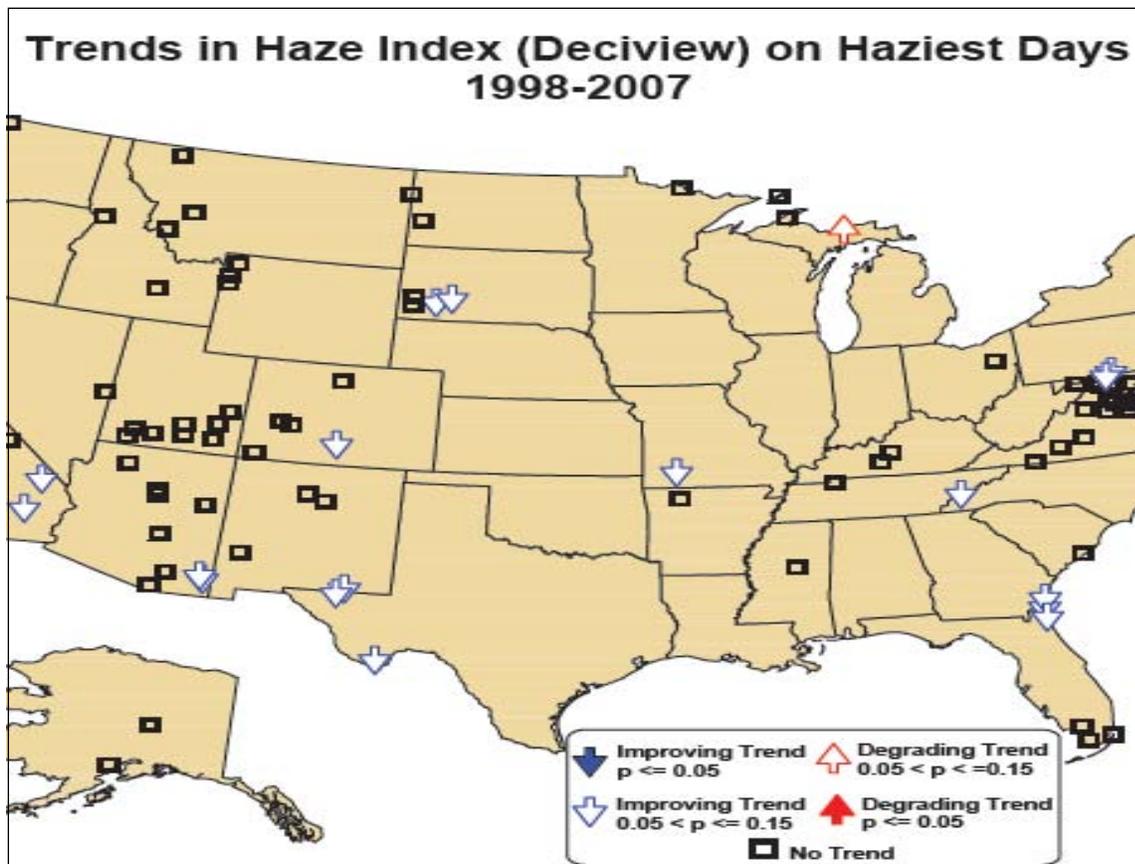


Figure 4. Trends in haze index (deciview) on haziest days, 1998-2007.

HiLine District

The AQI data shows that there's little risk to the general public from degraded air quality (Table 1). Between 1997 and 2007, 94 percent of the days monitored rated "good" with 6 percent being "moderate." While there was one day in 2003 that posed a health risk in Glacier County, this was a very rare and short-term occurrence that appears to have been related to large wildfires in Glacier National Park and to the south of the receptor (the Lincoln complex). Phillips County has not experienced any exceedances, and this station was discontinued in 1997. The Glacier County station was discontinued in 2008 and data for that year are not reported no true data were collected that year.

Table 1. US EPA – Air Data Air Quality Index Report – Field Office Summary (1997-2007)

County	State	# Days with Data	# Days Rated Good	Percent of Days Rated Good	# Days Rated Mod	# Days Rated Unhealthy for Sensitive Groups	# Days Rated Unhealthy
Phillips-1997	MT	92	92	100	0	0	0
Phillips-All	MT	92	92	100	0	0	0
Glacier-2007	MT	45	43	94	2	0	0
Glacier-2006	MT	61	60	98	1	0	0
Glacier-2005	MT	61	61	100	0	0	0
Glacier-2004	MT	66	66	100	0	0	0
Glacier-2003	MT	42	38	90	3	1	0
Glacier-2002	MT	59	52	88	7	0	0
Glacier-2001	MT	61	59	97	2	0	0
Glacier-2000	MT	59	55	93	4	0	0
Glacier-1999	MT	58	53	91	5	0	0
Glacier-1998	MT	52	44	85	8	0	0
Glacier-1997	MT	39	29	74	10	0	0
Glacier All	MT	603	560	93 percent	42	1	0
Field Office Values	MT	695	652	94 percent	42	1	0
Field Office Percentages	MT	-	-	94 percent	6 percent	< 1 percent	0 percent

In 2007 lands within the HiLine District were in compliance with all air quality standards. While the data is **are** from Browning, it is the only station within the District Office Boundary. At that time, particulate matter (PM₁₀) reached 40 percent of the standard. This indicates that current air quality is very good, falling well below applicable standards.

The primary pollutant identified for the project area is PM₁₀. A review of tier-1 and tier-2 emissions for ~~PM₁₀~~ PM₁₀ shows that agriculture and forestry is the largest source of PM₁₀. This source produces 53 percent of all emissions with fugitive dust contributing another 43 percent. ~~There are no known nonattainment areas for air quality in the Malta FO.~~

The UL Bend National Wildlife Refuge (NWR), with its wilderness area, and Glacier National Park are Class 1 Areas within the HiLine District, but only UL Bend is in the Malta Field Office. It is located approximately 70 miles south-southeast of the Parcels. Glacier National Park is hundreds of miles west of the Malta Field Office. ~~There are no known nonattainment areas for air quality.~~

3.2.2 Climate Change

Climate change is defined by the Intergovernmental Panel on Climate Change (IPCC) as “a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and persist for an extended period, typically decades or longer. 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 (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 (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 (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, earth has a natural greenhouse effect wherein naturally occurring gases such as water vapor, CO₂, methane, and N₂O absorb and retain heat. Without the natural greenhouse effect, earth would be approximately 60°F cooler (Climate Change SIR 2010). Current ongoing global climate change is ~~caused, in part, by~~ ~~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 (Climate

Change SIR 2010). The buildup of GHGs such as CO₂, methane, N₂O, and halocarbons since the start of the industrial revolution has substantially increased atmospheric concentrations of these compounds compared to background levels. At such elevated concentrations, these compounds absorb more energy from the earth's surface and re-emit a larger portion of the earth's heat back to the earth rather than allowing the heat to escape into space than would be the case under more natural conditions of background GHG concentrations.

A number of activities contribute to the phenomenon of climate change, including emissions of GHGs (especially 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, CO₂ proper may last 50 to 200 years in the atmosphere while methane has an average atmospheric life time of 12 years (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, and 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 region. (<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. 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 (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 increases insect populations such as pine beetles, which have killed trees on millions of acres in 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 of 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 5 to 10 percent increases.
- For most of Montana, annual median runoff is expected to decrease between 2 and 5 percent, but northwestern Montana may see little change in annual runoff. Mountain snowpack is expected to decline, reducing water availability in localities supplied by meltwater.
- Glaciers are already known to be melting, and all glaciers in Glacier National Park are expected to be completely melted by 2030 or sooner.
- Wind power production potential is predicted to decline in Montana based on modeling focused on the Great Falls area.

- Conditions in Montana wetlands across much of the northern part of the state are predicted to remain relatively stable, although some wetland habitat near Cut Bank is predicted to degrade to less favorable conditions.
- Water temperatures are expected to increase in lakes, reservoirs, rivers, and streams. Fish populations are expected to decline due to warmer temperatures, which could also lead to more fishing closures.
- Wildland fire risk is predicted to continue to increase due to climate change effects on temperature, precipitation, and wind. One study predicted an increase in median annual area burned by wildland fires in Montana based on a 1°C global average temperature increase to be 241 to 515 percent.

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 Niños, La Niñas, and the eruption of large volcanoes (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.

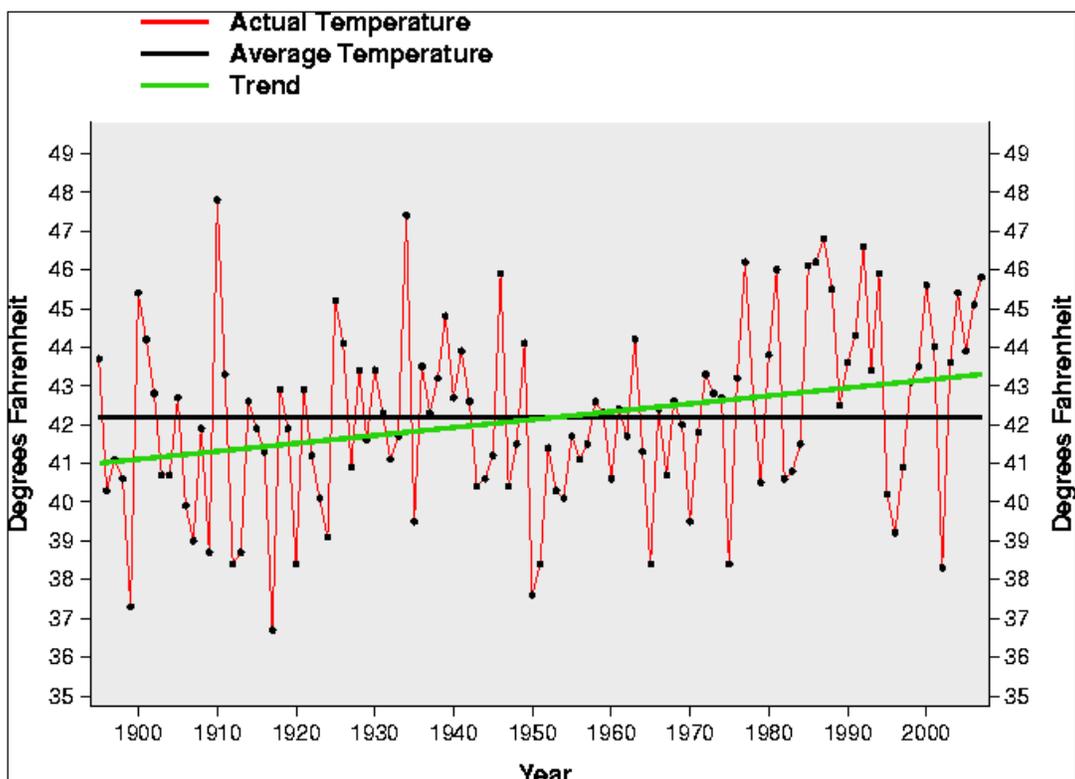


Figure 5. Regional climate summary of spring temperatures (March-May) for the West North Central Region (MT, ND, SD, WY), from 1895-2007. (Source: NOAA website – <http://www.ncdc.noaa.gov/oa/climate/research/cag3/wn.html>)

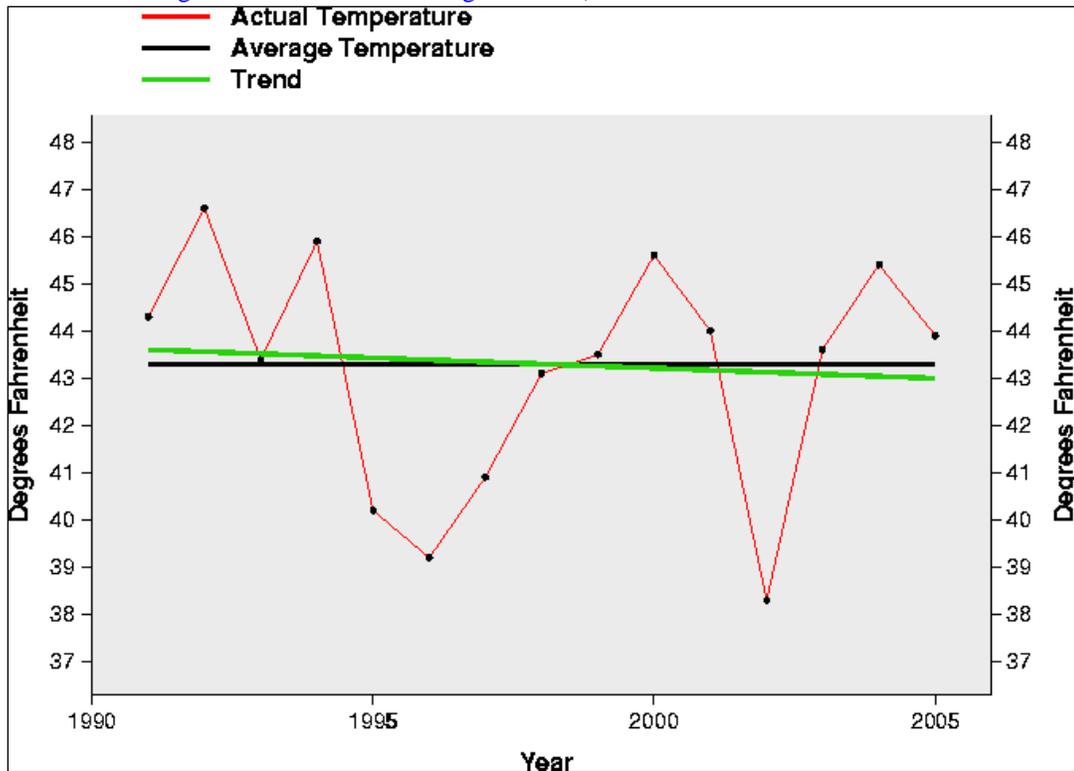


Figure 6. Regional climate summary of spring temperatures (March-May) for the West North Central Region (MT, ND, SD, WY), from 1991-2005. (Source: NOAA website – <http://www.ncdc.noaa.gov/oa/climate/research/cag3/wn.html>)

3.3 Soil Resources

Soils were identified from the United States Department of Agriculture’s Natural Resources Conservation Service’s (USDA-NRCS) Soil Survey Geographic (SSURGO) dataset and the Soil Data Mart (SDM) website (<http://soildatamart.nrcs.usda.gov/>). Soil surveys were performed by the USDA-NRCS according to National Cooperative Soil Survey (NCSS) standards. Soils within the lease parcels developed from glacial till, residuum from sedimentary shale and sandstone; and, alluvium from shale, and mixed sources. Landforms consist of nearly level to moderately sloping (0 to 30 percent slope) glacial till plains; highly erodible, steep to very steep (20 to 70 percent slope), hillslopes and escarpments; nearly level to gently sloping (0 to 8 percent slope) alluvial fans, terraces, and floodplains; and, depressions and lake plains.

Appendix C breaks out the Soil Map Units within each lease parcel, for alternatives B and C, and provides acres, soil ratings, and interpretations. Soil Map Unit descriptions are available from the SDM for the lease parcels.

3.4 Water Resources

3.4.1 Surface Hydrology

Wetlands were identified from the United States Fish and Wildlife Service's National Wetland Inventory dataset. The U.S. Fish and Wildlife Service is the principal Federal agency that provides information to the public on the extent and status of the nation's wetlands. The National Wetland Inventory dataset provides information on wetland type, location, and size. There are a total of 1,316.4 acres of wetlands within the analysis area (Appendix D lists the wetlands that are present in the lease parcels). Wetland characteristics are summarized in the acronyms that are used for identification. Wetlands within the lease parcels may be one or more of the following types:

PEMA -

[P] Palustrine, [EM] Emergent, [A] Temporarily Flooded

PEMC -

[P] Palustrine, [EM] Emergent, [C] Seasonally Flooded

PABFh -

[P] Palustrine, [AB] Aquatic Bed, [F] Semipermanently Flooded, [h] Diked/Impounded

PEM/ABFh -

[P] Palustrine, [EM] Emergent / , [AB] Aquatic Bed, [F] Semipermanently Flooded, [h] Diked/Impounded

L2ABFh -

[L] Lacustrine, [2] Littoral, [AB] Aquatic Bed, [F] Semipermanently Flooded, [h] Diked/Impounded

PEMCh -

[P] Palustrine, [EM] Emergent, [C] Seasonally Flooded, [h] Diked/Impounded

PABFx -

[P] Palustrine, [AB] Aquatic Bed, [F] Semipermanently Flooded, [x] Excavated

PUSA -

[P] Palustrine, [US] Unconsolidated Shore, [A] Temporarily Flooded

PEMAh -

[P] Palustrine, [EM] Emergent, [A] Temporarily Flooded, [h] Diked/Impounded

The General Wildlife Section (Section 3.7.2) offers additional details on the major wetland habitats that are present within each lease parcel.

The U.S. Geological Survey's National Hydrography Dataset (NHD) was used to identify ephemeral, intermittent, and perennial drainages within the lease parcels. The NHD is a feature-based dataset that interconnects and uniquely identifies the stream segments or reaches that comprise the nation's surface water drainage system.

The analysis area consists of 202.6 miles of mostly intermittent and ephemeral drainages (Appendix D lists the drainages that are present in the lease parcels). These drainages are important as they represent the primary flow paths in these watersheds and can influence downstream water quality. The main streams are the Milk River and Cottonwood Creek. These streams have been listed as water quality impaired. The probable cause of impairment for the Milk River has been identified as mercury, with probable sources being agriculture, dams or impoundments, or a natural source. The probable causes of impairment for Cottonwood Creek are alterations of streamside or littoral vegetative covers and heightened sedimentation and siltation rates, with probable sources being unknown, natural, or grazing in riparian and shoreline zones. An additional probable cause of water quality impairment for Cottonwood Creek is heightened iron concentrations that are attributed to natural sources. There are no other impaired streams in or adjacent to these parcels. Other streams include Pierson Coulee, Frey Coulee, Dodson Creek, North Fork Dodson Creek, Black Coulee, Alkali Coulee, Joiner Coulee, Garland Creek, Wilson Coulee, Coburg Coulee, Reservoir Coulee, Dry Coulee, Little Cottonwood Creek, and Lambing Coulee. These are generally intermittent streams with all others being ephemeral. While the National Hydrography dataset indicates many miles of flow paths, these are generally dry ephemeral drainages.

Appendix D lists the wetlands and drainages that are present in the lease parcels.

3.4.2 Groundwater

Groundwater below the lease parcels resides in both shallow alluvial and deep bedrock aquifers. Alluvial deposits consist of valley-fill, stream floodplain, and stream terrace gravels, sands, and muds. Valley-fill and floodplain deposits are extensively developed in and proximal to the broad valley of the Milk River and the wider floodplains of perennial and intermittent drainages in the area.

The Judith River formation is a widely used source of groundwater with total dissolved solids (TDS) levels generally ranging from 800 to 2,000 milligrams/liter. Wells in the Judith River formation near the Canadian border average 150-200 feet deep with an average yield of 3-4 gallons per minute (gpm) and a potential yield of 20 gpm.

The Judith River formation consists of up to 450 feet of gray, brown, and yellow mudstone; thin brown sandstones; and thick multistory-multilateral channel deposits, all of fluvial origin. Sandstone of the Judith River Formation generally overlies the Claggett Shale. The Claggett Shale consists of up to 450 feet of dark gray, brown, and sandy shale. Cemented gravel caps the Claggett Shale in some areas.

The Montana Bureau of Mines and Geology publishes geologic maps that are intended primarily as bedrock maps. The map unit contacts are approximate as they are almost always concealed. For the most part, glacial till of varying thicknesses overlies the bedrock. Tertiary and Pleistocene sand and gravel, which is commonly overlain by till, also overlies the bedrock. Formations are defined through field investigations and by available petroleum and groundwater well data.

Appendix D lists the geologic map units that are present under each of the lease parcels.

Map Units

- Qac (Quaternary) Alluvium-colluvium: includes deposits in alluvial fans and on alluvial terraces, and may include glacial outwash
- Qls (Quaternary) Landslide deposits
- Qal (Quaternary) Alluvial deposits (Holocene): deposits of gravel, sand, silt or clay in modern channels and flood plains
- Tsg (Tertiary) Sand and gravel deposits (Miocene-Pliocene): may include extensive sand and gravel deposits of Pleistocene age; up to 100 feet thick
- Kb (Upper Cretaceous) Bearpaw Shale: maximum thickness is about 1,100 feet
- Kjr (Upper Cretaceous) Judith River Formation: maximum thickness is about 450 feet; thins to the east

3.5 Vegetation Resources

Vegetation composition of the lease parcels is characteristic of that expected to occur on upland silty, shallow clay, clayey steep, coarse clay, clayey, claypan, dense clay, and overflow ecological sites. Major grasses consist primarily of increaser species including western wheatgrass (*Pascopyrum smithii* (Rydb.) A. Löve), needle and thread grass (*Hesperostipa comata* (Trin. & Rupr.) Barkworth), blue grama (*Bouteloua gracilis* (Willd. ex Kunth) Lag. ex Griffiths), prairie junegrass (*Koeleria macrantha* (Ledeb.) J.A. Schultes), and Sandberg bluegrass (*Poa secunda* J. Presl); major forbs consist primarily of scarlet globemallow (*Sphaeralcea coccinea* (Nutt.) Rydb.), and western yarrow (*Achillea millefolium* L. var. *occidentalis* DC.); major shrubs consist primarily of silver sagebrush (*Artemisia cana* Pursh), winterfat (*Krascheninnikovia lanata* (Pursh) A.D.J. Meeuse & Smit), broom snakeweed (*Gutierrezia sarothrae* (Pursh) Britt. & Rusby), prairie sagewort (*Artemisia frigida* Willd.), and Creeping Juniper (*Juniperus horizontalis*).

Most decreaser species are considered rare within these parcels but can be found. These include green needlegrass (*Nassella viridula* (Trin.) Barkworth), plains muhly (*Muhlenbergia cuspidata* (Torr. ex Hook.) Rydb.), purple prairieclover (*Dalea lasiathera* Gray), prairie coneflower (*Ratibida columnifera* (Nutt.) Woot. & Standl.), and dotted gayfeather (*Liatris punctata* Hook.).

Existing influences on local distribution of plant communities include soils, topography, surface disturbance, availability of water, management boundary fence lines, and soil salinity. Human activities have affected vegetation communities for over a century. Some of these activities include: infrastructure developments (roads, power lines, pipelines, etc.), chemical applications, livestock grazing, farming, recreation, and wildfire rehabilitation, prevention, manipulation, and suppression.

3.3.5.1 Vegetation Communities

Three vegetation communities plus several disturbed areas were identified in the lease parcels: silver sagebrush-mixed grassland, mixed grassland, improved pasture or restored pasture; agriculture; and riparian areas.

Noxious weeds occur in scattered isolated populations throughout the planning area. The most common species of noxious weeds are leafy spurge (*Euphorbia esula*), Russian knapweed (*Acroptilon repens*), spotted knapweed (*Centaurea stoebe*), and Canada thistle (*Cirsium arvense*). Noxious weed control is the responsibility of the surface management agency in cooperation with the local weed control board. Chemical and biological control methods are utilized, with chemical control being the more predominant. No weed inventories were completed on the parcels prior to the writing of this Environmental Assessment due to the severe winter and excessive amounts of spring runoff. Much of the area is very remote and weed infestations are unlikely. The Milk River does often transport seeds of several noxious weeds and small infestations are always possible along the river bank.

3.3.5.2 Silver-sagebrush-mixed Grassland, Mixed Grassland

The silver-sagebrush-mixed grassland community occurs on lower valley slopes near drainages, especially where soils are deeper. This setting is absent or very limited in extent in the lease area. The sagebrush/grassland vegetation community has a perennial grass understory, but a shift in the understory species composition may have occurred due to historic use or fire impacts. Mixed grasslands are similar, only missing the silver sagebrush component. Restored pastures may include sub-marginal farmlands that have been restored due to poor crop production and/or high erosion potential. These pastures are often dominated by a monoculture of crested wheatgrass.

3.3.5.3 Agricultural Land, Cropland

Cropland on private surface is currently in stubble, fallow, or converted to permanent cover.

3.3.5.4 Wetland-Riparian

Riparian and wetland areas are the green zones bordering lakes, rivers, reservoirs, estuaries, potholes, springs and seeps, and perennial, intermittent, or ephemeral streams where the water table is usually at or near the surface. The riparian zone is the interface or linkage between the upland (terrestrial) zone and the aquatic zone and is generally more productive in terms of total biomass than the remainder of the area. Characteristically, riparian and wetland areas display a greater diversity of plants, fish, and wildlife than adjoining ecosystems. 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.

Due to the extreme levels of precipitation realized in the analysis area during the winter of 2010-2011 and spring of 2011, the lease parcels were inaccessible and a detailed inventory of the riparian areas and wetlands has not been compiled. Some of the more common vegetative species that occur in wetlands and riparian zones along ephemeral, intermittent, and perennial drainages include prairie cordgrass (*Spartina pectinata*), switchgrass (*Panicum virgatum*), Canada wildrye (*Elymus canadensis*), western wheatgrass (*Pascopyrum smithii*), willow (*Salix*

spp.), chokecherry (*Prunus virginiana*), buffaloberry (*Shepherdia*), water sedge (*Carex aquatilis*), plains cottonwood (*Populus deltoids occidentalis*), sedges (*Carex spp.*), rushes (*Juncus spp.*), bulrush (*Schoenoplectus spp.*), cattail (*Typha spp.*), American licorice (*Glycyrrhiza lepidota*), smooth brome (*Bromus inermis*), wild rose (*Rosa spp.*), sago pondweed (*Struckenia pectinata*), sloughgrass (*Beckmannia*), curlycup gumweed (*Grindelia squarrosa*), Kentucky bluegrass (*Poa pratensis*), and snowberry (*Symphoricarpos spp.*).

The General Wildlife Section (Section 3.7.2) offers additional details on the major wetland habitats that are present in the analysis area.

3.6 Special Status Species; Threatened, Endangered, Candidate, and Proposed Species

Special Status Species can be Federally listed threatened, endangered, candidate or proposed fish, wildlife or plant species; BLM listed Sensitive Species; or those Special Status Species maintained on lists by the USFWS; Montana Department of Fish, Wildlife and Parks; Montana Natural Heritage Program; or other non-governmental organizations.

Although listed threatened or endangered species are unlikely to occur on the lease parcels, the TES 16-2 stipulation for threatened or endangered species would be attached to the leases in the event that listed species are observed, or in case any future listed species are likely to occur on the lease parcels. Some of the Standard Stipulations and Notice (16-3) also could apply to Special Status Species.

3.6.1 Special Status Animal Species

3.6.1.1 Aquatic Wildlife

Native minnow species can be found in many of the streams and drainages, especially during spring runoff periods, and in isolated pools later in summer. Riparian vegetation can be important for fish habitat as it shades the water surface and lowers water temperatures. There are fish-bearing streams, mostly tributaries of Cottonwood Creek and the Milk River on the lease parcels.

The one fish species that occurs or may occur in Phillips County that is protected under section 7c of the Endangered Species Act (ESA) as amended in 1973 is the pallid sturgeon (*Scaphirhynchus albus*) (Table 2). The pallid sturgeon occurs in the Missouri River and is not found on or near any of the lease parcels.

BLM Sensitive Fish Species include the sauger (*Stizostedion canadense*), pearl dace (*Margariscus margarita*) and northern redbelly X finescale dace hybrid (*Phoxinus eos* X *Phoxinus neogaeus*). The dace occur in intermittent streams such as Whitewater Creek, Garland Creek and Cottonwood Creek, while the sauger is found in the Milk River. Many of the lease parcels contain tributaries to Cottonwood Creek and dace could be present during periods of high flow or in pools during summer. Four of the parcels are river bed segments of the Milk River. The sturgeon chub (*Macrhybopsis gelida*) and paddlefish (*Polyodon spathula*) occur in the Missouri River and are not found on or near the lease parcels.

BLM Listed Sensitive Amphibian and Reptile Species that could be in Phillips County include the Great Plains toad (*Bufo cognatus*), plains spadefoot (*Spea bombifrons*), greater short-horned

lizard (*Phrynosoma hernandesi*), milksnake (*Lampropeltis triangulum*), northern leopard frog (*Rana pipiens*), snapping turtle (*Chelydra serpentina*), and western hog-nosed snake (*Heterodon nasicus*) (Table 3). The snapping turtle is rare and probably found only in the Milk River. The milksnake is known from two records in southern Phillips County, but it probably does not occur on or near the lease parcels. The plains spadefoot is known from three locations in Phillips County, much closer, but not on the lease parcels. For many of the species the lease parcels are within their current range and suitable habitat is present, but no occurrence records have been documented.

Table 2. Fish and herptile Sensitive or Special Status Wildlife Species that could occur in or near the lease parcels.

Species	USFWS Status	BLM Sensitive	In Range	Suitable Habitat present
Fish				
Pallid Sturgeon	Endangered	SSS	No	Yes
Paddlefish	none	Sensitive	No	Yes
Pearl Dace	none	Sensitive	Yes	Yes
Northern Redbelly x Finescale Dace Hybrid	none	Sensitive	Yes	Yes
Sturgeon Chub	none	Sensitive	No	Yes
Sauger	none	Sensitive	Yes	Yes
Amphibians & Reptiles				
Greater Short-horned Lizard	none	Sensitive	Yes	Yes
Great Plains Toad	none	Sensitive	Yes	Yes
Snapping Turtle	none	Sensitive	Yes	Yes
Northern Leopard Frog	none	Sensitive	Yes	Yes
Plains Spadefoot	none	Sensitive	Yes	Yes
Milksnake	none	Sensitive	No	Yes
Western Hog-nosed Snake	none	Sensitive	Yes	Yes

SSS – Special Status Species

Table 3. Special Status or Sensitive fish and herptile species that occur in, or their ranges overlap with, the lease parcels.

Lease Parcel	Endangered or Sensitive Species
MTM 97300 KL	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KM	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KP	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KW	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KQ	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot

MTM 97300 KR	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KS	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KT	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KU	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KV	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KX	Northern Redbelly X Finescale Dace Hybrid, Pearl Dace, Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KH	Northern Redbelly X Finescale Dace Hybrid, Pearl Dace, Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KI	Northern Redbelly X Finescale Dace Hybrid, Pearl Dace, Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KJ	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KK	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KY	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 KZ	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 K1	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 K2	Northern Redbelly X Finescale Dace Hybrid, Pearl Dace, Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 K3	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 K5	Greater Short-horned Lizard, Western Hog-nosed Snake, Great Plains Toad, Northern Leopard Frog, Plains Spadefoot
MTM 97300 PF	Northern Redbelly X Finescale Dace Hybrid, Pearl Dace, Sauger, Great Plains Toad, Snapping Turtle, Northern Leopard Frog, Plains Spadefoot
MTM 97300 PE	Northern Redbelly X Finescale Dace Hybrid, Pearl Dace, Sauger, Great Plains Toad, Snapping Turtle, Northern Leopard Frog, Plains Spadefoot
MTM 97300 PD	Northern Redbelly X Finescale Dace Hybrid, Pearl Dace, Sauger, Great Plains Toad, Snapping Turtle, Northern Leopard Frog, Plains Spadefoot
MTM 97300 RL	Northern Redbelly X Finescale Dace Hybrid, Pearl Dace, Sauger, Great Plains Toad, Snapping Turtle, Northern Leopard Frog, Plains Spadefoot

3.6.1.2 Terrestrial Wildlife

There are four wildlife species that occur or may occur in Phillips County that are protected under section 7c of the Endangered Species Act (ESA) as amended in 1973, including the

interior least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*), whooping crane (*Grus americana*), and black-footed ferret (*Mustela nigripes*) (Table 4). The black-footed ferret has been reintroduced in south Phillips County as an experimental, nonessential population. Those introduced on BLM land are located near the Dry Fork Road in the Beauchamp Creek reintroduction area, but none have been observed there since September 2006. The only known remaining ferrets in the HiLine District are on the Charles M. Russell National Wildlife Refuge (NWR) in the UL Bend Area. A recent ferret release in Grasslands National Park in Saskatchewan just a few miles from the United States Border is only about 35-45 miles northeast of the majority of the lease parcels. Ferrets were produced there in 2010. The piping plover and least tern have been observed on Whitewater Lake in northern Phillips County, but no nesting has occurred there. Piping plover nesting does occur on Nelson Reservoir and Bowdoin NWR in central Phillips County. The least tern has also been observed on Nelson Reservoir. The whooping crane has been observed several times in spring since 1990 in the Whitewater area and to the southwest. None of these listed species is likely to occur on the various lease parcels. The BLM Sensitive Species Greater sage-grouse was petitioned for listing under the Endangered Species Act with a March 2010 finding that listing for the species was warranted, but precluded. This moved the greater sage-grouse into “candidate” status with an annual status review. The two active strutting grounds were discussed previously, and nesting and winter use by sage-grouse are expected in some of the lease parcels north of Dodson. Four strutting grounds are fairly close to the middle Milk River bed parcel, but greater sage-grouse would not be using the Milk River bed. Listing of the Sprague’s pipit as a T&E Species was determined on 14 September 2010 to be warranted, but precluded due to the need to work on higher priority species. The Sprague’s pipit thus became a candidate species with an annual status review to determine eligibility for listing. The Sprague’s pipit occurs in grassland uplands in the lease parcels, and is limited only by steep topography and sagebrush.

BLM Listed Sensitive Species that could be in Phillips County include the black-tailed prairie dog (*Cynomys ludovicianus*), North American wolverine (*Gulo gulo luscus*), swift fox (*Vulpes velox*), bald eagle (*Haliaeetus leucocephalus*), black-crowned night-heron (*Nycticorax nycticorax*), black tern (*Chlidonias niger*), burrowing owl (*Athene/Speotyto cunicularia*), common loon (*Gavia immer*), dickcissel (*Spiza americana*), ferruginous hawk (*Buteo regalis*), Franklin’s gull (*Larus pipixcan*), golden eagle (*Aquila chrysaetos*), greater sage-grouse (*Centrocercus urophasianus*), Harlequin duck (*Histrionicus histrionicus*), loggerhead shrike (*Lanius ludovicianus*), long-billed curlew (*Numenius americanus*), chestnut-collared longspur (*Calcarius ornatus*), McCown’s longspur (*Calcarius mccownii*), marbled godwit (*Limosa fedoa*), mountain plover (*Charadrius montanus*), northern goshawk (*Accipiter gentiles*), peregrine falcon (*Falco peregrinus*), sage thrasher (*Oreoscoptes montanus*), Baird’s sparrow (*Ammodramus bairdii*), Brewer’s sparrow (*Spizella breweri*), Sprague’s pipit (*Anthus spragueii*), Swainson’s hawk (*Buteo swainsoni*), white-faced ibis (*Plegadis chihi*), red-headed woodpecker (*Melanerpes erythrocephalus*), bobolink (*Dolichonyx oryzivorus*), Le Conte’s sparrow (*Ammodramus leconteii*), Nelson’s sharp-tailed sparrow (*Ammodramus nelsoni*), and yellow rail (*Coturnicops noveboracensis*) (Table 5). Most of these species occur or could occur on the lease parcels. Many of these species are migratory birds that could be nesting during 15 April to 15 July. Bald eagles can be present from November to early April each year, but no confirmed nesting occurs in Phillips County. Nesting, if it does occur, is most likely along the Milk River in the Wagner area. The bald eagle was delisted on 29 June 2007, and now is treated as a Special Status

(Sensitive) Species rather than as a threatened species. The long-legged myotis (*Myotis volans*) and the Townsend's big-eared bat (*Corynorhinus townsendii*) have been found in Azure Cave in the Little Rocky Mountains, and the long-eared myotis (*Myotis evotis*) has been found near ponds in the Little Rocky Mountains. These bats could utilize cottonwood trees along the Milk River during summer for roosting, but no known surveys have been completed there. Additional species are listed by other groups, but are not BLM Sensitive Species (Table 4).

Table 4: Analysis Area occurrence of BLM Sensitive Bird and Mammal Species and USFWS Threatened, Endangered, Candidate or Proposed for Listing Wildlife Species.

Species	USFWS Status	BLM Status	In Current Range	Suitable Habitat Present
Mammals				
Black-footed ferret	Endangered	SSS	Yes	No
Black-tailed prairie dog	None	Sensitive	Yes	No
Swift fox	None	Sensitive	Yes	Yes
North American Wolverine	None	Sensitive	Yes	Yes
Long-legged Myotis	None	Sensitive	Yes	Yes
Long-eared Myotis	None	Sensitive	Yes	Yes
Townsend's big-eared bat	None	Sensitive	Yes	Yes
Birds				
Common loon	None	Sensitive	Yes	Yes
Franklin's gull	None	Sensitive	Yes	Yes
Interior least tern	Endangered	SSS	Yes	Yes
Black tern	None	Sensitive	Yes	Yes
White-faced ibis	None	Sensitive	Yes	Yes
Whooping crane	Endangered	SSS	Yes	Yes
Yellow rail	None	Sensitive	Yes	Yes
Piping plover	Threatened, with critical habitat	SSS	Yes	Yes
Mountain plover	Proposed	Sensitive	Yes	Yes
Marbled godwit	Bird of Conservation Concern (BCC)	Sensitive	Yes	Yes
Long-billed curlew	BCC	Sensitive	Yes	Yes
Black-crowned night heron	None	Sensitive	Yes	Yes
Bobolink	None	Sensitive	Yes	Yes
Greater sage-grouse	Candidate	Sensitive	Yes	Yes
Burrowing owl	BCC	Sensitive	Yes	Yes
Bald eagle*	BCC	Sensitive	Yes	Yes
Golden eagle	None	Sensitive	Yes	Yes
Ferruginous hawk	None	Sensitive	Yes	Yes
Swainson's hawk	None	Sensitive	Yes	Yes
Peregrine falcon	None	Sensitive	Yes	Yes
Northern goshawk	None	Sensitive	Yes	Yes
Sage thrasher	BCC	Sensitive	Yes	Yes
Sprague's pipit	Candidate	Sensitive	Yes	Yes
Loggerhead shrike	BCC	Sensitive	Yes	Yes
Chestnut-collared longspur	BCC	Sensitive	Yes	Yes

Species	USFWS Status	BLM Status	In Current Range	Suitable Habitat Present
McCown's longspur	BCC	Sensitive	Yes	Yes
Baird's sparrow	BCC	Sensitive	Yes	Yes
Brewer's sparrow	BCC	Sensitive	Yes	Yes
LeConte's sparrow	None	Sensitive	No	Yes
Nelson's Sharp-tailed sparrow	None	Sensitive	No	Yes
Horned grebe	BCC	None	Yes	Yes
American bittern	BCC	None	Yes	Yes
Prairie falcon	BCC	None	Yes	Yes
Upland sandpiper	BCC	None	Yes	Yes
Short-eared owl	BCC	None	Yes	Yes
Red-headed woodpecker	BCC	Sensitive	Yes	Yes
Grasshopper sparrow	BCC	None	Yes	Yes
Dickcissel	BCC	Sensitive	Yes	Yes
Harlequin duck	None	Sensitive	Yes	Yes

Table 5 sources: Skarr 2003; Werner, Maxell, Hendricks, and Flath. 2004; Foresman 2001; MTNHP, 2011; BLM, 2009; USDA – NRCS Plants Database, 2010

*Bald eagle has been delisted so has been moved to the sensitive list.

3.6.2 Special Status Plant Species

Following is a list of Montana's Plant Species of Concern and BLM Sensitive Plants that may have existing populations and/or suitable habitat on or near the lease parcels in Phillips County (Table 5).

All four BLM sensitive plant species are found in and around water and riparian areas. Not much is known of the status of these species in the analysis area, although the general condition and trend of these habitats could be used to estimate the specific conditions until the sites can be revisited and site-specific data collected.

Long-sheath waterweed is known from two sites in Phillips County. Six occurrences are known statewide. The aquatic habitat of this species is affected by drought and wetland modification to the lakes and ponds it occupies. Dwarf woolyheads is found on two sites in Phillips County, and six sites statewide. Slender bulrush is known from one site in Phillips County. Statewide, it is only known from two sites, the one in Phillips County and a second site in Sheridan County.

Surveys in Sheridan County in 2000 failed to find the species. It had been observed as abundant in Sheridan County in the 1940s (Heidel, et al. 2000). Slender-branched popcorn-flower is known from one site in Phillips County. Five occurrences are known statewide.

Table 5. Montana Plant Species of Concern and BLM Sensitive Plants on or near Lease Parcels

Plant Name	Counties it occurs in	Habitat description
Long-sheath Waterweed	Phillips	Riparian areas; two records for Phillips County; six records statewide; no recent records

Dwarf Woolly-heads	Phillips	Riparian areas; two records for Phillips County; six records statewide; no recent records
Slender Bulrush	Phillips	Riparian areas; one of two state records was in Phillips County; no recent records
Slender-branched Popcorn-flower	Phillips	Riparian areas; one of five state records was in Phillips County; no recent records

3.7 Fish and Wildlife

3.7.1 Aquatic Wildlife

There are over thirty stock ponds that are managed as either cold water or warm water fisheries depending on water depths and drought cycles. None of these reservoirs are in the lease parcels, but it is always possible that fish exist in some of the larger and deeper reservoirs due to natural introductions of fish eggs in water bird feathers or illegal plants by unknown individuals. Fish do occur in the Milk River and in Cottonwood Creek and its various tributaries.

Amphibians must live in or near aquatic systems while reptiles spend only part of the time in or near water. Amphibians and reptiles (herptiles) of Phillips County include the Great Plains toad (*Bufo cognatus*), Woodhouse’s toad (*Bufo woodhousii*), plains spadefoot (*Spea bombifrons*), Boreal chorus frog (*Pseudacris triseriata*), northern leopard frog (*Rana pipiens*), tiger salamander (*Ambystoma tigrinum*), greater short-horned lizard (*Phrynosoma douglasi*), common sagebrush lizard (*Sceloporus graciosus*), snapping turtle (*Chelydra serpentina*), painted turtle (*Chrysemys picta*), eastern racer (*Coluber constrictor*), western hog-nosed snake (*Heterodon nasicus*), plains garter snake (*Thamnophis radix*), gophersnake (bullsnake) (*Pituophis catenifer*), milksnake (*Lampropeltis triangulum*), and western rattlesnake (*Crotalus viridis*). The frogs, the painted turtle, and the salamander are restricted to wetlands and stockponds during most of the year. Many species are widespread throughout Phillips County. There are a number of high-quality natural and artificial wetlands on the lease parcels that are important to amphibian populations in wet years. Of particular importance are PR-56, Tarawa Reservoir, and several medium-sized reservoirs built during the 1930s.

3.7.2 General Wildlife

The wildlife resource is diverse and widely distributed in Phillips County with grassland species predominating. Nearly 300 bird species can be found across a wide variety of habitats either as year-long residents; spring, fall, or winter migrants; or as summer breeding species. Big game animals include pronghorn antelope (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), elk (*Cervus elaphus*), and occasionally moose (*Alces alces*) and bighorn sheep (*Ovis canadensis*). Large blocks of native grasslands, sagebrush grasslands, and breaks topography are important habitats for big game species and designated big game winter range areas are spread across much of Phillips County. Moose are becoming more

abundant as transient animals may stay in certain drainages throughout the summer. Bighorn sheep are more restricted to islands of habitat in the Little Rocky Mountains and the Larb Hills. Black bears (*Ursus americanus*) can occur in the Little Rocky Mountains, but they are extremely uncommon. The cougar (*Puma concolor*) is also found in the Little Rocky Mountains as well as in the Missouri River Breaks, and has been observed as far north as the Milk River. A few unconfirmed North American wolverine (*Gulo gulo luscus*) sightings have been reported near Malta and Loring since 2004. Mule deer, pronghorn antelope, white-tailed deer, elk and moose in decreasing order are the most likely big game animals to be found in the vicinity of the lease parcels; moose can move through many of the parcels when heading south from Woody Island Coulee.

Medium-sized mammals include coyote (*Canis latrans*), bobcat (*Lynx rufus*), badger (*Taxidea taxus*), beaver (*Castor canadensis*), porcupine (*Erethizon dorsatum*), striped skunk (*Mephitis mephitis*), swift (*Vulpes velox*) and red (*Vulpes vulpes*) foxes, white-tailed jackrabbit (*Lepus townsendii*), mountain cottontail (*Sylvilagus nuttallii*), muskrat (*Ondatra zibethicus*), mink (*Mustela vison*) and up to three species of weasels (*Mustela* spp.). There are black-tailed prairie dog (*Cynomys ludovicianus*) colonies in the southern two-thirds of the County, but they are reduced in area periodically by outbreaks of sylvatic plague. There are no known black-tailed prairie dog towns on or near any of the lease parcels.

A variety of shrews, rodents and other small mammals can also be found, including periodic high populations of Richardson's ground squirrels (*Spermophilus richardsonii*). Other small mammals found in Phillips County include species such as deer mouse (*Peromyscus maniculatus*), meadow vole (*Microtus pennsylvanicus*), sagebrush vole (*Lemmyscus [Lagurus] curtatus*), montane vole (*Microtus montanus*), northern grasshopper mouse (*Onychomys leucogaster*), olive-backed pocket mouse (*Perognathus fasciatus*), western harvest mouse (*Reithrodontomys megalotis*), and masked shrew (*Sorex cinereus*) for which records exist. All of these species could occur on the lease parcels.

Upland game birds include the native sharp-tailed grouse (*Tympanuchus phasianellus*), greater sage-grouse (*Centrocercus urophasianus*), and mourning dove (*Zenaidura macroura*), and the introduced ring-necked pheasant (*Phasianus colchicus*) and gray partridge (*Perdix perdix*). There are active greater sage-grouse strutting grounds or leks in sagebrush habitat, with leks more abundant in Wyoming big sagebrush areas in the southern half of the County than in silver sagebrush areas in the northern part of the County. Sage-grouse nesting is probable in sagebrush grasslands within two or possibly more miles of active leks. Sharp-tailed grouse dancing grounds are more abundant, especially near Breaks habitats north of the Milk River. Woody draws are especially important for sharp-tailed grouse, and some shrub species appear to be declining in portions of Phillips County. Many areas provide nesting habitat for female sharp-tailed grouse coming from multiple leks due to the high lek abundance. Pheasant, gray partridge, and mourning doves are most abundant near crop fields and Conservation Reserve Program (CRP) lands in the County. Gray partridge are often observed near the boundary with the Charles M. Russell NWR. There are two active greater sage-grouse strutting grounds either in or very near the northwestern lease parcels (MTM 97300-KW, MTM 97300-KX, and MTM 97300-K1) and sage-grouse are expected to be nesting on the parcels. There also are four active greater sage-grouse strutting grounds within two miles of the middle Milk River bed lease parcel

(MTM 97300-PE); the area is also used for winter habitat. There are forty or more known historic sharp-tailed grouse dancing grounds on or within two miles of the lease parcels, although many of these dancing grounds have not been monitored for many years. Although many of the older lek locations possibly are no longer active or have moved, it is still quite likely that sharp-tailed grouse are nesting somewhere on many of the lease parcels and woody draws are being used for feeding and winter cover.

Stock ponds and wetlands throughout Phillips County, when wet, provide habitat for over 20 species of waterfowl. Common nesting species include gadwall (*Anas strepera*), northern shoveler (*Anas clypeata*), blue-winged teal (*Anas discors*), cinnamon teal (*Anas cyanoptera*), northern pintail (*Anas acuta*), mallard (*Anas platyrhynchos*), American wigeon (*Anas americana*), green-winged teal (*Anas crecca*), lesser scaup (*Aythya affinis*) and Canada goose (*Branta canadensis*). The nesting season for waterfowl usually extends from April 15 to July 15. Constructed as well as natural islands on stock ponds and reservoirs provide important nesting sites for Canada geese and most duck species. Wood ducks (*Aix sponsa*) and some diving duck species utilize natural cavities and nest boxes in trees along the Milk River and various irrigation canals. Most or all of these waterfowl species nest on the various lease parcels in wet years.

Raptors found in Phillips County include the bald (*Haliaeetus leucocephalus*) and golden (*Aquila chrysaetos*) eagles, peregrine (*Falco peregrinus*) and prairie (*Falco mexicanus*) falcons, northern harrier (*Circus cyaneus*), Swainson's hawk (*Buteo swainsoni*), ferruginous hawk (*Buteo regalis*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), merlin (*Falco columbarius*), turkey vulture (*Cathartes aura*), northern goshawk (*Accipiter gentilis*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), rough-legged hawk (*Buteo lagopus*), and numerous species of owls. Many raptor nests are found in lone cottonwood (*Populus deltoides*) trees along County roads. Ferruginous hawks are especially abundant in northwestern Phillips County, a long ways from prairie dog towns. Many of these raptor species can be found on the lease parcels, but the ferruginous hawk and northern harrier are most abundant. Harriers probably nest on parcel MTM 97300-KX and a ferruginous hawk has nested approximately two miles south of that same parcel for many years.

Important grassland birds occurring in native prairie habitat in Phillips County include the Baird's (*Ammodramus bairdii*) and grasshopper (*Ammodramus savannarum*) sparrows, Sprague's pipit (*Anthus spragueii*), long-billed curlew (*Numenius americanus*), marbled godwit (*Limosa fedoa*), willet (*Cataptrophorus semipalmatus*), and McCown's (*Calcarius mccownii*) and chestnut-collared (*Calcarius ornatus*) longspurs. The Brewer's sparrow (*Spizella breweri*) is locally abundant in sagebrush habitat. Many of these species have experienced declines across much of their range in recent years, and large blocks of intact native grasslands remain important in maintaining healthy breeding populations of these birds. Areas with reduced or no livestock grazing are especially important. Wetlands also provide nesting areas for Wilson's phalaropes (*Phalaropus tricolor*) and spotted sandpipers (*Actitis macularia*) (shorebirds). The nesting season for migratory birds other than ducks generally is May 01 to August 01. Many of these species nest on the lease parcels.

Important wildlife species and habitats are described for each lease parcel, based on BLM records, Montana Natural Heritage Program records, literature sources, and personal experience

and knowledge of Fish and Wildlife Biologists from several Federal and State agencies. In addition, a brief field tour was conducted on 21 April 2011 along the County Road which adjoined many of the lease parcels. A severe winter with above normal snowfall had made this County Road impassable from late November 2010 until just before the field tour date. Phillips County does not maintain this road during winter because no one lives along this portion of the road and there are no postal or school bus routes that utilize the road. Off-road travel conditions on 21 April were impassable. Snowmelt was in progress and runoff covered much of the area as well as all drainage ways were running water. All wetlands visible from the road were full of runoff water, including many temporary wetlands that rarely fill with water. A more detailed field tour was not possible due to the unusually wet conditions and time constraints placed on completing this Environmental Assessment. **More rain and flooding came in May and June.**

Lease Parcel MTM 97300-KL

This parcel of 2,079.20 acres north of Dodson, Montana, contains one of the nicest wetland complexes in Phillips County. Natural wetlands are fairly large and provide important waterfowl habitat in wet years. The center of the complex is the west end (section 23) and north edge (section 13) of PR-56, a large reservoir with an extensive nesting island development project. The reservoir is more than a mile long and when full provides an important staging area for waterfowl besides breeding habitat. A quick estimate found 50 thousand ducks and geese on the project in late fall in the early 1980s when it was full. Adjacent grassland nesting habitat is used extensively by waterfowl as well as by Sprague's pipits and a host of BLM Sensitive grassland bird species covered by the Migratory Bird Treaty Act as well as Executive Order 13186. The same nesting areas around PR-56 are also located within two miles of a historic sharp-tailed grouse dancing ground and grouse nesting is anticipated on the lease parcel. Historic dancing grounds are those first discovered during 1979 - 1981 aerial surveys and have had no population data collected on them since initial discovery. During this 30-year time period it is probable that the grouse have changed the location of the dancing ground, but it is highly likely that they are still somewhere in the near vicinity. The parcel is also summer habitat for pronghorn antelope.

Lease Parcel MTM 97300-KM

Parcel MTM 97300-KM is 679.93 acres in size and is similar to the previous parcel, except that nesting habitat is located farther from PR-56. The private surface in section 3 is cropped and migratory bird nesting would be greatly reduced there, although not entirely eliminated. The remaining surface is either native range or crested wheatgrass and supports nesting habitat for Sprague's pipits and other migratory birds. Some natural wetlands are quite large, but may be dry for years during periods of drought. The 40 acres in section 25 is about a mile from the sharp-tailed grouse dancing ground and grouse nesting is expected on the parcel. There is summer habitat available for pronghorn antelope.

Lease Parcel MTM 97300-KP

This parcel of 1,840 acres contains the largest portion of PR-56 (section 24), an important waterfowl staging area and brood rearing reservoir. Waterfowl broods come to it in late summer from numerous small wetlands in surrounding sections that may go dry by late summer. The importance of PR-56 as a fall staging area for ducks and geese has already been emphasized, but the bulk of the birds were on the portion in this lease parcel. Many of the nesting islands are in this portion and surrounding native and introduced grasslands provide important nesting habitat

for Sprague's pipit and many BLM Sensitive grassland-nesting bird species. Most of the sections are within two miles of a historic sharp-tailed grouse dancing ground and nesting is expected, as is summer use by pronghorn antelope.

Lease Parcel MTM 97300-KW

This small lease parcel of 40 acres is within a quarter-mile of an active greater sage-grouse strutting ground and sage-grouse nesting is expected on this parcel. Some winter use could also occur there. The parcel is also close to two historic sharp-tailed grouse dancing grounds and nesting is also expected by grouse as well as by many species of migratory birds. The parcel is in the center of a large area of designated mule deer winter range and is only a half mile from designated pronghorn antelope winter range.

Lease Parcel MTM 97300-KQ

Parcel MTM 97300-KQ (2,237.92 acres) lies in a transition zone between native grasslands and rugged topography utilized by mule deer. The northern sections are on the edge of designated mule deer winter range, but are more than four miles from an active greater sage-grouse strutting ground. Sage-grouse use is not expected to any great extent. Nesting by Sprague's pipit and other important grassland-nesting migratory birds is expected in the upland grasslands in the southern sections of this parcel as well as on finger ridges extending into the breaks topography. The southern portions also have some smaller wetlands used by breeding waterfowl during wet years. The parcel is several miles from designated pronghorn antelope winter range, but summer use does occur.

Lease Parcel MTM 97300-KR

This parcel of 2,438.59 acres contains some excellent grassland habitat with associated wetlands. Some wetlands, such as in section 31, are quite large and capable of holding water for several years. Nesting island developments have been constructed on several of the reservoirs and wetlands. Waterfowl use is high, but nesting habitat is also important for Sprague's pipits and other grassland-nesting migratory birds. Many of the sections are within two miles of a historic sharp-tailed grouse dancing ground and nesting is anticipated in the area. The northern part in section 4 is in designated mule deer winter range while the entire parcel is pronghorn antelope summer range.

Lease Parcel MTM 97300-KS

Parcel MTM 97300-KS (1,680 acres) has similar habitat issues as the previous parcels, except that sharp-tailed grouse are less likely to be nesting on it. The closest known historic sharp-tailed grouse dancing ground is a little over two miles away from the closest piece of the parcel. Designated mule deer winter range occurs in the northern sections (11 and 12) while Sprague's pipit and other migratory bird nesting occurs in all of the sections. There is at least one wetland in section 13. Pronghorn antelope use the parcel for summer range.

Lease Parcel MTM 97300-KT

This parcel of 640 acres is primarily habitat for Sprague's pipit and other grassland-nesting migratory birds. Wetland habitat is abundant in section 23 with some large wetlands present. There is no big game winter range on the parcel, but the area is used by pronghorn antelope for summer range. The closest historic sharp-tailed grouse dancing ground is over three miles away,

although nesting could occur in section 23. The parcel is even farther from known greater sage-grouse strutting grounds and a lack of sagebrush severely limits the potential for sage-grouse nesting.

Lease Parcel MTM 97300-KU

Parcel MTM 97300-KU is 799.98 acres in size comprised mostly of small pieces of Federal minerals spread over eight sections. All are located close to the historic sharp-tailed grouse dancing ground mentioned in previous parcels. The primary habitat is native grassland nesting cover used by Sprague's pipits and other migratory birds. Wetland habitat is present in a couple of the sections, including a rather large wetland in section 26. There is no designated big game winter range present, but pronghorn antelope use the area as summer habitat.

Lease Parcel MTM 97300-KV

This parcel contains the 640 acres in section 33. Wetland habitat is abundant partly due to a large reservoir built in a small drainage that contains several upstream pools that hold water for a while after spring runoff. There is a nesting island development on the reservoir that is used extensively by Canada geese. The same sharp-tailed grouse dancing ground as in previous parcels is about a mile away and nesting is likely on the lease parcel. Sprague's pipits and other grassland-nesting migratory birds nest on the parcel. Pronghorn antelope use the parcel for summer range, but there is no designated big game winter range on or near the parcel.

Lease Parcel MTM 97300-KX

Breaks habitat combined with grass-covered ridges in parcel MTM 97300-KX is habitat for a wide variety of important wildlife species. The lease area is 760 acres in the four sections in the northwest corner of the township. The parcel is in the center of a large area of designated mule deer winter range and most of it is also in designated pronghorn antelope winter range. The parcel is within two miles of an active greater sage-grouse strutting ground and about two and a half miles from another. Two historic sharp-tailed grouse dancing grounds are also within a mile and nesting by both grouse species is highly probable on the parcel. Both species also spend the winter there. Grassland finger ridges extending into the breaks habitat provide nesting habitat for Sprague's pipits and other grassland-nesting migratory birds. Wetland habitat is mostly restricted to the drainage bottom in section 8 where some riparian habitat is used by nesting northern harriers. The parcel is also about two miles northeast of an active ferruginous hawk nest and hawks could use the parcel for hunting and feeding.

Lease Parcel MTM 97300-KH

Lease parcel MTM 97300-KH (2,259.75 acres) is in the heart of a large block of designated mule deer winter range. Pronghorn antelope winter range is just a couple of miles north of the parcel and summer habitat occurs throughout the parcel. Grassland habitat on ridges and in drainage bottoms provide nesting habitat for Sprague's pipits and other migratory birds. Four historic sharp-tailed grouse dancing grounds are on or near the parcel and grouse nesting is expected. The parcel is about six miles from the closest known greater sage-grouse strutting ground and sage-grouse use of the area is more likely for migration habitat than for nesting habitat.

Lease Parcel MTM 97300-KI

Parcel MTM 97300-KI is a rather large parcel (2,520 acres) located directly south of the previous parcel. Habitat issues are the same, with designated mule deer winter range, sharp-tailed grouse dancing grounds, and Sprague's pipit and migratory bird nesting habitat. The south half of section 10 does contain some riparian habitat on Cottonwood Creek, but more of the drainage bottom is covered by sagebrush than by deciduous trees. The BLM Sensitive Fish Species Pearl Dace has been found in Cottonwood Creek. There are no known greater sage-grouse strutting grounds near the parcel. Pronghorns use the area for summer habitat.

Lease Parcel MTM 97300-KJ

This lease parcel is another large unit of 2,471.03 acres and continuing south from the previous two parcels. The northern sections are in designated mule deer winter range while the southern sections contain more grassland habitat with occasional wetlands. The combination of grasslands with natural wetland habitat provides nesting habitat for Sprague's pipits, waterfowl and many grassland-nesting migratory birds. Sharp-tailed grouse from the dancing grounds to the north could still be nesting on this parcel. Pronghorn antelope are found on the parcel during summer. A scattered 40-acre piece in section 25 contains a tributary of Garland Creek which is known to support a population of the BLM Sensitive Fish Species northern redbelly x finescale dace hybrid.

Lease Parcel MTM 97300-KK

The remaining portions of this township are included in the 320 acres of parcel MTM 97300-KK in some of the southern sections. Section 17 remains in designated mule deer winter range, but sections 20 and 29 are in grassland habitat interspersed with natural wetlands. Nesting habitat is available for Sprague's pipits, waterfowl and other grassland-nesting migratory birds. Sections 17 and 20 are also within two miles of two sharp-tailed grouse dancing grounds and grouse nesting probably occurs on the parcel. There is summer habitat for pronghorn antelope.

Lease Parcel MTM 97300-KY

Lease parcel MTM 97300-KY is in a large block of public land (2,311.97 acres) in a fairly remote location. Reservoirs in this area are quite large and several contain nesting island projects and partial enclosure fences to exclude livestock grazing from important wildlife habitat. One of these reservoirs in section 2 supports a nesting colony of eared grebes (*Podiceps nigricollis*) during wet years. A combination of wetlands and native grassland provides nesting habitat for Sprague's pipits, waterfowl and other grassland-nesting migratory birds. The western portion in sections 4 and 5 is in designated mule deer winter range and is very close to pronghorn antelope winter range. The entire parcel is pronghorn antelope summer range. Most of the parcel is within two miles of a sharp-tailed grouse dancing ground.

Lease Parcel MTM 97300-KZ

This parcel of 2,240 acres is adjacent to the previous parcel, but is removed from the big game winter range areas. Pronghorn antelope do use the area for summer habitat. Wetlands in sections 3 and 11 in combination with grassland habitat provide nesting areas for Sprague's pipits, waterfowl, and other grassland-nesting migratory birds. Section 14 is within two miles of a historic sharp-tailed grouse dancing ground and grouse nesting is expected on the parcel. There is some silver sagebrush in the area, but not enough to provide habitat for greater sage-

grouse on a regular basis. The closest sage-grouse strutting ground is over four miles to the west.

Lease Parcel MTM 97300-K1

Lease parcel MTM 97300-K1 (2,307.17 acres) is located in a similar area as the previous two parcels, and includes some more reservoirs, including one of considerable significance. Tarawa Reservoir in section 10 was built in cooperation with Ducks Unlimited and includes over a hundred surface acres of water, nesting islands, water control structure, exclosure fence, and a downstream alternate stock tank for watering livestock. The portions in sections 6, 7 and 8 are wholly in designated mule deer winter range and partly in pronghorn antelope winter range. The entire area is important nesting habitat for Sprague's pipits, waterfowl and other grassland-nesting migratory birds. A colony of eared grebes nests on Tarawa Reservoir. The scenic overlook on the south side of Tarawa Reservoir gives an impressive view of one of the most spectacular waterfowl habitat development projects in northern Montana. It is ironic that access to the site is extremely difficult and few people ever get to see the project. The drainage above Tarawa Reservoir consistently produces ample runoff and waterfowl habitat is available every year. The western edge of section 6 is about two miles from an active greater sage-grouse strutting ground and nesting is expected in the parcel.

Lease Parcel MTM 97300-K2

This lease parcel of 2,400 acres is quite similar to previous ones in this township, with a wide variety of wildlife species and habitats present. The entire parcel has Sprague's pipit and migratory bird nesting habitat with some portions having greater potential than others. Designated mule deer winter range is present in Sections 17, 20 and 21, while pronghorn antelope winter range is present in sections 17 and 20. Summer habitat is present for both species. A historic sharp-tailed grouse dancing ground just south of the parcel is within two miles of most of the parcel and grouse nesting can be expected. A small portion of Cottonwood Creek in section 20 provides a little bit of riparian habitat in proximity to some sagebrush flats about three miles from an active greater sage-grouse strutting ground. Nesting is possible on the parcel, but less likely than for areas within two miles of the strutting ground. Cottonwood Creek also supports populations of the pearl dace, a BLM Sensitive Species.

Lease Parcel MTM 97300-K3

Lease parcel MTM 97300-K3 of 2,560 acres is the last parcel in this township. Waterfowl habitat is present in several large reservoirs. Nesting habitat is available for Sprague's pipit, waterfowl and other grassland-nesting migratory birds, and the entire parcel is close to the same historic sharp-tailed grouse dancing ground. Small wetlands are common, although runoff and nesting cover have been altered in recent years by a chisel-plowing project to rejuvenate native range. Sections 25 and 35 are in designated mule deer winter range. The entire parcel is pronghorn antelope summer habitat and the lack of easy access has left this area for the most part undisturbed with wildlife living in a natural setting with only an occasional human visiting the area during most of the year.

Lease Parcel MTM 97300-K5

This parcel of 1,961.28 acres is on the east edge of a large block of public land. Grassland habitat on most of the parcel provides nesting sites for Sprague's pipit and other grassland-

nesting migratory birds. The one exception would be a crop field in section 32, but that piece contains natural wetlands as do most of the segments of this parcel, and some waterfowl use would be expected in wet years. Most of the parcel is within two miles of at least one of four sharp-tailed grouse dancing grounds and nesting is expected on the parcel. Sections 30 and 31 are also within designated mule deer winter range, and the entire parcel is summer habitat for pronghorn antelope. Section 6 contains the upper reaches of Little Cottonwood Creek, and although riparian habitat is minimal, several BLM Sensitive Fish Species could travel to this area from the Milk River in years with abundant spring runoff.

Lease Parcel MTM 97300-PF

Parcel MTM 97300-PF is a small piece (2.75 acres) of river bed beneath the Milk River within a State section. The Milk River contains the BLM Sensitive Fish Species Sauger and probably provides habitat for at least two Sensitive Dace Species that are found in several tributaries of the Milk River. The river bed does not contain terrestrial habitat other than a little bit of riparian habitat on the river's edge, but access to the parcel does cross through designated mule deer and pronghorn antelope winter range. The parcel is also within two miles of several sharp-tailed grouse dancing grounds and a historic greater sage-grouse strutting ground, although the strutting ground has not been occupied for many years. Some migratory birds could nest along the river, but the Sprague's pipit is not present.

Lease Parcel MTM 97300-PE

This parcel is another Milk River bed segment of 42.79 acres in a State section. The Milk River contains the BLM Sensitive Fish Species Sauger and probably provides habitat for at least two Sensitive Dace Species that are found in several tributaries of the Milk River. The river bed does not contain terrestrial habitat other than a little bit of riparian habitat on the river's edge, but access to the parcel does cross through designated mule deer and pronghorn antelope winter range. The parcel is also within two miles of several sharp-tailed grouse dancing grounds and four active greater sage-grouse strutting grounds. The access route goes by two of the strutting grounds which are also in an important wintering area for sage-grouse, if not the most important sage-grouse wintering area in Phillips County. Some migratory birds could nest along the river, but the Sprague's pipit is not present.

Lease Parcel MTM 97300-PD

Lease parcel MTM 97300-PD is another Milk River bed segment of 21.87 acres in a State section north of Hewitt Lake National Wildlife Refuge. The Milk River contains the BLM Sensitive Fish Species Sauger and probably provides habitat for at least two Sensitive Dace Species that are found in several tributaries of the Milk River. The river bed does not contain terrestrial habitat other than a little bit of riparian habitat on the river's edge, but access to the parcel does cross through designated mule deer and pronghorn antelope winter range. The parcel is also within two miles of several sharp-tailed grouse dancing grounds. Some migratory birds could nest along the river, but the Sprague's pipit is not present.

Lease Parcel MTM 97300-RL

This parcel is another Milk River bed segment of 21.19 acres in the same State section as the previous parcel north of Hewitt Lake National Wildlife Refuge. The Milk River contains the BLM Sensitive Fish Species Sauger and probably provides habitat for at least two Sensitive Dace Species that are found in several tributaries of the Milk River. The river bed does not contain terrestrial habitat other than a little bit of riparian habitat on the river's edge, but access to the parcel does cross through designated mule deer and pronghorn antelope winter range. The parcel is also within two miles of several sharp-tailed grouse dancing grounds. Some migratory birds could nest along the river, but the Sprague's pipit is not present.

3.8 Cultural Resources

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

Table 6 summarizes the existing level of Class III Cultural Resource inventory (by percentage) which has occurred to date within the proposed lease parcel boundaries. Furthermore; potentially affected sites, Class III inventory records numbers, and a brief description of why the inventories were performed is also included.

Table 6. Summary of Cultural Resource Locations, Inventory Reports and Percent of Lease Parcels surveyed to Class III Standards

PARCEL NUMBER	CULTURAL LOCATIONS WITHIN PARCEL SECTION	INVENTORIES W/N PARCEL	% OF PARCEL SURVEYED	COMMENTS
MTM 97300-KL	24PH2210 AND 24PH2211 LOCATED WITHIN SEC. 13	MT-065-81-114, MT-065-82-201, MT-065-81-76, MT-065-81-94, MT-060-58-79-06, MT-065-81-123	20 % SURVEYED	MAJORITY OF INVENTORIES PERFORMED FOR RANGE IMPROVEMENTS (I.E. RESERVOIRS)
MTM 97300-KM	24PH0587 AND 24PH0590 LOCATED WITHIN SEC. 25	MT-065-81-93, MT-065-80-311 MT-065-80-243 MT-065-81-79 MT-060-58-79-06	15 % SURVEYED	MAJORITY OF INVENTORIES PERFORMED FOR RANGE IMPROVEMENTS (I.E. RESERVOIRS)
MTM 97300-KP	24PH2209 AND 24PH2212 LOCATED WITHIN SEC 24, 24PH0587 AND 24PH0590 LOCATED WITHIN SEC 25, 24PH0588 AND 24PH0589 LOCATED WITHIN SEC 36	MT-065-81-93 MT-065-82-206 MT-065-81-81 MT-065-81-78 MT-065-80-311 MT-065-81-80 MT-065-81-315 MT-065-80-243	30 % SURVEYED	MAJORITY OF INVENTORIES PERFORMED FOR RANGE IMPROVEMENTS (I.E. RESERVOIRS)

		MT-065-81-79 MT-065-81-114 MT-065-82-201 MT-065-81-76 MT-065-80-353 MT-065-80-240 MT-060-58-79-06		
MTM 97300-KW	NO SITES	NO INVENTORY	0 % SURVEYED	NO INVENTORY
MTM 97300-KQ	24PH2220 LOCATED WITHIN SEC 9	MT-065-81-118 MT-065-84-50 MT-065-84-41 MT-065-82-87 96-MT-064-002	LESS THAN 1 % SURVEYED	MAJORITY OF INVENTORIES PERFORMED FOR RANGE IMPROVEMENTS (I.E. RESERVOIRS)
MTM 97300-KR	24PH2208 AND 24PH2215 LOCATED WITHIN SEC 19, 24PH2216 LOCATED WITHIN SEC 29, 24PH2213 AND 24PH2214 LOCATED WITHIN SEC 31	MT-065-80-342 MT-065-80-350 MT-065-80-351 MT-065-81-117 MT-065-81-84 MT-065-81-118 MT-065-85-133-(12) PH 2 7591 MT-065-80-347 MT-065-80-348 MT-065-80-244 MT-065-80-345 MT-065-81-115 MT-065-80-349 MT-065-82-202 MT-060-58-79-06 96-MT-064-002 ZZ 2 19196	2 % SURVEYED	MAJORITY OF INVENTORIES PERFORMED FOR RANGE IMPROVEMENTS (I.E. RESERVOIRS)
MTM 97300-KS	NO SITES	90-MT-065-100 90-MT-065-101 MT-065-84-33	1 % SURVEYED	MAJORITY OF INVENTORIES PERFORMED FOR RANGE IMPROVEMENTS (I.E. RESERVOIRS)
MTM 97300-KT	NO SITES	90-MT-065-103	1 % SURVEYED	INVENTORY FOR RESERVOIR
MTM 97300-KU	24PH2216 LOCATED WITHIN SEC 29	MT-065-81-84 PH 2 7591 MT-060-58-79-06 MT-065-82-115 MT-065-82-202 ZZ 2 19196	3 % SURVEYED	MAJORITY OF INVENTORIES PERFORMED FOR RANGE IMPROVEMENTS (I.E. RESERVOIRS)
MTM 97300-KV	24PH2206 LOCATED WITHIN SEC 33	MT-065-81-116 MT-060-58-79-06 MT-065-81-82 MT-065-82-195 MT-065-82-115	12 % SURVEYED	MAJORITY OF INVENTORIES PERFORMED FOR RANGE IMPROVEMENTS (I.E. RESERVOIRS)

MTM 97300-KX	NO SITES	90-MT-065-160 MT-065-80-274	5 % SURVEYED	INVENTORIES PERFORMED FOR RANGE IMPROVEMENTS (I.E. RESERVOIRS)
MTM 97300-KH	NO SITES	HL 6 19616	5 % SURVEYED	INVENTORY FOR NRCS PROJECT
MTM 97300-KI	NO SITES	NO INVENTORY	0 % SURVEYED	NO INVENTORY
MTM 97300-KJ	24PH2255 AND 24PH2256 LOCATED WITHIN SEC 25	PH 6 12735 PH 6 15011 PH2 7591 MT-065-84-32 PH 6 32083 MT-065-85-133 (27)	30 % SURVEYED	LARGE SCALE CHISEL PLOW PROJECT AND NUMEROUS RANGE IMPROVEMENTS
MTM 97300-KK	NO SITES	NO INVENTORY	0 % SURVEYED	NO INVENTORY
MTM 97300-KY	24PH3867,24PH3868, 24PH3869,24PH3870 (SEC 1), 24PH0585,24PH3863, 24PH3864,24PH3865, 24PH3866 (SEC 2), 24PH0584 (SEC 3), 24PH2230 (SEC 4,5)	90-MT-065-99 MT-065-82-20 MT-065-82-137 MT-065-82-133 MT-065-82-21 MT-065-80-272 MT-065-80-310 MT-065-80-238 MT-065-82-139 04-MT-065-039	60 % SURVEYED	LARGE SCALE CHISEL PLOW PROJECT AND NUMEROUS RANGE IMPROVEMENTS
MTM 97300-KZ	24PH3867,24PH3868, 24PH3869,24PH3870 (SEC 1), 24PH0584 (SEC 3), 24PH3858,24PH3859, 24PH3860,24PH3861, 24PH3862 (SEC 11), 24PH3871,24PH3872, 24PH3873 (SEC 12), 24PH3793,24PH3794, 24PH3802,24PH3803, 24PH3804,24PH3805, 24PH3806 (SEC 13) 24PH3791,24PH3792, 24PH3806,24PH3857 (SEC 14)	MT-065-82-79 MT-065-82-134 MT-065-82-137 MT-065-82-81 MT-065-82-136 MT-065-82-80 MT-065-82-135 MT-065-82-82 MT-065-82-138 04-MT-065-039 04-MT-065-030 MT-066-85-199 03-MT-065-026	70 % SURVEYED	LARGE SCALE CHISEL PLOW PROJECT AND NUMEROUS RANGE IMPROVEMENTS
MTM 97300-K1	NO SITES	MT-065-84-36 MT-065-84-35 MT-065-84-120	5 % SURVEYED	MAJORITY OF INVENTORIES PERFORMED FOR RANGE IMPROVEMENTS (I.E. RESERVOIRS)
MTM 97300-K2	24PH3858,24PH3859, 24PH3860,24PH3861, 24PH3862 (SEC 11), 24PH3793,24PH3794, 24PH3802,24PH3803, 24PH3804,24PH3805, 24PH3806 (SEC 13)	90-MT-065-102 90-MT-065-97 90-MT-065-98 MT-065-82-79 MT-065-82-134 MT-065-82-80 MT-065-82-135	50 % SURVEYED	LARGE SCALE CHISEL PLOW PROJECT AND NUMEROUS RANGE IMPROVEMENTS

		MT-065-82-200 04-MT-065-039 03-MT-065-026		
MTM 97300-K3	24PH3795,24PH3796, 24PH3797,24PH3806 (SEC 23) 24PH3798,24PH3799, 24PH3801,24PH3804 (SEC 24)	MT-065-82-79 MT-065-82-134 MT-065-82-102 MT-065-82-80 MT-065-82-135 03-MT-065-026	50 % SURVEYED	LARGE SCALE CHISEL PLOW PROJECT AND NUMEROUS RANGE IMPROVEMENTS
MTM 97300-K5	24PH3800 LOCATED WITHIN SEC 19	93-MT-065-20 93-MT-067-02 93-MT-068-05 03-MT-065-026	25 % SURVEYED	CHISEL PLOW PROJECT
MTM 97300-PF	24PH3454,24PH3455 (SEC 36)	MDT #NH 99-1(2)7	0 % SURVEYED	INVENTORY ALONG EXISTING HWY
MTM 97300-PE	24PH2671, 24PH3766 (SEC 36)	MDT #NH 99-1(2)7 BOR-MR-97-85 BLM-M77268-98MT- 065-008	0 % SURVEYED	INVENTORY ALONG EXISTING HWY
MTM 97300-PD	24PH4334 (SEC 36)	PH 5 30927 PH 6 32272 PH 6 30136 PH 6 7877	10 % SURVEYED	INVENTORIES WITHIN SECTION PERFORMED FOR OIL AND GAS DEVELOPMENTS
MTM 97300-RL	24PH4334 (SEC 36)	PH 5 30927 PH 6 32272 PH 6 30136 PH 6 7877	10 % SURVEYED	INVENTORIES WITHIN SECTION PERFORMED FOR OIL AND GAS DEVELOPMENTS
MTM 97300-KL	24PH2210 AND 24PH2211 LOCATED WITHIN SEC. 13	MT-065-81-114, MT-065-82-201, MT-065-81-76, MT-065-81-94, MT-060-58-79-06, MT-065-81-123	20 % SURVEYED	MAJORITY OF INVENTORIES PERFORMED FOR RANGE IMPROVEMENTS (I.E. RESERVOIRS)

60 historic properties are located within or near the proposed lease parcels. Of these, 40 are prehistoric and 20 are historic. Prehistoric sites include stone circles, stone cairns, lithic scatters, fire cracked rock, and quarry sites. Historic sites consist of debris piles, roads and trails, railroads, foundations, and corrals. For a summary of specific sites and eligibility determinations see Table 7.

Table 7. Historic Properties within or near proposed lease parcels, NRHP eligibility determinations.

Site #	Eligibility	Description	Township	Range	Section(s)
24PH0584	ND	DUMP	34N	28E	3

24PH0585	UD	TIPI RING	34N	28E	2
24PH0587	ND	CARIN	33N	26E	25
24PH0588	ND	FOUNDATION	33N	26E	36
24PH0589	ND	TIPI RING	33N	26E	36
24PH0590	ND	DUMP	33N	26E	25
24PH2206	ND	HOMESTEAD	33N	27E	33
24PH2207	ND	TIPI RING	33N	27E	33
24PH2208	ND	TIPI RING	33N	27E	19
24PH2209	ND	TIPI RING	33N	26E	24
24PH2210	ND	TIPI RING	33N	26E	13
24PH2211	ND	HOMESTEAD	33N	26E	13
24PH2212	ND	TIPI RING	33N	26E	24
24PH2213	ND	CARIN	33N	27E	31
24PH2214	ND	TIPI RING	33N	27E	31
24PH2215	ND	TIPI RING	33N	27E	19
24PH2216	ND	TIPI RING	33N	27E	29
24PH2220	ND	TIPI RING	33N	27E	9
24PH2230	ND	TIPI RING	34N	28E	4,5
24PH2255	ND	TIPI RING	33N	28E	25
24PH2256	ND	TIPI RING	33N	28E	25
24PH2671	IE	RAILROAD/ TRAVEL	33N	30E	36
24PH3454	UR	ROAD/TRAIL	32N	30E	36
24PH3455	UR	IRRIGATION	32N	30E	36
24PH3766	ND	CARIN	33N	30E	36
24PH3791	UR	PITS	34N	28E	14
24PH3792	UR	TIPI RING	34N	28E	14
24PH3793	UR	TIPI RING	34N	28E	13
24PH3794	UR	CARIN	34N	28E	13
24PH3795	UR	TIPI RING	34N	28E	23
24PH3796	UR	TIPI RING	34N	28E	23

24PH3797	UR	TIPI RING	34N	28E	23
24PH3798	UR	LITHIC SCATTER	34N	28E	24
24PH3799	UR	TIPI RING	34N	28E	24
24PH3800	UR	TIPI RING	34N	29E	19
24PH3801	UR	TIPI RING	34N	28E	24
24PH3802	UR	TIPI RING	34N	28E	13
24PH3803	UR	TIPI RING	34N	28E	13
24PH3804	UR	TIPI RING	34N	28E	13,23
24PH3805	UR	TIPI RING	34N	28E	13
24PH3806	UR	LITHIC SCATTER, QUARRY	34N	28E	13,14,23
24PH3857	IE	DUMP	34N	28E	14
24PH3858	IE	CARIN	34N	28E	11
24PH3859	UR	CARIN	34N	28E	11
24PH3860	IE	CARIN	34N	28E	11
24PH3861	UR	TIPI RING	34N	28E	11
24PH3862	IE	CARIN	34N	28E	11
24PH3863	UR	TIPI RING	34N	28E	2
24PH3864	UR	STONE QUARRY	34N	28E	2
24PH3865	IE	DUMP	34N	28E	2
24PH3866	UR	TIPI RING	34N	28E	2
24PH3867	UR	TIPI RING, FCR, LITHICS	34N	28E	1
24PH3868	UR	TIPI RING	34N	28E	1
24PH3869	IE	DUGOUT	34N	28E	1
24PH3870	IE	CARIN	34N	28E	1
24PH3871	IE	DUMP	34N	28E	12
24PH3872	IE	FOUNDATION	34N	28E	12
24PH3873	UR	STOCK RAISING	34N	28E	12
24PH4334	UR	CARIN	33N	31E	36

*IE= Ineligible, UR= Unresolved, UD= Undetermined, ND= No data available

3.9 Native American Religious Concerns

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

The area that makes up the proposed lease parcels was at one time the aboriginal lands of multiple tribes. These tribes include Piegan, Blood, Blackfeet, Gros Ventre, Assinboine, Sioux, Flathead (Salish), and Cree Tribes.

Previous consultation with tribes indicates that they use certain areas for religious and cultural purposes. Certain types of archaeological sites have cultural and religious significance. These include vision quest sites, monumental/ anthropomorphic/zoomorphic rock features, rock art sites, burials, habitation sites with special purpose ceremonial structures, and ceremonial and/or dance grounds. No defined Traditional Cultural Properties have been identified within the proposed lease parcels however; a significant cultural location (Big Bend of the Milk River ACEC) has been identified nearby.

The Big Bend of the Milk River ACEC contains an abundance of archaeological sites with unique characteristics and scientific values which warrant special attention. The ACEC consists of two large sites adjacent to the Milk River and includes the Henry Smith and Beaucoup site complexes, both of which contain bison kills and ceremonial and habitation sites. Both complexes are characterized by unique stone surface features and multiple occupation episodes. Other important, but lesser known sites nearby are unnamed bison kills, drive lines, meat processing sites, petroglyph boulders, and tipi ring concentrations.

3.10 Paleontology

Occurrences of paleontological resources are closely related to the geologic units that contain them, and the potential for finding important paleontological resources can be broadly predicted by the presence of the pertinent geologic units at or near the surface (Table 8). Therefore, geologic mapping can be used as a proxy for assessing the potential occurrence of important paleontological resources. The Potential Fossil Yield Classification (PFYC) system adopted by the BLM in 2008 uses geologic units as base data. The PFYC system provides a uniform tool to assess potential occurrences of paleontological resources and evaluate possible impacts.

Under the PFYC system, geologic units are classified based on the relative abundance of vertebrate fossils or uncommon invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential. This classification is best applied at the geologic formation or member level. It is not intended to be an assessment of whether important fossils are known to occur occasionally in these units (i.e. a few important fossils or localities widely scattered throughout a formation does not necessarily indicate a higher class), nor is it intended to be applied to specific sites or areas. The classification system is intended to provide baseline guidance to assessing and mitigating impacts to paleontological resources. In many situations, the classification should be an intermediate step in the analysis, and should be used to assess additional mitigation needs. The PFYC classes are defined in detail below:

Class 1: Units unlikely to contain recognizable fossil remains. This includes units that are igneous or metamorphic in origin (but excludes tuffs), as well as units that are Precambrian in age or older. Management concern for paleontological resources in *Class 1* units is negligible or not applicable. No assessment or mitigation is needed except in very rare circumstances. The occurrence of significant fossils in *Class 1* units is non-existent or extremely rare.

Class 2: Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant nonvertebrate fossils. This includes units in which vertebrate or significant nonvertebrate fossils are unknown or very rare, units that are younger than 10,000 years before present, units that are Aeolian in origin, and units which exhibit significant physical changes in rock (i.e. compaction, cementation, mineral replacement). The potential for impacting vertebrate fossils or uncommon invertebrate or plant fossils is low. Management concern for paleontological resources is low, and management actions are not likely to be needed. Localities containing important resources may exist, but would be rare and would not influence the classification.

Class 3: Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential. These units are often marine in origin with sporadic known occurrences of vertebrate fossils. Vertebrate fossils and uncommon nonvertebrate fossils are known to occur inconsistently and predictability is known to be low. Two subsets to *Class 3* units are described below:

Class 3a includes a broad range of potential impacts. Geologic units of unknown potential, as well as units of moderate or infrequent fossil occurrence are included. Assessment and mitigation efforts also include a broad range of options. Surface-disturbing activities will require sufficient assessment to determine whether significant fossil resources occur in the area of a proposed action, and whether the action could affect the paleontological resources.

Class 3b includes units that are poorly studied and/or poorly documented, so that the potential yield cannot be assigned without ground reconnaissance. Management concern for paleontological resources in these units is moderate, or cannot be determined from existing data. Surface-disturbing activities may require field assessment to determine a further course of action.

Class 4: These are **Class 5** geologic units (see below) that have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation. They include bedrock units with extensive soil or vegetative cover, bedrock exposures that are limited or not expected to be impacted, units with areas of exposed outcrop that are smaller than two contiguous acres, units in which outcrops form cliffs of sufficient height and slope so that impacts are minimized by topographic effects, and units where other characteristics are present that lower the vulnerability of both known and unidentified fossil localities.

Class 5: Highly fossiliferous geologic units that regularly and predictably produce vertebrate fossils or uncommon invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation. These include units in which vertebrate fossils or uncommon invertebrate or plant fossils are known and documented to occur consistently, predictably, or abundantly. **Class 5** pertains to highly sensitive units that are well exposed with little or no soil or vegetative cover, units in which outcrop areas are extensive, and exposed bedrock areas that are larger than two contiguous acres.

Table 8. Individual Lease Parcel PFYC Classifications

PARCEL NUMBER	PFYC CLASSIFICATION
MTM 97300-KL	3
MTM 97300-KM	3
MTM 97300-KP	3

MTM 97300-KW	3
MTM 97300-KQ	3
MTM 97300-KR	3
MTM 97300-KS	3
MTM 97300-KT	3
MTM 97300-KU	3
MTM 97300-KV	3
MTM 97300-KX	3
MTM 97300-KH	3,4,5
MTM 97300-KI	3,4,5
MTM 97300-KJ	3,4,5
MTM 97300-KK	3,4,5
MTM 97300-KY	3,4,5
MTM 97300-KZ	3,4,5
MTM 97300-K1	3,4,5
MTM 97300-K2	3,4,5
MTM 97300-K3	3,4,5
MTM 97300-K5	3,4,5
MTM 97300-PF	3,4,5
MTM 97300-PE	3
MTM 97300-PD	1,2
MTM 97300-RL	1,2

3.11 Visual Resources

The visual resource management (VRM) class of a landscape sets the BLM's management objectives for allowable change in the area's appearance. These are stated as levels of adverse contrast that a new BLM activity can introduce to the landscape. Adverse contrast occurs when the new elements do not repeat or harmonize with the characteristic form, line, color and texture of the natural landscape. Based on current VRM designations, the proposed lease parcels fall within VRM Classifications III and IV.

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

A Class IV VRM area classification means that the characteristic landscape can provide for major modification of the landscape. The level of change in the basic landscape elements can be high. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements. Twenty-three of the proposed lease parcels fall within the Class IV designation (Table 9).

Table 9: VRM Classes for the analysis area

Leasing Areas	VRM Class III Acres	VRM Class IV Acres
<i>PHILLIPS COUNTY</i>	<i>0 acres</i>	<i>0 total acres</i>
MTM 97300- KL	0	2079.20
MTM 97300-KM	0	679.93
MTM 97300-KP	0	1840.00
MTM 97300-KW	0	40.00
MTM 97300-KQ	0	2237.92
MTM 97300-KR	0	2438.59
MTM 97300-KS	0	1680.00
MTM 97300-KT	0	640.00
MTM 97300-KU	0	799.98
MTM 97300-KV	0	640.00
MTM 97300-KX	0	760.00
MTM 97300-KH	0	2259.75
MTM 97300-KI	0	2520.00
MTM 97300-KJ	0	2471.03
MTM 97300-KK	0	320.00
MTM 97300-KY	0	2311.97
MTM 97300-KZ	0	2240.00
MTM 97300-K1	0	2307.17
MTM 97300-K2	0	2400.00
MTM 97300-K3	0	2560.00
MTM 97300-K5	0	1961.28
MTM 97300-PF	2.75	0
MTM 97300-PE	42.79	0
MTM 97300-PD	0	21.87
MTM 97300-RL	0	21.19

3.12 Forest and Woodland Resources

Forest and woodland resources for the most part are not present. A few woody draws are a minor component of the landscape, although they provide important habitat for mule deer, sharp-tailed grouse, and many songbirds. Cottonwood gallery forest occurs adjacent to the Milk River bed parcels, but the river beds do not support the trees. There is no marketable lumber, and

regeneration of cottonwoods has been repressed in recent years due to a lack of flooding of oxbows.

3.13 Livestock Grazing

Lease parcels contain portions of many BLM grazing allotments (Table 10). BLM grazing allotments may or may not have BLM land intermingled with unfenced private and/or State lands. Livestock grazing is administered by a permit system using animal unit months (AUM) which is the amount of forage consumed by a cow/calf pair in one month during the summer grazing season. Calves normally are shipped prior to any authorized winter grazing. Winter grazing is not expected on most allotments due to the remoteness of the area and the lack of road maintenance (snow plowing) during the winter season.

Table 10. Acreages of Grazing Allotments Proposed for Leasing.

PARCEL	ALLOTMENT	NAME	ACRES
MTM 97300-KL	Private Surface		1,194.41
MTM 97300-KM	Private Surface		639.45
MTM 97300-KP	Private Surface		0.01
MTM 97300-KQ	Private Surface		160.10
MTM 97300-KR	Private Surface		80.43
MTM 97300-KS	Private Surface		0.02
MTM 97300-KT	Private Surface		639.82
MTM 97300-KU	Private Surface		279.97
MTM 97300-KH	Private Surface		0.07
MTM 97300-KJ	Private Surface		359.59
MTM 97300-K5	Private Surface		638.77
MTM 97300-KV	Private Surface		0.14
MTM 97300-KK	Private Surface		0.02
MTM 97300-KY	Private Surface		0.07
MTM 97300-K2	Private Surface		0.02
MTM 97300-K3	Private Surface		0.00
MTM 97300-PD	State Surface		12.48
MTM 97300-RL	State Surface		10.14
MTM 97300-KL	6122	Black Creek	0.00
MTM 97300-KL	5144	Dodson Creek	799.42
MTM 97300-KM	5165	North Dodson Creek	0.01
MTM 97300-KM	5144	Dodson Creek	40.00
MTM 97300-KP	6122	Black Creek	0.01
MTM 97300-KP	6123	Finger Lakes	0.01
MTM 97300-KP	5100	Mud Creek	639.26
MTM 97300-KP	5165	North Dodson Creek	0.00
MTM 97300-KP	5165	North Dodson Creek	0.23
MTM 97300-KP	5144	Dodson Creek	1,198.43
MTM 97300-KQ	5103	South Joiner Coulee	160.11
MTM 97300-KQ	5094	Upper Cottonwood	1,280.89
MTM 97300-KQ	5095	Joiner Coulee	639.24

MTM 97300-KR	5100	Mud Creek	332.23
MTM 97300-KR	5101	Upper Mud Creek	319.50
MTM 97300-KR	5165	North Dodson Creek	546.80
MTM 97300-KR	5103	South Joiner Coulee	79.96
MTM 97300-KR	5102	Upper Northfork	40.00
MTM 97300-KR	5103	South Joiner Coulee	79.88
MTM 97300-KR	5101	Upper Mud Creek	0.05
MTM 97300-KR	5095	Joiner Coulee	480.31
MTM 97300-KR	5144	Dodson Creek	478.17
MTM 97300-KS	5103	South Joiner Coulee	559.45
MTM 97300-KS	5094	Upper Cottonwood	1,121.83
MTM 97300-KS	5095	Joiner Coulee	0.19
MTM 97300-KT	5103	South Joiner Coulee	0.01
MTM 97300-KT	5102	Upper Northfork	0.03
MTM 97300-KT	5094	Upper Cottonwood	0.04
MTM 97300-KU	5101	Upper Mud Creek	239.65
MTM 97300-KU	5165	North Dodson Creek	159.75
MTM 97300-KU	5103	South Joiner Coulee	0.01
MTM 97300-KU	5102	Upper Northfork	79.84
MTM 97300-KU	5103	South Joiner Coulee	0.02
MTM 97300-KU	5094	Upper Cottonwood	39.98
MTM 97300-KU	5144	Dodson Creek	0.01
MTM 97300-KH	5106	Shed Coulee	970.44
MTM 97300-KH	5093	Lambing Coulee	0.01
MTM 97300-KH	5094	Upper Cottonwood	1,288.31
MTM 97300-KI	5164	Albright Coulee	235.43
MTM 97300-KI	5160	Lower Wilson Coulee	482.29
MTM 97300-KI	5104	Pierson Coulee	0.01
MTM 97300-KI	5106	Shed Coulee	1,280.64
MTM 97300-KI	5107	Garland Creek	0.00
MTM 97300-KI	5094	Upper Cottonwood	521.87
MTM 97300-KJ	5105	Upper Pierson Coule	0.06
MTM 97300-KJ	5164	Albright Coulee	166.19
MTM 97300-KJ	5160	Lower Wilson Coulee	840.84
MTM 97300-KJ	5104	Pierson Coulee	719.78
MTM 97300-KJ	5106	Shed Coulee	0.11
MTM 97300-KJ	5107	Garland Creek	79.92
MTM 97300-KJ	5094	Upper Cottonwood	304.43
MTM 97300-K1	5093	Lambing Coulee	639.37
MTM 97300-K1	5094	Upper Cottonwood	1,329.69
MTM 97300-K1	5163	S. Woody Island	337.00
MTM 97300-K5	5092	Mount Coulee	0.01
MTM 97300-K5	5092	Mount Coulee	159.64
MTM 97300-K5	5093	Lambing Coulee	1,165.25
MTM 97300-KW	5096	Lamerer Coulee	39.96

MTM 97300-KV	5103	South Joiner Coulee	0.01
MTM 97300-KV	5100	Mud Creek	319.85
MTM 97300-KV	5101	Upper Mud Creek	319.72
MTM 97300-KX	5096	Lamerer Coulee	761.39
MTM 97300-KK	5105	Upper Pierson Coule	79.80
MTM 97300-KK	5164	Albright Coulee	239.50
MTM 97300-KY	5093	Lambing Coulee	1,321.11
MTM 97300-KY	5094	Upper Cottonwood	990.11
MTM 97300-KY	5053	Take-Away	0.15
MTM 97300-KZ	5093	Lambing Coulee	2,242.98
MTM 97300-KZ	5094	Upper Cottonwood	0.50
MTM 97300-K2	5093	Lambing Coulee	801.17
MTM 97300-K2	5094	Upper Cottonwood	1,597.43
MTM 97300-K3	5093	Lambing Coulee	2,560.19
MTM 97300-K3	5094	Upper Cottonwood	0.03
MTM 97300-PF	5325	Horse Camp Coulee	0.54
MTM 97300-PF	5130	Horse Camp Coulee	3.19
MTM 97300-PE	5114	River Unit	1.97
MTM 97300-PE	5301	Dry Lake	44.66
MTM 97300-PD	5394	Beaucoup	21.50
MTM 97300-RL	5394	Beaucoup	11.14

3.14 Recreation and Travel Management

The proposed lease parcels are located in the Phillips and Havre Extensive Recreation Management Areas (ERMA). ERMAs are managed for traditional dispersed recreational use with little or no facility development. Recreational opportunities in this area include hunting, fishing, pleasure driving, wildlife observation, picnicking and camping. The heaviest use is during the fall hunting season and Montana residents make up the majority of users. Cottonwood Recreation Area is the only developed site near the proposed lease area, located less than a mile northeast of parcel MTM 97300-PE.

Motorized travel throughout the area, including the proposed lease area, is limited to existing roads and trails. Cross-country travel by oil and gas lessees and permittees is limited to the administration of a federal lease or permit.

3.15 Lands and Realty

Parcel 97300-KW, Parcel 97300-KQ, Parcel 97300-KS, Parcel 97300-KT, Parcel 97300-KX, Parcel 97300-KJ, Parcel 97300-KK, Parcel 97300-KY, Parcel 97300-KZ, Parcel 97300-K1, Parcel 97300-K2, Parcel 97300-K3, Parcel 97300-PF, Parcel 97300-PE, Parcel 97300-PD, Parcel 97300-RL – There are currently no right-of-ways (ROW's) associated with these parcels of land.

Parcel 97300-KL – This parcel has two authorized and constructed ROW's associated with it. A ROW was issued to Triangle Telephone Coop. in 1979, for a buried telephone line. In 2008 Big

Flat Electric Coop., Inc. was issued a ROW for an aerial powerline. There are no other known ROW's for this parcel.

Parcel 97300-KM – This parcel has one authorized and constructed ROW associated with it. A ROW was issued to Triangle Telephone Coop. in 1979, for a buried telephone line. There are no other known ROW's for this parcel.

Parcel 97300-KP- This parcel has one authorized and constructed ROW associated with it. A ROW was issued to Triangle Telephone Coop. in 1979, for a buried telephone line. There are no other known ROW's for this parcel.

Parcel 97300-KR – This parcel has two authorized and constructed ROW's associated with it. A ROW was issued to Triangle Telephone Coop. in 1979, for a buried telephone line. In 1984 Big Flat Electric Coop., Inc. was issued a ROW for an aerial powerline. There are no other known ROW's for this parcel.

Parcel 97300-KU – This parcel has one authorized and constructed ROW associated with it. A ROW was issued to Triangle Telephone Coop. in 1979, for a buried telephone line. There are no other known ROW's for this parcel.

Parcel 97300-KV – This parcel has two authorized and constructed ROW's associated with it. A ROW was issued to Triangle Telephone Coop. in 1979, for a buried telephone line. In 1984 Big Flat Electric Coop., Inc. was issued a ROW for an aerial powerline. There are no other known ROW's for this parcel.

Parcel 97300-KU – This parcel has one authorized and constructed ROW associated with it. In 1984 Big Flat Electric Coop., Inc. was issued a ROW for an aerial powerline. There are no other known ROW's for this parcel.

Parcel 97300-KI – This parcel has one authorized and constructed ROW associated with it. In 1984 Big Flat Electric Coop., Inc. was issued a ROW for an aerial powerline. There are no other known ROW's for this parcel.

Parcel 97300-KP- This parcel has one authorized and constructed ROW associated with it. A ROW was issued to Triangle Telephone Coop. in 1978, for a buried telephone line. There are no other known ROW's for this parcel.

3.16 Minerals

3.16.1 Fluid Minerals

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

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 607 oil and gas leases covering approximately 490,207 acres in the Malta Field Office. Existing production activity holds approximately 61 percent of this lease acreage. 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 11.

Numbers of townships, leased acres within those townships, and development activity for all jurisdictions are summarized in Table 12.

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 11. Existing Development Activity.

	FEDERAL WELLS	PRIVATE AND STATE WELLS
Drilling Well(s)	0	1
Producing Gas Well(s)	1035	576
Producing Oil Well(s)	0	0
Water Injection Well(s)	0	0
Shut-in Well(s)	63	59
Temporarily Abandoned Well(s)	0	2

Table 12. Oil and Gas Leasing and Existing Development within Townships Containing Lease Parcels.

	Phillips County
Number of Townships Containing Lease Parcels	10
Total Acres Within Applicable Township(s)	232,135.55
Federal Oil and Gas Minerals	120,720.38
Percent of Township(s)	52
Leased Federal Oil and Gas Minerals	55,265.91
Percent of Township(s)	23.8
Leased Federal Oil and Gas Minerals Suspended	0
Percent of	

	Phillips County
Township(s)	0
Federal Wells	Producing Gas Well(s) 42 Shut-in Well(s) 33
Private and State Wells	Producing Gas Well(s) 12 Shut-in Well(s) 9

The 21 parcels north of Dodson and Wagner are not near any active natural gas developments. There are no pipelines nearby. They occur in seven townships and are grouped in an area with very poor access during the winter months. There are existing leases nearby.

The four lease parcels in the Milk River channel are in three townships, all of which are in the Bowdoin Natural Gas Production Field (BNGPF). The three in T33N (MTM 97300-PE, MTM 97300-PD, and MTM 97300-RL) are located in two State sections that have developed wells. The one parcel in T32N (MTM 97300-PF) is not near any developed wells and is on the very edge of the BNGPF in a State section.

3.16.2. Solid Minerals

3.16.2.1. Coal

There is no current coal production in the lease parcel areas. Information was verified utilizing the economic coal deposits GIS layer. No proposed lease parcels are lying over any leased coal deposits.

3.16.2.2. Locatable Minerals

Locatable minerals are subject to provisions of the 1872 Mining Law. These generally include metallic minerals such as gold and silver and other materials not subject to lease or sale. There is currently no locatable mineral production or potential for production in the lease parcel areas.

3.16.2.3. 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. Mineral materials are disposed of by free-use and community/common-use permits granted to municipalities or non-profit entities, respectively. Contracts for sale of mineral materials are offered to private entities on both a competitive and non-competitive basis. Disposal of salable minerals is a discretionary decision of the BLM authorized officer. Future potential resource development conflicts would be avoidable either by not issuing sales contracts in oil and gas development locations or conditioning the APD or salable mineral contracts in a manner to avoid conflicts between operations.

None of the lease parcels proposed to be leased for oil and gas in the Project Area conflict with current permits and contracts for salable minerals awarded on federal lands. Therefore, this subject will not be discussed further in this document.

3.17 Special Designations

3.17.1 National Historic/Scenic Trails

There is no National Historic or Scenic Trails located within the proposed lease parcels.

3.17.2 Areas of Critical Environmental Concern (ACECs)

Parcels MTM 97300-PF, MTM 97300-PD and MTM 97300-RL are located adjacent to or within 0.5 mile of portions of the 2,120-acre Big Bend of the Milk River ACEC. The ACEC was designated to protect archaeological resources representing bison hunting and prehistoric ceremonial use of the Northwestern Plains. This area will be managed for research and interpretation and has been withdrawn from mineral location and withheld from solid mineral leaseables to protect the cultural resources.

3.18 Social and Economic Conditions

3.18.1 Social and Environmental Justice

The social section focuses on Phillips County in northern Montana where all the leases are located. The County seat for Phillips County is Malta with a 2010 population of 1,997. In addition, there are other smaller communities in the vicinity of the leases (Dodson, Wagner, and Whitewater). The County population in 2010 was 4,253, which was a decline of 7.6% from the 2000 population. Population density is very low in Phillips County at .8 persons per square mile compared to a state figure of 6.8. The areas in the vicinity of the leases, which are all located north of Highway 2, are home to large cattle ranches. Approximately one third of the land being considered is split estate (private or state surface with federal mineral estate). Gas leasing and production currently occurs in Phillips County; some of these potential leases are located in the vicinity of current activity. The gas industry support services for the current activities in Phillips County come from the County seat, Malta, and Havre in Hill County to the west.

In 2010, the American Indian population was 8% of the total population in Phillips County. A small part of the Fort Belknap Indian Reservation is located in southwestern Phillips County; the remainder is located in Blaine County. The American Indian population of the Fort Belknap Reservation was 2,704 in 2010. The percent of the population living below the poverty level in 2008 was 16.1% in Phillips County and 24.0% in Blaine County. The comparison figure for the state as a whole is 14.1%.

The social environment of Phillips County is described in detail in the Analysis of the Management Situation (AMS) of the HiLine Resource Management Plan (2008).

Management Common to All Alternatives

No alternative would affect the demographics, social trends or social organization in the area.

3.18.2 Economics

Introduction

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 local economic impact area extends beyond the Field Office boundaries because of economic linkages to areas outside the Field Office boundaries. The affected local economy is made up of Phillips County within the BLM Malta Field Office boundaries as well as Blaine and Hill Counties which are outside the Malta Field Office boundaries. Hill County is included because of the oil and gas related businesses that are based in Havre that work in oil and gas fields within the Malta Field Office boundaries. While public revenues from oil and gas leasing, rent, and production addressed in this EA are only distributed to Phillips County in the Malta Field Office area, employment and income effects are spread across the three counties. The distribution of these economic effects is based on acres leased and levels of production as well as business patterns.

Affected Environment

The three-county local economy had an estimated 2009 population of 27,061 people. Total employment was estimated to be 16,408 jobs; there were an estimated 10,401 households; and there were 133 NAICS industrial sectors represented in the local economy (IMPLAN, 2009). The local economy includes Havre and Malta (local population, business, and oil field service centers). There were 1.65 people per job within the local economy and 0.63 households per job.

Nature of the Oil and Gas Industry in the Malta Field Office:

In March 2011, BLM had leases in effect covering 472,065 acres within the Malta Field Office boundaries. Annual lease rent is paid on 194,939 acres that are not held by production on leases with oil/gas being produced from one or more wells. Annual average (2005-2010) lease bonus and rental revenue to the Federal government was \$543,225 (ONRR, 2011). Lease rent was not paid on 277,126 acres that were held by production. Instead, royalties are paid on oil and gas production from these leases. All Federal natural gas production within the Malta Field Office boundary occurs in Phillips County.

Local oil and gas exploration, development, and production as well as gas pipeline transmission industry all support jobs and income in the local economy.

A portion of the oil and gas-related revenues collected by the Federal government is distributed to the state and counties. The amount that is distributed is determined by the Federal authority under which the Federal minerals are being managed. The leased acres change daily as some leases expire and other parcels are leased. Generally, within the field office boundary, public domain Federal minerals account for about 76 percent of the acres leased; acquired lands/minerals, mostly Bankhead-Jones lands, account for about 24 percent of acres leased.

Forty-nine percent of these Federal leasing revenues from public domain minerals are distributed to the state and the state distributes 25% back to the counties (Title 17-3-240, Montana Code Annotated). Twenty-five percent of the Federal leasing revenues from acquired minerals are distributed to the counties of production.

Leasing:

Federal oil and gas leases generate a one-time lease bonus bid as well as annual rents. The minimum lease bid is \$2.00 per acre. If parcels do not receive the minimum bids they may be leased later as noncompetitive leases that don't generate bonus bids. Within the Malta Field Office area, bonus bids averaged \$1.01 per acre on Federal leases issued between 2005 and 2010.

Lease rent 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 rent continues until one or more wells are drilled that result in production and associated royalties.

Currently, the Federal government collects an estimated annual average of about \$361,000 in lease bids and rent; of which about \$150,000 is distributed to the state/local governments.

Production:

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 the royalties from public domain Federal minerals are distributed to the state, of which 25 percent is distributed back to the county of production (Title 17-3-240, MCA).

Between 2005 and 2010, an annual average of 11,979,490 MCF of natural gas was produced from BLM-administered Federal minerals in the Malta Field Office area. All of the gas production from BLM-administered Federal minerals occurred in Phillips County. The average annual royalty value less allowances was \$7,756,372 (in 2009 dollars) for Federal gas production.

Local Economic Contribution:

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 409 total jobs and \$25.99 million in total employee compensation and proprietor income in the local economy (IMPLAN, 2009).

Total average annual Federal revenues from Federal oil and gas leasing, rents, and royalty payments within the Malta Field Office boundary are an estimated \$11.8 million. Federal revenues distributed to the state of Montana amount to an estimated \$5.1 million per year. The state redistributes an estimated \$1.8 million per year to Phillips County. These revenues help fund traditional county functions such as enforcing laws, administering justice, collecting and disbursing tax funds, providing for orderly elections, maintaining roads and highways, providing fire protection, and/or keeping records. Other county functions that may be funded include administering primary and secondary education and operating clinics/hospitals, county libraries, county airports, local landfills, and county health systems.

The estimated annual local economic contribution associated with Federal leases, rents, drilling, production, and royalty payments combined to support about 640 total local jobs and \$37.4 million in local labor income, respectively. These contributions equal about four percent of the local employment and about seven percent of the local income. The NAICS aggregated sectors that experience the most influence from oil and gas related leasing, exploration, development, and production are mining, retail trade, professional scientific and technical services, and health care and social assistance, and accommodations and food services. Table 13 shows the current contributions of leasing Federal oil and gas minerals and the associated exploration, development, and production of Federal oil and gas minerals to the local economy.

Table 13. Current Contributions of Federal Oil and Gas Leasing, Exploration, Development, and Production to the Local Economy

Industry	Employment (jobs)		Labor Income (Thousands of 2009 dollars)	
	Area Totals	Federal O&G -Related	Area Totals	Federal O&G-Related
Agriculture	2,716	1	\$45,570	\$10
Mining	409	398	\$25,989	\$29,892
Utilities	86	4	\$6,351	\$313
Construction	809	10	\$27,974	\$437
Manufacturing	149	1	\$4,562	\$25
Wholesale Trade	402	16	\$16,797	\$680
Transportation & Warehousing	667	7	\$50,976	\$348
Retail Trade	1,711	45	\$41,364	\$1,065
Information	261	5	\$14,346	\$243
Finance & Insurance	553	16	\$16,633	\$426
Real Estate & Rental & Leasing	434	11	\$4,685	\$140
Prof, Scientific, & Tech Services	488	31	\$18,457	\$1,390
Mngt of Companies	0	0	\$0	\$0
Admin, Waste Mngt & Rem Serv	275	9	\$4,417	\$145
Educational Services	291	4	\$4,492	\$57
Health Care & Social Assistance	1,193	22	\$49,531	\$891
Arts, Entertainment, and Rec	385	4	\$7,239	\$72
Accommodation & Food Services	959	22	\$14,812	\$327
Other Services	1,147	21	\$25,422	\$401

Government	3,471	12	\$172,339	\$558
Total	16,408	637	551,956	37,420
Federal O&G as Percent of Total	---	3.88%	---	6.78%

IMPLAN, 2009 database

4.0 ENVIRONMENTAL IMPACTS

4.1 Assumptions and Reasonably Foreseeable Development Scenario Summary

At this stage of the leasing process, the act of leasing parcels would not result in any activity that might affect various resources. Even if lease parcels are leased, it remains unknown whether development would actually occur, and if so, where specific wells would be drilled and where facilities would be placed. This would not be determined until the BLM receives an APD in which detailed information about proposed wells and facilities would be provided for particular leases. 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 BMPs documented in “Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development” (USDI and USDA 2007), also known as the “Gold Book.” The BLM could also identify APD COAs, based on site-specific analysis that could include moving the well location, restrict timing of the project, or require other reasonable measures to minimize adverse impacts (43 CFR 3101.1-2 Surface use rights; Lease Form 3100-11, Section 6) to protect sensitive resources, and to ensure compliance with laws, regulations, and land use plans.

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

In some cases, resource-specific impact analyses may be conservative because the analyses may not have taken into account stipulations being applied from other resource program areas. Stipulations to protect cultural sites, for example, could also benefit sharp-tailed grouse or greater sage-grouse breeding areas and nesting cover in the same locality.

The following assumptions are from the RFD developed for the HiLine Planning Area (for the HiLine RMP revision; the HiLine planning area includes the Malta, Glasgow and Havre Field Offices). The BLM administers approximately 3,483,000 acres of federal minerals (for fluid minerals) available for leasing within the HiLine planning area. The RFD forecasts the following level of development in the HiLine planning area.

The reasonably foreseeable development (RFD) scenario for the HiLine RMP forecasts up to 6,866 wells in the planning area between 2007 and 2026. Up to 150 of these wells could be coalbed natural gas (CBNG) wells. Of the 6,716 conventional wells, 1,351 wells are located

within the boundaries of the Bowdoin Dome area (see RFD Map in Appendix E). In the HiLine planning area, high development potential indicates an average drilling density would exceed 100 wells per township from 2007 to 2026. Moderate potential indicates 20 to 100 wells per township. Low development potential indicates two to 20 wells per township. Very low development potential indicates two wells or less per township. Average well depths should remain typical of the planning area, less than 6,000 feet except for along the Rocky Mountain Front.

Potential surface disturbance for typical wells by area can be found in the draft RFD scenario (Table 14). Baseline projected new producing well numbers and existing producing wells for the period from 2007 through 2026 is in the draft RFD scenario (Table 15). This information follows.

Table 14. Total RFD Projected Disturbance Associated with New Drilled Wells and Existing Active Wells (Short-Term Disturbance – Two Years).

Wells			Acres of Surface Disturbance			
Type	Total	BLM Managed	Access Roads and Flow Lines	Well Pad	Total	BLM Managed
New Exploratory and Development Wells CBNG	150	24	1.85	1	428	68
New Exploratory and Development Wells Bowdoin Dome Area	1,351	776	1.85	1	3,850	2,212
New Exploratory and Development Wells Rest of Planning Area	5,365	1,447	3.1	2.1	27,898	7,527
Existing Wells Bowdoin Dome Area	1,706	988	0.25	0.5	1,280	741
Existing Wells Rest of Planning Area	7,176	571	0.78	0.14	6,602	525
Total Wells/Disturbance	15,748	3,806			40,057	11,073

Table 15. Total RFD Projected Disturbance Associated with All New Producing Wells and Existing Active Wells Less Abandonments (Long-Term Disturbance).

Wells			Acres of Surface Disturbance			
Type	Total	BLM Managed	Access Roads and Flow Lines	Well Pad	Total	BLM Managed
New Exploratory and Development Wells CBNG	135	22	0.25	0.5	101	16

New Exploratory and Development Wells Bowdoin Dome Area	1,310	753	0.25	0.5	983	565
New Exploratory and Development Wells Rest of Planning Area	4,118	1,111	0.78	0.14	3,788	1,022
Existing Wells Bowdoin Dome Area	1,573	911	0.25	0.5	1,180	683
Existing Wells Rest of Planning Area	5,533	440	0.78	0.14	5,090	405
Total Wells/Disturbance	12,669	3,236			11,142	2,691

Alternative A (No Action Alternative)

Under the No Action Alternative, the proposed parcels would not be leased. 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.

Analysis Assumptions for Alternative B

By itself, the act of leasing the parcels would have no impact on any natural resources in the area administered by the Malta 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). Long-term impacts are those that would substantially remain for more than five years.

Leasing of these parcels would not necessarily mean that development would occur for the vast majority of the parcels. The first 21 parcels located north of Dodson and Wagner are not near any active gas developments. The closest pipelines and compressor stations are from 10 to 25 miles away across rough terrain. The closest developed wells have low gas production and expansion of the Bowdoin Field has all but stopped movement in the direction of the lease parcels.

The four river bed parcels in the Milk River channel are within the developed Bowdoin Natural Gas Production Field. Three of the parcels have active wells in close proximity where tie-in to existing pipelines would be fairly easy should development occur. The fourth parcel (MTM 97300-PF) is more removed from existing development, but within a couple of miles of smaller

collection pipelines. It is more likely that development would not occur on these narrow parcels due to mandatory set-backs, but royalties would be collected due to gas field unit rights.

Analysis Assumptions for Alternative C

By itself, the act of leasing the parcels in Alternative C would have no impact on any natural resources in the area administered by the Malta 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. The same assumptions would be applied from Alternative B for the 21 parcels being deferred (17 whole, 4 part) in this alternative.

The remaining 8 parcels (4 whole, 4 part) are located in Phillips County, Montana. If the lease parcels are developed, short-term impacts would be stabilized or mitigated rapidly (within two to five years). Long-term impacts are those that would substantially remain for more than five years.

Most of the parcels were deferred because of the presence of habitat for the candidate species greater sage-grouse and Sprague's pipit which are not covered adequately by Standard Lease Stipulations. The four partial parcels could be leased, but with many of the Standard Lease Stipulations applying for big game winter range and sharp-tailed grouse breeding and nesting habitat. The four Milk River bed parcels would be leased as in Alternative B.

4.2 Alternative A (No Action Alternative)

4.2.1 Direct Effects Common to All Resources

Under Alternative A, the 25 parcels would not be offered for competitive oil and gas lease sale. Under this alternative, the state and private minerals could still be leased in surrounding areas.

There would be no new impacts from oil and gas exploration or production activities on the federal lease parcel lands. No additional natural gas or crude oil would enter the public markets, and no royalties would accrue to the federal or state treasuries from the parcel lands. The No Action Alternative would result in the continuation of the current land and resource uses on the lease parcels.

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

4.2.2 Social and Economics

4.2.2.1 Direct and Indirect Effects:

The No Action alternative would result in the continuation of the current land and resource uses and would cause no social impacts. However, residents who have experienced ongoing population losses may welcome new revenues or employment related to oil and gas leasing and development (as in Alternative B). There would be no disproportionate effects to low income or minority populations under this alternative.

Economic effects are summarized and displayed in comparative form in Tables 16 and 17. Under Alternative A, none of the nominated parcels would be leased. Consequently, no federal, state, or local revenues would be generated from leasing, rents, or royalties associated with production. No additional employment or income would be generated from the nominated parcels if none of the parcels are leased.

The basis for economic impacts is the number of acres leased, rents paid, and level of production by alternative. This is displayed in Table 16. 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 and rent of Federal minerals, 2) royalty payments associated with production of Federal oil and gas, and 3) economic activity generated from drilling and associated activities. 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. Table 16 is a summary of local revenues, employment, income, population, and household impacts of each alternative.

Table 16. Summary of Anticipated Average Annual Oil and Gas Activity by Alternative.

Activity	Alternative		
	A	B	C
<i>Additional acres that would be leased based on this EA</i>	0	35,275	2,769
Lease rental first 5 years (\$1.50/acre)	0	\$26,456	\$2,077
Lease rental second 5 years (\$2.00/acre)	0	\$35,275	\$2,769
Bonus bids (avg. \$12.54/acre)	0	\$3,563	\$280
Total annual Federal lease and rental revenue	0	\$65,294	\$5,125
Distribution to State/local government	0	\$27,136	\$2,130
Average annual oil production (bbl)	0	0	0
Average annual gas production (MCF)	0	895,166	70,268
Average annual Federal Oil Royalty (bblx\$91.76x0.125)	0	0	0

Average annual Federal gas Royalty (MCFx\$7.65x0.125)	0	\$856,002	\$67,194
Total average annual Federal O&G royalties	0	\$856,002	\$67,194
Average annual distribution to state/local government	0	\$370,135	\$29,055
Total average annual Federal revenues	0	\$921,296	\$72,319
Total average annual state/local revenues	0	\$397,272	\$31,185
Total average annual revenue distributed to counties	0	\$141,050	\$11,072
Average annual total local employment (jobs)	0	48	4
Average annual total local income (\$1,000)	0	\$2,800	\$221

Table 17. Summary Comparison of Estimated Average Annual Economic Impacts

Alternative	Acres Recommended for Lease	Local Revenue to Counties (\$)	Total Employment (full and part-time jobs)	Total Labor Income (\$1,000)	Change in Population Change	Change in Number of Households
A	0	0	0	0	0	0
B	35,275	\$141,050	48	\$2,800	79	30
C	2,769	\$11,072	4	\$221	7	3

Economic effects are summarized and displayed in comparative form in Table 16 (Summary of Anticipated Average Annual Oil and Gas Activity by Alternative), Table 17 (Summary Comparison of Estimated Average Annual Economic Impacts), Table 18 (Summary Comparison of Cumulative Annual Economic Impacts by Alternative), and Table 19 (Summary Comparison of Cumulative Employment and Income by Major Industry by Alternative). With Alternative A

none of the parcels considered would be leased. Consequently, no Federal, state, or local revenues would be generated from leasing, rents, or royalties associated with production. No employment or income would be generated if none of the parcels are leased.

Cumulative Effects:

Cumulative economic impacts associated with Alternative A would be similar to those described in the economic section of the Affected Environment. The cumulative effects of Federal mineral leasing, exploration, development and production within the local economy are summarized in Table Econ.4 and Table Econ. The cumulative demographic and economic characteristics of the local economy would not change if the parcels being considered are not leased.

Table 18. Summary Comparison of Cumulative Annual Economic Impacts by Alternative

Activity	Alternative		
	A	B	C
Existing Acres leased*	472,065	472,065	472,065
<i>Acres that would be leased based on this EA</i>	0	35,275	2,769
Total acres leased	472,065	507,340	474,834
Acres held by production*	277,126	277,126	277,126
Total acres leased for which lease rents would be paid	194,939	230,214	197,708
Lease rental first 5 years (\$1.50/acre)	\$146,204	\$172,661	\$148,281
Lease rental second 5 years (\$2.00/acre)	\$194,939	\$230,214	\$197,708
Bonus bids (average \$1.01/acre)	\$19,689	\$23,252	\$19,969
Total average annual Federal lease and rental revenue	\$360,832	\$426,126	\$365,958
Average annual distribution to State/local government	\$149,962	\$177,098	\$152,092
Average annual oil production (bbl)**	0	0	0
Average annual gas production (MCF)**	11,979,490	12,874,656	12,049,759
Federal Oil Royalty (bblx\$91.79x0.125)	\$0	\$0	\$0
Federal gas Royalty (MCFx\$7.65x0.125)	\$11,455,388	\$12,311,390	\$11,522,582

Total Average annual Federal O&G royalties	\$11,455,388	\$12,311,390	\$11,522,582
Average annual distribution to State/local government	\$4,953,310	\$5,323,445	\$4,982,364
Total average annual Federal Revenues	\$11,816,220	\$12,737,516	\$11,888,539
Total average annual State/Local Revenues	\$5,103,271	\$5,500,543	\$5,134,456
Total average annual revenue distributed to counties	\$1,809,063	\$1,950,114	\$1,820,135
*LR2000, BLM, April 4, 2011			
**Based on average annual production 2005-2010, Office of Natural Resource Revenue, 2011			

Table 19. Summary Comparison of Cumulative Employment and Income by Major Industry by Alternative.

Industry	Total Jobs Contributed			Total Income Contributed (\$1000)		
	Alt. A	Alt. B	Alt. C	Alt. A	Alt. B	Alt. C
Total Federal Contribution	637	685	641	\$37,420	\$40,220	\$37,641
Percent Change from Current	0.0%	7.5%	0.6%	0.0%	7.5%	0.6%

IMPLAN, 2009 database

4.3 Alternative B (Proposed Action)

Under Alternative B, 25 parcels, 35,275.42 federal mineral acres (28,227.02 acres of federal surface and 7,048.4 acres of private and/or state surface), would be offered for competitive oil and gas lease sale. No parcels would be deferred.

4.3.1 Direct Effects Common to All Resources

The action of leasing the parcels in Alternative B would, in and of itself, have no direct impact on resources. Any potential effects on resources from the sale of leases would occur during lease exploration and development activities. At the time of this review it is unknown whether a particular lease parcel would be sold and a lease issued.

4.3.2 Indirect Effects Common to All Resources

Oil and gas exploration and development activities such as construction, drilling, production, infrastructure installation, vehicle traffic and reclamation are indirect effects from leasing the

parcels in Alternative B. It is unknown when, where, how, or if future surface disturbing activities associated with oil and gas exploration and development such as well sites, roads, facilities, and associated infrastructure would be proposed. It is also not known how many wells, if any, would be drilled and/or completed, the types of technologies and equipment would be used and the types of infrastructure needed for production of oil and gas. Thus, the types, magnitude and duration of potential impacts cannot be precisely quantified at this time, and would vary according to many factors. The potential impacts from exploration and development activities would be analyzed after receipt of an APD or sundry notice.

Typical impacts to resources from oil and gas exploration and development activities such as well sites, roads, facilities, and associated infrastructure are described in the Phillips Management Framework Plan (MFP) (1977) and the Oil & Gas Environmental Assessment of the BLM Leasing Program – Lewistown District (September 1981).

4.3.3 Air Resources

4.3.3.1 Direct and Indirect Effects

4.3.3.1.1 Air Quality

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

Potential impacts of development could include increased airborne soil particles blown from new well pads or roads; exhaust emissions from drilling equipment, compressors, vehicles, and dehydration and separation facilities, 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, as well as the scope of specific activities proposed in an APD.

Current 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 described below is expected to maintain this level of air quality by limiting emissions. In addition, 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.

4.3.3.1.2 Greenhouse Gas Emissions at the Malta Field Office and Project Scales

Sources of GHGs 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 offer parcels for lease. 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 analysis effort if the BLM receives an APD on any of the parcels considered here.

Anticipated GHG emissions presented in this section are taken from the Climate Change SIR, 2010. Data are derived from emissions calculators developed by air quality specialists at the BLM National Operations Center in Denver, Colorado, based on methods described in the Climate Change SIR (2010). Based on the assumptions summarized above for the HiLine District RFD, Table 20 discloses projected annual GHG source emissions from BLM-permitted activities associated with the RFD (note: the source year selected to disclose the estimated GHG emissions was the year with the highest expected combined construction and production emissions for oil and gas sources in the planning area).

Table 20. BLM projected annual emissions of greenhouse gases associated with oil and gas exploration and development activity in the HiLine District RFD.

Source	BLM Projected Greenhouse Gas Emissions in tons/year from HiLine District RFD			Emissions (metric tons/yr)
	CO ₂	CH ₄	N ₂ O	CO ₂ e
Conventional Natural Gas	120,755.6	1,041.1	0.9	129,664.2
Coal Bed Natural Gas	883.9	48.4	0.0	1,725.3
Oil	2,380.4	15.9	0.7	2,655.4
Total	124,019.9	1,105.4	1.6	134,044.9

To estimate GHG emissions associated with the action alternatives, 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 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 (with the highest year emission output used) to estimate GHG emissions for that particular alternative.

Under Alternative B, approximately 35,275.42 acres of lease parcels with federal minerals would be leased. These acres constitute approximately 1.01 percent of the total federal mineral estate of approximately 3,483,000 acres identified in the HiLine District RFD. Therefore, based on the approach described above to estimate GHG emissions, 1.01 percent of the RFD for this EA total estimated BLM emissions of approximately 134,044.9 metric tons/year would be approximately 1,353.9 metric tons/year of CO₂e if the parcels within Alternative B were to be developed.

4.3.3.1.3 Climate Change

The assessment of GHG emissions and climate change is in its formative phase. As summarized in the Climate Change SIR, 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 (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 GHG 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.

4.3.3.2 Mitigation

The BLM encourages industry to incorporate and implement BMPs to reduce impacts to air quality by reducing emissions, surface disturbances, and dust from field production and operations. Measures may also be required as COAs 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 combustion engines for compressors;
- nitrogen oxides (NO_x) 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.
- co-locate 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;
- forward looking infrared (FLIR) technology to detect fugitive emissions; and
- air monitoring for NOx and ozone (O₃).

More specific to reducing GHG emissions, Section 6 of the Climate Change SIR 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 and as summarized below in Table 21 (reproduced from Table 6-2 in Climate Change SIR), display common methane emission technologies reported under the USEPA Natural Gas STAR Program and associated emission reduction, cost, maintenance and payback data.

Table 21. 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 21. 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 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 CO₂ injection. These measures are discussed in more detail in Section 6.0 of the Climate Change SIR (2010).

In an effort to disclose potential future GHG emissions reductions that might be feasible in individual field offices, the BLM estimated GHG emissions reductions based on the RFD for the MCFO. For analysis purposes, the Miles City FO RFD was selected based on the high potential development scenario. Similar emissions reductions may be possible in other Montana, North Dakota and South Dakota Field Offices. For emissions sources subject to BLM (federal) jurisdiction, the estimated emissions reduction represent approximately 51 percent reduction in total GHG emissions compared to the estimated MCFO federal GHG emissions inventory (Climate Change SIR, as updated October 2010, Section 6.5 and Table 6-3). The emissions reductions technologies and practices are identified as mitigation measures that could be imposed

during development. (Note: except for the light-duty vehicle GHG emission standards, no federal or state regulations mandate these GHG emissions reductions).

4.3.4 Soil Resources

4.3.4.1 Direct and Indirect Effects

While the act of leasing a parcel would produce no effects, 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 and rutting, mixing of soil horizons, 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. Effects would be both short-term (well pads and pipelines) and long-term (production areas and access roads). Areas needed for production, access roads, and facilities would require a long-term commitment of the soil resource. These sites remain non-productive and continue to be at risk of erosion and compacted until abandonment and final reclamation. Generally sites would be revegetated and erosion would return to natural rates within 5 years. Exceptions would be sites poorly suited to reclamation. These areas, once disturbed, are the most difficult and costly to stabilize and reclaim. Production water, when spilled, could contaminate soils and vegetation (depending on properties of the water). This would affect reclamation by altering chemical characteristics of the soils (high electrical conductivity, exchangeable sodium percentage, sodium adsorption ratio, pH, etc.). Potential site-specific effects would be addressed in more detail at the APD stage.

Lease parcels/development would be subject to stipulations that protect soils on slopes over 30 percent, erodible soil on slopes over 20 percent, slumping soils, and/or wet soils. Table 22 shows the approximate acres of soils on slopes over 30 percent and erodible soils on slopes over 20 percent for each lease parcel. There would be approximately 10,704 acres on slopes over 30 percent and erodible soils on slopes over 20 percent within the lease parcels.

Table 22. Approximate acres of soils on slopes over 30 percent and erodible soils on slopes >20 percent for each Lease Parcel. (Source: USDA-NRCS SSURGO dataset (USDA-NRCS, 2010)).

Parcel #	>30% slope		Erodible soils on slopes >20%	
	Acres ¹	Percent of Lease Parcel	Acres ^{2,3}	Percent of Lease Parcel
MTM97300-KL	76	4	20	1
MTM97300-KM	0	0	0	0
MTM97300-KP	0	0	0	0
MTM97300-KW	0	0	40	100
MTM97300-KQ	0	0	1,024	46
MTM97300-KR	12	<1	277	11
MTM97300-KS	14	<1	762	45
MTM97300-KT	0	0	0	0
MTM97300-KU	24	3	99	12
MTM97300-KV	0	0	0	0
MTM97300-KX	0	0	735	97
MTM97300-KH	0	0	1,395	62
MTM97300-KI	51	2	1,636	65

MTM97300-KJ	281	11	941	38
MTM97300-KK	35	11	5	2
MTM97300-KY	17	1	521	23
MTM97300-KZ	0	0	157	7
MTM97300-K1	0	0	1,357	59
MTM97300-K2	0	0	873	36
MTM97300-K3	8	<1	204	8
MTM97300-K5	148	8	0	0
MTM97300-PF	0	0	0	0
MTM97300-PE	0	0	0	0
MTM97300-PD	0	0	0	0
MTM97300-RL	0	0	0	0

1. Approximate acres calculated from MU RV slope where RV slope is >30%. Approximate acres based on GIS calculations.
2. Approximate acres calculated from MU RV slope and Water Erosion Hazard where RV slope > 20% and Water Erosion Hazard is severe. Approximate acres based on GIS calculations.
3. For analysis purposes, if a Soil Map Unit (SMU) has a RV slope >20% and severe Water Erosion Hazard rating then the entire SMU acreage is included. However, there may be areas within the SMU that could have slope values less than 20% and a less than severe Water Erosion Hazard rating. For example, SMU 1251E has a RV slope of 22% but the SMU has a slope range from 8 to 35%.

4.3.4.2 Mitigation

In the event of exploration/development, a number of measures would be taken to prevent, minimize, or mitigate effects to soil resources. Typical measures include, but are not limited to:

- Stripping and stockpiling topsoil separate from sub-soils/spoil;
- Applying erosion/sediment control/containment products and structures, such as mulch, straw wattles, water bars, rolling dips, silt fence, bale filters, erosion control blankets and mats, cover crops, etc;
- Alleviating compaction;
- Applying soil amendments, when necessary;
- Re-contouring to approximate original contours or blend with surrounding topography;
- Re-seeding with native vegetation;
- Completing interim reclamation on all disturbed areas associated with producing well locations and associated facilities.
- Monitoring for reclamation success and applying additional measures as needed.

Measures included in the Gold Book (USDI-BLM 2007) would be applied. Additional mitigation measures and/or BMPs, if necessary, would be applied once a site-specific plan of development is proposed.

Upon abandonment of wells and/or when access roads are no longer needed, the authorized officer would issue instructions and/or orders for surface reclamation/restoration of the disturbed areas as described in attached conditions of approval (COA).

4.3.5 Water Resources

4.3.5.1 Direct and Indirect Effects

Leasing the parcels would ~~have no direct impacts on~~ not directly affect water resources. Any potential effects on water resources from the sale of lease parcels would occur at the time the leases are developed. The magnitude of the ~~impacts to~~ affects on water resources would be dependent on the specific activity, season, proximity to waterbodies, location in the watershed,

upland and riparian vegetation condition, effectiveness of mitigation, and the time until reclamation success. Surface disturbance effects typically are localized, short-term, and occur from implementation through vegetation reestablishment. As acres of surface-disturbance increase within a watershed, so could the effects on water resources.

~~Oil and gas exploration and development of a lease parcel could cause the removal of vegetation, soil compaction, and soil disturbance in uplands within the watershed, 100-year floodplains of non-major streams, and non-riparian, ephemeral waterbodies.~~ In uplands within the watershed and in floodplains of non-riparian and ephemeral waterbodies, oil and gas exploration and development of a lease parcel could cause the removal of vegetation, soil compaction, and soil disturbance. The potential effects from these activities could be accelerated erosion, increased overland flow, decreased infiltration, increased water temperature, channelization, and water quality degradation associated with increased sedimentation, turbidity, nutrients, metals, and other pollutants. Erosion potential can be further increased in the long term by soil compaction and low permeability surfacing (e.g. roads and well pads) which increases the energy and amount of overland flow and decreases infiltration, which in turn changes flow characteristics, reduces groundwater recharge, and increases sedimentation and erosion (DEQ 2007).

Spills or produced fluids could potentially impact surface and groundwater resources in the long term. Oil and gas exploration/~~development~~ and development of a lease parcel could contaminate aquifers with salts, drilling fluids, fluids and gases from other formations, detergents, solvents, hydrocarbons, metals, and nutrients; change vertical and horizontal aquifer permeability; and increase hydrologic communication with adjacent aquifers (EPA 2004). Groundwater removal would result in a depletion of flow in nearby streams and springs if the aquifer is hydraulically connected to such features. Typically produced water from conventional oil and gas wells is from a depth below useable aquifers or coal seams (FSEIS 2008).

4.3.5.2 Mitigation

Stipulations addressing steep slopes, waterbodies, streams, 100-year floodplains of major rivers, riparian areas, and wetlands would minimize potential impacts and would be included with the lease when necessary (refer to Appendix A). In the event of exploration or development, measures would be taken to reduce, avoid, or minimize potential impacts to water resources including application of appropriate mitigation. Mitigation measures that minimize the total area of disturbance, control wind and water erosion, reduce soil compaction, maintain vegetative cover, control nonnative species, and expedite rapid reclamation (including interim reclamation) would maintain water resources. Methods to reduce erosion and sedimentation could include: reducing surface disturbance acres; installing and maintaining adequate erosion control; proper road design, road surfacing, and culvert design; road/infrastructure maintenance; use of low water crossings; and use of horizontal directional drilling (HDD) methods for waterbodies and floodplains. In addition, applying mitigation to maintain adequate, undisturbed, vegetated buffer zones around waterbodies and floodplains could reduce sedimentation and maintain water quality. Appropriate well completion, the use of Spill Prevention Plans, and Underground Injection Control (UIC) regulations would mitigate groundwater impacts. Site-specific mitigation and reclamation measures would be described in the COAs.

4.3.6 Vegetation Resources

4.3.6.1 Direct and Indirect Effects

Leasing the parcels would have no direct impacts on vegetation resources. Any potential effects on vegetation resources from sale of lease parcels would occur at the time the leases are developed. Impacts to vegetation would depend on the vegetation type/community, soil community and the topography of the lease parcels. Disturbance to vegetation is of concern because protection of soil resources, maintenance of water quality, conservation of wildlife habitat, and livestock production capabilities may be diminished or lost over the long-term through direct loss of vegetation (including direct loss of both plant communities and specific plant species).

Other direct impacts, such as invasive species and noxious weed invasion could result in loss of desirable vegetation. Invasive species and noxious weeds may also reduce livestock grazing forage, wildlife habitat quality, and native species diversity. Cheatgrass is an invasive species well known for completely replacing native vegetation and changing fire regimes.

Additionally, surface disturbing activities directly affect vegetation by destroying habitat, churning soils, impacting biological crusts, disrupting seedbanks, burying individual plants, and generating sites for competitive non-native plants including weedy species. In addition, other vegetation impacts could also be caused from soil erosion and result 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 affected.

Fugitive dust generated by construction activities and travel along dirt roads can affect nearby plants by depressing photosynthesis, disrupting pollination, and reducing reproductive success. Oil, fuel, wastewater or other chemical spills could contaminate soils as to render them temporarily unsuitable for plant growth until cleanup measures were fully implemented. If cleanup measures were less successful, longer term vegetation damage could be expected.

Oil and gas development activity would reduce BLM's ability to manage livestock grazing while meeting or progressing towards meeting the Standards of Rangeland Health. Development and associated disturbances would reduce available forage or alter livestock distribution leading to overgrazing or other localized excess grazing impacts. Construction of roads, especially in areas of rough topography can cause significant changes in livestock movement and fragment suitable habitat for some plant communities. Where grazing activity contributes to not meeting the Standards for Rangeland Health, the authorized officer must adjust grazing practices or levels of use prior to the next grazing season.

If development activity is reducing vegetative resources for livestock grazing and the grazing activity is resulting in the allotment not meeting the Standards for Rangeland Health, then the authorized officer would have to take action prior to the next grazing season to ensure the BLM lands are progressing towards meeting the Standards. This could result in the change of livestock grazing activities in order to improve vegetative conditions.

4.3.6.2 Mitigation

Mitigation would be addressed at the site specific APD stage of exploration and development. If needed, COAs would potentially include revegetation with desirable plant species, soil enhancement practices, direct live haul of soil material for seed bank revegetation, reduction of livestock grazing, fencing of reclaimed areas, and the use of seeding strategies consisting of native grasses, forbs, and shrubs, would be identified and addressed at the APD stage.

4.3.7 Riparian-Wetland Habitats

4.3.7.1 Direct and Indirect Effects

Leasing the parcels would have no direct impacts on riparian-wetland habitats. Any potential effects on riparian-wetland habitats from sale of lease parcels would occur at the time the leases are developed. The exploration and development of oil and gas within uplands or adjacent to riparian-wetland areas could reduce riparian/wetland functionality by changing native plant productivity, composition, richness, and diversity; accelerating erosion; increasing sedimentation; and changing hydrologic characteristics. Impacts that reduce the functioning condition of riparian and wetland areas would impair the ability of riparian/wetland areas to reduce nonpoint source pollution (MDEQ 2007) and provide other ecosystem benefits. The magnitude of these effects would be dependent on the specific activity, season, proximity to riparian-wetland areas, location in the watershed, upland and riparian-wetland vegetation condition, mitigation applied, and the time until reclamation success. Erosion increases typically are localized, short term, and occur from implementation through vegetation reestablishment. As acres of surface-disturbance increase within a watershed, so would the effects on riparian-wetland resources.

4.3.7.2 Mitigation

Stipulations addressing steep slopes, waterbodies, streams, 100-year floodplains of major rivers, riparian areas, and wetlands would minimize potential impacts and would be included with the lease when necessary (refer to Appendix A). In the event of exploration or development, site-specific mitigation measures would be identified which would avoid or minimize potential impacts to riparian-wetland areas at the APD stage. Mitigation measures that minimize the total area of disturbance, control wind and water erosion, reduce soil compaction, maintain vegetative cover, control nonnative species, maintain biodiversity, maintain vegetated buffer zones, and expedite rapid reclamation (including interim reclamation) would maintain riparian/wetland resources.

4.3.8 Wildlife

4.3.8.1 Direct and Indirect Effects

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

The use of standard lease terms and stipulations on these lands (refer to Appendix A) would minimize, but not preclude impacts to wildlife. Oil and gas development which results in surface disturbance could directly and indirectly impact aquatic and terrestrial wildlife species. These impacts could include loss or reduction in suitability of habitat, improved habitat for undesirable (non-native) competitors, species or community shift to species or communities more tolerant of disturbances, nest abandonment, mortalities resulting from collisions with vehicles and power lines, electrocutions from power lines, barriers to species migration, habitat fragmentation,

increased predation, habitat avoidance, and displacement of wildlife species resulting from human presence. The scale, location, and pace of development, combined with implementation of mitigation measures and the specific tolerance of the species to human disturbance all influence the severity of impacts to wildlife species and habitats, including Threatened, Endangered, Candidate, Proposed, and other Special Status Species.

Suitable habitat within various lease parcels exists to support USFWS Threatened, Endangered, Proposed, or Candidate species including the whooping crane, interior least tern, piping plover, greater sage-grouse, and Sprague's pipit.

4.3.8.1.1 Threatened, Endangered, Proposed, and Candidate Species

Habitat within the lease parcels exists to support USFWS Threatened, Endangered, Proposed, or Candidate species including the whooping crane, interior least tern, piping plover, greater sage-grouse and Sprague's pipit.

BLM has determined that the act of issuing leases within the whooping crane migration corridor will not affect the whooping crane. However, impacts to whooping cranes are possible from subsequent oil and gas development activities that would be permitted at the APD stage. At this time, stipulations do not currently exist to protect any known whooping crane migration staging areas. Line strikes, collisions with vehicles, habitat fragmentation, and other anthropogenic activities can disturb, displace, or cause direct mortality of whooping cranes.

Therefore, if development of these leases is proposed, BLM could consult with the USFWS pursuant to section 7(a)(2) of ESA. An outcome of the consultation process may be that conditions of approval are attached to the permit or the permit may not be approved. Other BMP's would also be developed through consultation, including minimizing disturbance, adherence to Avian Powerline Interaction Committee (APLIC) guidelines, and others as deemed appropriate.

The interior least tern and piping plover have been observed on Nelson Reservoir, Whitewater Lake, and/or Bowdoin National Wildlife Refuge (NWR), all of which are within easy flying distance of the lease parcels. The piping plover has also nested on Nelson Reservoir and Bowdoin NWR for many years. PR-56 and Tarawa Reservoir could attract either species for migration stopovers, but suitable sand and gravel nesting substrate is not present to hold the birds thru the summer months.

The Proposed Species mountain plover is fairly abundant in Phillips County during the nesting season primarily on black-tailed prairie dog towns. There are no known prairie dog towns on the lease parcels.

Effects on the candidate species greater sage-grouse and Sprague's pipit would occur on many of the parcels and each parcel will be dealt with in detail. BLM does not consult with the USFWS on candidate species. The lack of adequate protections and/or mitigation for the two Candidate Species in the Standard Leasing Stipulations would be grounds for deferring leasing until more adequate stipulations are approved in the HiLine District RMP. If leased, LN 14-15 (lease

notice) would have been attached warning that special stipulations may be needed for Sprague's pipit on the parcels north of Dodson and Wagner, but not on the Milk River bed parcels.

4.3.8.1.2 Other Special Status Species

As noted, up to 45 wildlife species that BLM has designated as "Sensitive" have the potential to occur within the parcel areas. Stipulations are not provided for all BLM Sensitive Species in the current Resource Management Plans. The JVP RMP does not have an adequate Sensitive Species list. Standard leasing stipulations cover only grouse breeding grounds (minimally), big game timing limits, and a quarter-mile restriction around Sensitive Species designated essential habitat. For those species afforded some protections through existing stipulations, impacts would be minimized, but not eliminated. Impacts to BLM Sensitive Species would be similar to those described above, unless they are afforded protective measures from other regulations such as the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703.) or the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668c). BLM does not consult with the USFWS on "Sensitive Species" and likewise would not receive terms and conditions from USFWS requiring additional protections for those species.

Numerous species of birds were identified as inhabitants across the analysis area. With the impacts associated with development, it is reasonable to assume there would be impacts to nesting and migrating bird species. The primary impacts to these species would include disturbance of preferred nesting habitats, improved habitat for undesirable competitors and/or a species shift to disturbance associated species, and increased vehicle collisions. Research in Sublette County, Wyoming on the effects of natural gas development on sagebrush steppe passerines documented negative impacts to sagebrush obligates such as Brewer's sparrows, sage sparrows, and sage thrashers. (Ingelfinger, 2001) The impacts were reported greatest along roads where traffic volumes are high and within 100 meters of these roads. Sagebrush obligates were reduced within these areas by as much as 60%. Sagebrush obligate density was reduced by 50% within 100 meters of a road even when traffic volumes were less than 12 vehicles /day. It would be expected that similar population declines would occur to this guild of species from similar development proposals within sagebrush and grassland habitats.

Stipulations do not exist specifically for the protection of BLM Sensitive songbirds. The MBTA prohibits the take, capture or kill of any migratory bird, any part, nest or eggs of any such bird (16 U.S.C 703 (a)). NEPA analysis pursuant to Executive Order 13186 (January 2001) requires BLM to ensure that MBTA compliance and the effects of Bureau actions and agency plans on migratory birds are evaluated, and should reduce take of migratory birds and contribute to their conservation.

Effects to migratory birds from oil and gas development at the APD stage could include direct loss of habitat from roads, well pads and other infrastructure, disturbance, powerline strikes and accidental direct mortality, fragmentation of habitat, change in use of habitats, and potential threats and competition from edge species. Field surveys for nesting birds at proposed development sites would be conducted for activities planned between April 15 and July 15. Mitigation measures would be assigned at the APD stage to ensure there would be no measurable negative effect on migratory bird populations, in compliance with Executive Order 13186 and

MBTA. These mitigation measures would be required as Conditions of Approval. An NSO stipulation for oil and gas surface disturbing activities in riparian and wetland areas would prohibit any potential oil and gas development in those habitats unless approval was granted through the “Waivers, Exceptions, and Modifications” (WEM) process. BLM could coordinate WEMs with USFWS to assure MBTA compliance.

All raptor species known to exist within the analysis area are considered migratory under MBTA. Known raptor nest data exists for one of the lease parcels. The Standard lease conditions do not cover raptor nests above and beyond what can be called essential habitat for Sensitive migratory bird species. Some raptors could abandon nests during development and relocate to new sites. The potential impact to raptors from relocation of suitable nest sites on nest success is unknown.

Take of bald and golden eagles and any other migratory raptors is not anticipated through this action; however, take may occur indirectly as a result of vehicle collisions and other related actions associated with development. Field surveys for raptors at proposed development sites would be conducted for activities planned between April 15 and August 30. Mitigation measures would be assigned at the APD stage to ensure there would be no measurable negative effect on raptor populations, including bald and golden eagles. These mitigation measures would be required as Conditions of Approval. The application of stipulations and COA’s at the project level is expected to comply with MBTA and BGEPA.

The HiLine District RMP, when completed, will have stipulations for the Candidate Species greater sage-grouse and Sprague’s pipit. It has been shown that oil and gas development negatively impacts sage-grouse. Based on recent research, the current oil and gas stipulations for sage-grouse are considered ineffective to ensure that sage-grouse can persist within fully developed areas. With regard to existing restrictive stipulations applied by the BLM, (Walker et al. 2007a) research has demonstrated that the 0.4-km (0.25 miles) NSO lease stipulation is insufficient to conserve breeding sage-grouse populations in fully developed gas fields because this buffer distance leaves 98 percent of the landscape within 3.2 km (2 miles) open to full-scale development. Full-field development of 98 percent of the landscape within 3.2 km (2 miles) of leks in a typical landscape in the Powder River Basin reduced the average probability of lek persistence from 87 percent to 5 percent (Walker et al. 2007a).

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

considerably less support, but the regression coefficient indicated that impacts were still apparent out to 6.4 km (4 miles) (Walker et al. 2007a). Tack (2009) found impacts of energy development on lek abundances (numbers of males per lek) out to 7.6 miles.

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

4.3.8.1.3 Other Fish and Wildlife

The types and extent of impacts to wildlife species and habitats from development are similar to those described above for other species. Impacts include loss of habitat from development infrastructure, mortalities resulting from collisions with vehicles and power lines, electrocution on power lines, and displacement of wildlife species from initial disturbance caused by human presence. Indirect impacts would include habitat fragmentation and subsequent vehicle traffic, human presence, and other continual development activities.

Based on the RFD scenarios, a wide range of direct habitat loss is possible. Initial disturbance would change the occupation of those areas to disturbance-oriented species (i.e. horned larks), or species with more tolerance for disturbances. These changes would also be expected to decrease the diversity of wildlife. Although bladed corridors would be reclaimed after the facilities are constructed, some changes in vegetation would occur along the reclaimed areas. The goal of reclamation is to restore disturbed areas to pre-disturbed conditions. The outcome of reclamation, unlike site restoration, will therefore not always mimic pre-disturbance conditions and offer the same habitat values to wildlife species. Sagebrush obligates, including some species of songbirds and sage-grouse, would be most affected by this change.

It is anticipated that some development may occur adjacent to existing disturbances of some type. Depending on proximity and species tolerance, wildlife species within these areas would either have acclimated to the surrounding conditions, previously been displaced by construction activities, or may be caused to be displaced to other areas with or without preferred habitat.

Potential impacts to aquatic wildlife from development could include: spills from drilling mud or other extraction and processing chemicals, and surface disturbance activities that create a localized erosion zone.

Additional mitigation will occur as conditions of approval at the APD stage. These conditions might include the placement of earthen berms (in ephemeral drainages where fish passage will not be blocked) which should help protect aquatic wildlife habitat in case of gas leaks.

Gas development is allowed within big game crucial winter range with a timing restriction from December 1 to May 15. This stipulation does not apply to operation and maintenance of production facilities. The goal of this stipulation is to protect crucial big game habitats from disturbance during the winter use season. This stipulation provides protection to big game winter habitats and species only during that timeframe, and does not provide protection during the long-term operation and maintenance periods. Development can occur outside of those dates and will exist thereafter until reclamation, thus only delaying impacts until after that year of construction.

Mule deer would be impacted by this project from habitat fragmentation and disturbance. Mule deer winter range habitat has been identified through the central portion of the lease area for several miles on either side of Cottonwood Creek, and along the Milk River. Development would affect mule deer use of winter range habitat in those areas. Studies conducted in the Pinedale anticline of Wyoming found that mule deer avoided areas in close proximity to well pads with no evidence of well-pad acclimation during 3 out of 4 years. During year 4 of development habitat selection patterns were influenced more by road density, and not proximity of well pads. The authors attributed this to an unusually severe winter, where movement options and available habitat were limited. Densities of mule deer decreased by an estimated 46% within the developed area over the four years, and indirect impacts were observed out to 2.7-3.7 km of well sites. Mule deer distribution shifted toward less preferred and presumably less suitable habitat. (Sawyer et al, 2005) Similar impacts would be expected from development with this proposal.

White-tailed deer would also be expected to be impacted by this project from habitat fragmentation and disturbance. Winter range for white-tailed deer exists across the planning area, but covers much less area than other big game ranges. The Milk River bottom and smaller portions of the Cottonwood Creek bottom support white-tailed deer winter range.

Pronghorn would be impacted by this project from habitat fragmentation and disturbance. Pronghorn winter range habitat has been identified in the area surrounding the junction of Woody Island Coulee and Black Coulee when forming Cottonwood Creek, and around the Milk River parcels. Preliminary studies in the upper Green River Basin in Wyoming report that some pronghorn exhibit movement patterns that suggest almost complete avoidance of gas field areas of intensive development in the Jonah Field during the winter, whereas pronghorn in the PAPA (Pinedale Anticline Project Area) apparently have not been avoiding human activities. It is speculated that the difference may exist due to different levels in well densities, as the Jonah field was reported as 1 well/57 acres, and the PAPA at 1 well/124 acres. (Berger et al., 2007) Effects to winter range within existing and future gas development and exploration would be similar to those referenced above and would depend on rate and location of development.

Although limited research exists that documents impacts to sharp-tailed grouse from development activities, it is expected that sharp-tailed grouse would be impacted similarly to greater sage-grouse. Sharp-tailed grouse would be impacted by this project from habitat fragmentation and disturbance. Vehicles and human activity during breeding and nesting seasons may reduce breeding activity, displace nesting hens and reduce the suitability of habitat for brood-rearing. Mortality may increase as a result of collisions with vehicles.

Inventory data for sharp-tailed grouse is available for all of the lease parcels from 1979-1981, although it is likely that dancing grounds have been moved or abandoned over time, while new dancing grounds have formed. A 500-foot buffer around dancing grounds and avoidance of nesting habitat would provide minimal mitigation for nesting sharp-tailed grouse. Wild turkeys, pheasants, and gray partridge may also be affected by disturbance and direct mortality through nest destruction and vehicle collisions during the development stages. See the Special Status Species section above for impacts to greater sage-grouse.

Wetland habitat also could be affected by project development, but not by leasing. Set-backs from natural wetlands for well pads as a COA at the time of development would mitigate many of the concerns, but pipeline and road placement during drought years could result in disturbances to wetlands that hold water during wet years. Additional disturbance occurs as vehicles are forced to drive around wet areas and more roads are created. Road dust also enters the wetlands and over time leads to wetland filling and loss of habitat.

Wildlife species, habitats and issues and concerns likely to be impacted in each lease parcel, if leased, follows. Besides the issues and concerns listed, all lease parcels except the four Milk River bed parcels are expected to have a variety of small mammal, reptile, amphibian, and resident bird species as described in Chapter 3 – Affected Environment. These species, although not Special Status Species or species of high priority, are still important to the environment contributing much to the diversity and stability of the various wildlife habitats and plant communities present in the proposed lease parcels.

MTM 97300-KL

Wildlife issues on this parcel include Sprague's pipit, migratory bird nesting, wetland habitat, sharp-tailed grouse breeding and nesting, and waterfowl habitat developments (PR-56).

MTM 97300-KM

Issues and concerns on this parcel include Sprague's pipit, migratory bird nesting, wetland habitat, and sharp-tailed grouse breeding and nesting.

MTM 97300-KP

Wildlife concerns on this parcel include Sprague's pipit, migratory bird nesting, wetland habitat, sharp-tailed grouse breeding and nesting, and waterfowl habitat developments (PR-56).

MTM 97300-KW

Wildlife issues on this 40-acre parcel include migratory bird nesting, sharp-tailed grouse breeding and nesting, greater sage-grouse breeding and nesting, mule deer winter range, and pronghorn antelope winter range.

MTM 97300-KQ

Issues and concerns include Sprague's pipit, migratory bird nesting, wetland habitat, and mule deer winter range.

MTM 97300-KR

Wildlife concerns include Sprague's pipit, migratory bird nesting, wetland habitat, sharp-tailed grouse breeding and nesting, mule deer winter range, and waterfowl habitat developments (nesting islands).

MTM 97300-KS

Wildlife issues include Sprague's pipit, migratory bird nesting, wetland habitat, sharp-tailed grouse breeding and nesting, and mule deer winter range.

MTM 97300-KT

Issues and concerns include Sprague's pipit, migratory bird nesting, and wetland habitat.

MTM 97300-KU

Wildlife concerns include Sprague's pipit, migratory bird nesting, wetland habitat, and sharp-tailed grouse breeding and nesting.

MTM 97300-KV

Wildlife issues include Sprague's pipit, migratory bird nesting, wetland habitat, sharp-tailed grouse breeding and nesting, and waterfowl habitat developments.

MTM 97300-KX

Wildlife issues and concerns include Sprague's pipit, migratory bird nesting, sharp-tailed grouse breeding and nesting, greater sage-grouse breeding and nesting, mule deer winter range, pronghorn antelope winter range, raptor nesting and hunting, riparian habitat, and possibly Sensitive Fish Species.

MTM 97300-KH

Issues include Sprague's pipit, migratory bird nesting, sharp-tailed grouse breeding and nesting, and mule deer winter range.

MTM 97300-KI

Wildlife concerns include Sprague's pipit, migratory bird nesting, sharp-tailed grouse breeding and nesting, mule deer winter range, riparian habitat, and Sensitive Fish Species.

MTM 97300-KJ

Wildlife issues and concerns include Sprague's pipit, migratory bird nesting, wetland habitat, sharp-tailed grouse breeding and nesting, mule deer winter range, riparian habitat, and Sensitive Fish Species.

MTM 97300-KK

Wildlife issues include Sprague's pipit, migratory bird nesting, wetland habitat, sharp-tailed grouse breeding and nesting, and mule deer winter range.

MTM 97300-KY

Wildlife concerns include Sprague's pipit, migratory bird nesting, wetland habitat, sharp-tailed grouse breeding and nesting, mule deer winter range, pronghorn antelope winter range, and colonial bird nesting.

MTM 97300-KZ

Concerns include Sprague's pipit, migratory bird nesting, wetland habitat, and sharp-tailed grouse breeding and nesting.

MTM 97300-K1

Wildlife issues and concerns include Sprague's pipit, migratory bird nesting, wetland habitat, sharp-tailed grouse breeding and nesting, greater sage-grouse breeding and nesting, mule deer winter range, pronghorn antelope winter range, colonial bird nesting, and waterfowl habitat developments (Tarawa Reservoir).

MTM 97300-K2

Wildlife issues include Sprague's pipit, migratory bird nesting, sharp-tailed grouse breeding and nesting, mule deer winter range, and pronghorn antelope winter range.

MTM 97300-K3

Wildlife concerns include Sprague's pipit, migratory bird nesting, wetland habitat, sharp-tailed grouse breeding and nesting, and mule deer winter range.

MTM 97300-K5

Wildlife issues include Sprague's pipit, migratory bird nesting, wetland habitat, sharp-tailed grouse breeding and nesting, mule deer winter range, riparian habitat, and Sensitive Fish Species.

MTM 97300-PF

Fish and wildlife issues and concerns include migratory bird nesting, sharp-tailed grouse breeding and nesting, greater sage-grouse breeding and nesting, mule deer winter range, pronghorn antelope winter range, riparian habitat, and Sensitive Fish Species. Most of these concerns are for the adjoining terrestrial habitat that would have to be crossed when accessing the river bed lease parcel.

MTM 97300-PE

Fish and wildlife issues include migratory bird nesting, sharp-tailed grouse breeding and nesting, greater sage-grouse breeding and nesting, mule deer winter range, pronghorn antelope winter range, riparian habitat, and Sensitive Fish Species. Most of these concerns are for the adjoining terrestrial habitat that would have to be crossed when accessing the river bed lease parcel.

MTM 97300-PD

Fish and wildlife concerns include migratory bird nesting, sharp-tailed grouse breeding and nesting, mule deer winter range, pronghorn antelope winter range, riparian habitat, and Sensitive Fish Species. Most of these concerns are for the adjoining terrestrial habitat that would have to be crossed when accessing the river bed lease parcel.

MTM 97300-RL

Fish and wildlife issues and concerns include migratory bird nesting, sharp-tailed grouse breeding and nesting, mule deer winter range, pronghorn antelope winter range, riparian habitat, and Sensitive Fish Species. Most of these concerns are for the adjoining terrestrial habitat that would have to be crossed when accessing the river bed lease parcel.

4.3.8.2 Mitigation

Measures would be taken to prevent, minimize, or mitigate impacts to fish and wildlife species from exploration and development activities. Prior to authorization, activities would be evaluated on a case-by-case basis, and the project would be subject to mitigation measures. Mitigation could include rapid revegetation, project relocation, or pre-disturbance wildlife species surveying. If gas development is proposed in suitable habitat for threatened or endangered species, consultation with the USFWS would occur to determine if additional terms and conditions would need to be applied. Standard Lease Stipulations (16-3) and Threatened and Endangered Species Lease Stipulations (16-2) would be applied to the leases.

4.3.9 Special Status Plant Species

4.3.9.1 Direct and Indirect Effects

Leasing the parcels would have no direct impacts on Special Status Plant Species. Any potential effects from the sale of leases would occur at the time the leases are developed. All Sensitive Plants are from riparian areas where mandatory set-backs would preclude development.

4.3.9.2 Mitigation

Stipulations applied to wildlife resources, steep slopes, waterbodies, streams, 100-year floodplains of major rivers, riparian areas, and wetlands would likely also provide mitigation for Special Status Plant Species. Proposed development would be analyzed on a site-specific basis prior to approval of gas exploration or development activities at the APD stage. Mitigation would also be addressed at the site-specific APD stage. Surveys to determine the existence of federally listed species could occur on BLM-administered surface or minerals prior to approval of exploration and development activities at the APD stage.

4.3.10 Cultural Resources

4.3.10.1 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 at this stage. It is only when the lease is developed that there is a potential for cultural resources to be affected by the proposed action. That is when the drilling location is known and cultural resource investigations can be centered on that location and other related developments such as roads, transmission lines, and pipelines.

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 will 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 will apply to all parcels (Appendix A). In the event that cultural resources are identified within the APE, an evaluation of National

Register eligibility will occur for each identified cultural resource. Mitigation measures for cultural resources determined to be eligible to the National Register of Historic Places (NRHP) will have to be followed for those cultural resources directly and/or indirectly impacted by the proposed development.

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.

Indirect effects from surface disturbances associated with exploration and development activities after leasing have the potential to alter the characteristics of a significant cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Other effects to cultural resources from proposed surface disturbance activities include the destruction, damage, or alteration to all or part of the cultural resource and diminishing the property's significant historic features as a result of the introduction of visual, atmospheric, or audible elements. This could include altering or diminishing the elements of a National Register eligible property and diminish an eligible property's eligibility status. Cultural resource investigations associated with development potentially adds to our understanding of the prehistory/history of the area under investigation and discovery of sites that would otherwise remain undiscovered due to burial or omission during review inventories.

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.

4.3.10.2 Mitigation

Specific mitigation measures, such as site avoidance or data recovery through excavation, would have to be determined when project specific development proposals are received. In almost all situations, direct impacts to cultural resources could be avoided by relocating well sites and pipelines. Given the relatively small number of acres to be disturbed by anticipated development it is unlikely that it would be necessary to mitigate adverse impacts to archaeological sites through data recovery efforts. It should be noted that BLM has discretionary 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 200 meters in any direction. 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

The use of standard lease terms and Standard Stipulation 16-3 the cultural no surface occupancy (NSO) stipulation, and the cultural lease notice protect vulnerable significant cultural resource values on these lease parcels (refer to Appendix A). The application of these requirements at the leasing phase provide protection to cultural values or at least notification to the lessee that potentially valuable cultural resource values are or are likely to be present on the lease parcels.

Specific mitigation measures, including but not limited to, possible site avoidance, excavation or data recovery would have to be determined when site-specific development proposals are received. However, in most surface-disturbing situations cultural resources would be avoided by project redesign or relocation. ~~Should a cultural property be unavoidable, significant properties would be site specifically mitigated prior to implementation of a project.~~ If significant properties cannot be avoided, appropriate strategies would be implemented to mitigate potential impacts in accordance with existing federal regulations.

In addition, each nominated lease parcel would have the standard lease notice attached and the special cultural resource stipulation as written in IM 2005-003. Refer to Appendix A of this document for pertinent parcel-specific lease stipulations as needed.

4.3.11 Native American Religious Concerns

4.3.11.1 Direct and Indirect Effects

Leasing the parcels would have no direct impacts on Native American religious concerns. Any potential effects from the sale of leases would occur at the time the leases are developed.

The BLM WO IM-2005-003 notes that while a lease does not authorize specific on-the-ground activities, and no ground disturbance can occur without further authorization from BLM and the surface management agency, but unless proscribed by stipulation, lessees can expect to drill somewhere on a lease unless precluded by law. Leasing 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 EO 13007. It would not prevent tribes from visiting sacred sites or prevent possession of sacred objects. Indirect effects from site specific development proposals could have an impact to Native American religious practices and TCPs.

4.3.11.2 Mitigation

The application of Stipulation 16-1 to all lease parcels ensures that BLM's obligations under NHPA, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 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

or CSU Stipulations may be necessary if TCPs or properties of religious and cultural importance are identified at the APD stage.

4.3.12 Paleontology

4.3.12.1 Direct and Indirect Effects

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

The surface disturbances associated with oil and gas exploration and development activities could have indirect effects to paleontological resources primarily in areas classified as Potential Fossil Yield Classification (PFYC) 4 or 5 areas. Surface-disturbing activities could potentially alter the characteristics of paleontological resources through damage, fossil destruction, or disturbance of the stratigraphic context in which paleontological resources are located, resulting in the loss of important scientific data. However, in most surface-disturbing situations, paleontological resources would be avoided by project redesign or relocation before project approval which would negate the need for the implementation of mitigation measures.

Conversely, surface-disturbing activities can also potentially lead to the discovery of paleontological localities that would otherwise remain undiscovered due to burial or omission during review inventories. The scientific study to retrieve and interpret important paleontological resource information provides a better understanding of the nature and distribution of those resources. The retrieval and interpretation of information is most successful and meaningful when a site is left intact.

Once a parcel is leased, the application of standard lease terms (movement of activities by 200 meters or delay of up to 60 days) would protect vulnerable significant paleontological resource values on these lease parcels. In most instances this may be sufficient to provide the necessary protection to paleontological values. However, the application of standard lease terms may not always adequately protect paleontological values. In order to protect paleontological values, paleontological resources management relies on the application of Lease Notice LN 14-12, applied at the leasing phase to provide protection to paleontological resources or at least notification to the lessee that potentially significant paleontological resources are or are likely to be present on the lease parcels should the lease parcel fall within one of the designated PFYC Class 4 or 5 significant geologic formations which have a record of producing significant fossils.

The paleontological lease notice would be applied to those lease parcels that fall within the PFYC 4 or 5 areas, requiring a field survey prior to surface disturbance. Paleontological resource surveys conducted prior to surface-disturbing activities could locate additional paleontological resources and would result in a better understanding of the nature and distribution of those resources.

4.3.12.2 Mitigation

The use of standard lease terms, **Standard Stipulation 16-3**, ~~the NSO stipulation~~ and the **Lease Notice 14-12** protect paleontological resource values on these lease parcels (refer to Appendix A). The application of these requirements at the leasing phase provides protection to

paleontological values. The paleontological lease notice would be applied to those lease parcels that fall within the PFYC 4 or 5 areas, requiring a field survey prior to surface disturbance. These inventory requirements should result in the identification of paleontological resources and avoidance or mitigation of significant localities before permit approval and prior to surface disturbance. However, the application of standard lease terms only allows the relocation of activities up to 200 meters, unless documented in the NEPA document, and cannot result in moving the activity off lease.

Specific mitigation measures could include, but are not limited to, site avoidance or excavation. Avoidance of paleontological properties would be a best management practice. However, should a paleontological locality be unavoidable, significant properties would be mitigated prior to implementation of a project. These measures would be determined when site specific development proposals are received.

Based on the above analysis, in order to protect potential paleontological values the following Leases are recommended to have the Paleontological Lease Notice, (LN 14-12) applied per guidance identified in Instructional Memorandums 2009-011 and 2008-009. Leases recommended for paleontological lease notice are listed by county: Phillips County; MTM 97300-KH, MTM 97300-KI, MTM 97300-KJ, MTM 97300-KK, MTM 97300-KY, MTM-97300-KZ, MTM 97300-K1, MTM 97300-K2, MTM-97300-K3, MTM-97300-K5, MTM-97300-PF. See Appendix A for specific legal description.

4.3.13 Visual Resources

4.3.13.1 Direct and Indirect Effects

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

The lease parcels fall into VRM classes III and IV. While the act of leasing federal minerals produces no visual impacts, subsequent development (indirect effects) of a lease parcel would result in some level of modification to the existing landscape.

4.3.13.2 Mitigation

All new oil and gas development would implement, as appropriate for the site, BLM Best Management Practices for VRM, regardless of the VRM class. This includes, but would not be limited to, proper site selection, reduction of visibility, minimizing disturbance, selecting color(s)/color schemes that blend with the background and reclaiming areas that are not in active use. Repetition of form, line, color and texture when designing projects would reduce contrasts between landscape and development. Wherever practical, no new development would be allowed on ridges or mountain tops. Overall, the goal would be to not reduce the visual qualities or scenic value that currently exists.

4.3.14 Forest and Woodland Resources

4.3.14.1 Direct and Indirect Effects

Leasing the parcels would have no direct impacts on forest and woodland resources. Any potential effects from the sale of leases would occur at the time the leases are developed.

Potential impacts from oil and gas development would be minimal to forest and woodland resources. The lease parcels are primarily in grassland, sagebrush grassland, or breaks plant communities with no woodland resources other than a few scattered stands of deciduous shrubs in woody draws or side drainages that occasionally trap snowfall in sufficient amounts to support growth of taller shrubs such as buffaloberry (*Shepherdia argentea*) or chokecherry (*Prunus virginiana*). None of this resource is marketable, and functions primarily for wildlife cover and food, and occasionally for shading of livestock during the warm season. The Milk River bed parcels have no trees other than an occasional cottonwood (*Populus deltoides*) with branches spreading over the river channel. Generally these trees are scattered and could be avoided if there was a need to access the lease parcels for some type of development.

4.3.14.2 Mitigation

Measures would be taken to prevent, minimize, or mitigate impacts to trees or tall shrubs from exploration and development activities. Prior to authorization, activities would be evaluated on a case-by-case basis, and the project would be subject to mitigation measures. The road construction and maintenance BMPs outlined in the Gold Book are consistent with the Water Quality BMPs for Montana Forests (Logan 2001) which are designed to protect water quality and forest soils. Other mitigation measures could include the artificial planting of bareroot or containerized nursery stock seedlings.

All severed forest and woodland vegetative material, although unlikely, would need to be removed or reduced to acceptable standards meeting Montana's Control of Timber Slash and Debris Law (Title 76, Chapter 13, Part 4), commonly referred to as the "Slash" Law; therefore requiring burning, grinding, chipping, burying, or hauling residual debris off-site to a designated landfill or other location for disposal.

4.3.15 Livestock Grazing

4.3.15.1 Direct and Indirect Effects

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

Natural gas development could result in a loss of vegetation for livestock grazing (e.g., direct removal, introduction of unpalatable plant species, etc.), decrease the palatability of vegetation due to fugitive dust, disrupt livestock management practices, involve vehicle collisions, and decrease grazing capacity. Direct losses of forage could also result from construction of roads, well pads and associated infrastructure and would vary depending on the extent of development. These impacts could vary from short-term impacts to long-term impacts depending on the type of exploration or development, the success of reclamation, and the type of vegetation removed for the natural gas activities.

4.3.15.2 Mitigation

Measures would be taken to prevent, minimize, or mitigate impacts to livestock grazing from exploration and development activities. Prior to authorization, activities would be evaluated on a case-by-case basis, and the project would be subject to mitigation measures. Mitigation could potentially include controlling livestock movement by maintaining fence line integrity, fencing of facilities, revegetation of disturbed sites, and fugitive dust control.

4.3.16 Recreation and Travel Management

4.3.16.1 Direct and Indirect Effects

Leasing the parcels would have no direct impacts on recreation and travel management. Any potential effects from the sale of leases would occur at the time the leases are developed.

Recreation impacts may exist where oil and gas development and recreational user conflicts may occur. In areas where a high level of oil and gas development is likely, there may be user conflicts between motorized recreationists, hunting, target shooting, camping, fishing, picnicking, and winter activities such as snowmobiling and the oil and gas/industrial activities. The intensity of these impacts is moderate and could exist in both the short-term (exploration and construction phases of oil and gas development) and in the long-term (producing wells, maintenance of facilities, etc.). Recreationists would lose some benefit outcomes such as loss of a sense of solitude and possible increase of stress.

The public may also perceive oil and gas development areas as inaccessible or unavailable when they see construction or maintenance activities and production facilities. Potential public safety hazards/risks include: moving equipment, operator vehicles, transport vehicles for oil and gas, oil and gas wells, etc. However, this will be addressed in more detail at the development stage.

As oil and gas development occurs, new routes are created which often attract recreationists seeking additional or new areas to explore for motorized recreational opportunities. Motorized recreational opportunities could be enhanced through the additional opportunities to explore; however, user conflicts and public safety issues could result from the use of the new travel routes. The creation of routes from oil and gas activities could lead to a proliferation of user-created motorized routes, resulting in adverse impacts to the scenic qualities of the area, increased level of surface disturbance, and loss of sense of solitude. These impacts would be isolated to BLM-administered public lands and could be minimized and avoided through mitigation and reclamation of industrial routes when no longer needed.

For those areas with isolated tracks of BLM public lands that generally do not have existing public access, recreation opportunities that occur in these areas are limited to use with adjacent land owner permission or hunting by an outfitter; therefore, oil and gas activities would have little or no impact on recreational experiences in this area.

Foreseeable changes in recreation use levels include demand for recreational use of public land to increase. Increases could be expected in, but not limited to, hunting, fishing, hiking, camping, wildlife viewing, and dispersed recreational uses. This could increase the incidence of conflict between recreationists involved in motorized activities and non-motorized activities.

4.3.16.2. Mitigation

Specific mitigation for development of any leases would be addressed during the development phase based on best management practices appropriate for each area. Mitigations that would minimize impacts to the recreating public may include noise control, alternate placement of facilities, safety measures and short and long-term site reclamation guidelines.

4.3.17 Lands and Realty

4.3.17.1 Direct and Indirect Effects

Leasing the parcels would have no direct impacts on lands and realty. Any potential effects from the sale of leases would occur at the time the leases are developed.

Facilities associated with oil and gas development could cause disturbance to the existing rights-of-way on federal surface on nine of the twenty five tracts (Parcels MTM-97300-KL, KM, KP, KR, KU, KV, KH, KI, and K5). Additional rights-of-way could be required across federal surface for “off-lease” or third party facilities required for potential development of the parcels.

4.3.17.2 Mitigation

Measures would need to be taken to avoid disturbance to or impacting the existing rights-of-way on federal surface on parcels MTM-97300-KL, KM, KP, KR, KU, KV, KH, KI, and K5 in the event of any exploration and development activities on the leased parcels. Any new “off-lease” or third party rights-of-way required across federal surface for future exploration and/or development of the any of the parcels would be subject to stipulations to protect other resources as determined by environmental analyses which would be completed on a case-by-case basis.

4.3.18 Minerals

4.3.18.1 Fluid Minerals

4.3.18.1.1 Direct and Indirect Effects

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

Issuing a lease provides opportunities to explore for and develop natural gas. Additional natural gas produced from any or all of the 21 whole or partial parcels would enter the public markets. The production of natural gas results in the irreversible and irretrievable loss of these resources. Royalties and taxes would accrue to the federal and state treasuries from the lease parcel lands. There would be a reduction in the known amount of natural gas resources.

Stipulations applied to various areas with respect to occupancy, timing limitation, and control of surface use could affect natural gas exploration and development, both on and off the federal parcel. Leases issued with major constraints (NSO stipulations) may decrease some lease values, increase operating costs, and require relocation of well sites, and modification of field development. Leases issued with moderate constraints (timing limitation and controlled surface Use (CSU) stipulations) may result in similar but reduced impacts, and delays in operations and uncertainty on the part of operators regarding restrictions.

Under Alternative B, all of the lease parcels would be offered for lease subject to major (NSO) or moderate (CSU) constraints, lease notices, and/or standard lease terms and conditions.

4.3.18.2 Solid Minerals

4.3.18.2.1 Direct and Indirect Effects

Leasing the parcels would have no direct impacts on solid minerals. As described in Chapter 3, none of the parcels proposed to be leased for oil and gas in the analysis area conflict with currently active or existing claims, patents, permits or leases for all solid materials issued on federal lands within the analysis area.

4.3.19 Special Designations

4.3.19.1 Direct and Indirect Effects

Leasing the parcels would have no direct impacts on the Big Bend of the Milk River ACEC. Any potential effects from the sale of leases would occur at the time the leases are developed.

Parcels MTM 97300-PF, MTM 97300-PD and MTM 97300-RL are located adjacent to or within 0.5 mile of portions of the 2,120-acre Big Bend of the Milk River ACEC. The ACEC was designated to protect archaeological resources representing bison hunting and prehistoric ceremonial use of the Northwestern Plains. This area will be managed for research and interpretation and has been withdrawn from mineral location and withheld from solid mineral leaseables to protect the cultural resources. Development of mineral resources adjacent to the ACEC may lead to an increase in recreational access by the public which would increase the potential for damage to the cultural features in the area.

4.3.19.2 Mitigation

Mitigation measures to protect the cultural features of the ACEC would have to be addressed at the time of lease development. Specific actions should take into account the ACEC's management plan and facilities placed as far away from the ACEC boundary as possible.

4.3.20 Social and Economic Conditions

4.3.20.1 Social

4.3.20.1.1 Direct and Indirect Effects

While the act of leasing Federal minerals itself would result in no social impact, subsequent exploration and development may generate impacts to people living near or using the area in the vicinity of the lease. Exploration, drilling or production could create an inconvenience to people living adjacent to leases due to increased traffic and traffic delays, and light, noise and visual impacts. This could be especially noticeable in rural areas where oil and gas development has not occurred previously. The amount of inconvenience would depend on the activity affected, traffic patterns within the area, noise and light levels, length of time and season these activities occur, etc. In addition, incoming households may create competition for housing in some communities. However, residents living in areas that have been experiencing ongoing population losses may support the increased employment and population related to oil and gas development. Phillips County would also benefit from the additional revenues due to oil and gas leasing and development.

There would be no disproportionate effects to low income or minority populations, from leasing. Consultation with potentially affected Tribes would occur at the APD stage.

4.3.20.2 Economics

4.3.20.2.1 Direct and Indirect Effects

Public Revenues:

Leasing an additional 35,275 acres of Federal minerals (Alternative B) would increase average annual oil and gas leasing and rent revenues to the Federal government by an estimated \$65,000 (Table 23). Average annual leasing and rent revenues that would be distributed to state/local

governments would increase by about \$27,000. Estimated average annual Federal oil and gas royalties would increase by about \$856,000 with Alternative B compared to current levels. Estimated average annual royalties distributed to the state/counties would increase by about \$370,000 compared to current levels.

Total average annual Federal revenues related to leasing an additional 35,275 acres of Federal minerals and associated annual rent and royalty revenues related to average annual production of Federal minerals would amount to about \$921,000. Estimated total average annual revenues from leasing, rent, and royalties distributed to the state and counties would be about \$397,000. Total estimated annual revenues distributed to Phillips County would be about \$141,000.

Local Economic Contribution:

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 50 total jobs (full and part-time) and \$2.8 million within the local economy (IMPLAN 2009). There would also be a corresponding increase in local population of about 80 people and 30 households.

Conclusion:

Total Federal contribution of Alternative B (leasing an additional 35,275 acres of Federal minerals) and anticipated related exploration, development, and production of oil and gas would affect local income, total local employment, local population, and number of households (Table 24). Leasing the additional 35,275 acres and anticipated exploration, development, and production under alternative B would provide additional funds for Phillips County functions such as enforcing laws, administering justice, collecting and disbursing tax funds, providing for orderly elections, maintaining roads and highways, providing fire protection, keeping records, administering primary and secondary education and operating clinics/hospitals, county libraries, county airports, local landfills, and county health systems. Demand for these services would likely increase since the population and number of households would increase. Leasing the additional 35,275 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) within the local economy.

Table 23. Summary of Anticipated Average Annual Oil and Gas Activity by Alternative.

Activity	Alternative		
	A	B	C
<i>Additional acres that would be leased based on this EA</i>	0	35,275	2,769
Lease rental first 5 years (\$1.50/acre)	0	\$26,456	\$2,077
Lease rental second 5 years (\$2.00/acre)	0	\$35,275	\$2,769
Bonus bids (avg. \$12.54/acre)	0	\$3,563	\$280
Total annual Federal lease and rental revenue	0	\$65,294	\$5,125
Distribution to State/local government	0	\$27,136	\$2,130

Average annual oil production (bbl)	0	0	0
Average annual gas production (MCF)	0	895,166	70,268
Average annual Federal Oil Royalty (bblx\$91.76x0.125)	0	0	0
Average annual Federal gas Royalty (MCFx\$7.65x0.125)	0	\$856,002	\$67,194
Total average annual Federal O&G royalties	0	\$856,002	\$67,194
Average annual distribution to state/local government	0	\$370,135	\$29,055
Total average annual Federal revenues	0	\$921,296	\$72,319
Total average annual state/local revenues	0	\$397,272	\$31,185
Total average annual revenue distributed to counties	0	\$141,050	\$11,072
Average annual total local employment (jobs)	0	48	4
Average annual total local income (\$1,000)	0	\$2,800	\$221

Table 24. Summary Comparison of Estimated Average Annual Economic Impacts

Alternative	Acres Recommended for Lease	Local Revenue to Counties (\$)	Total Employment (full and part-time jobs)	Total Labor Income (\$1,000)	Change in Population Change	Change in Change in Number of Households
A	0	0	0	0	0	0
B	35,275	\$141,050	48	\$2,800	79	30
C	2,769	\$11,072	4	\$221	7	3

4.3.21 Cumulative Impacts- Alternative B

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 cumulative impacts associated with this project on resources. 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 addressed in this document, more site-specific planning would be conducted in 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.

4.3.21.1 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, wildfire and prescribed fire, range improvement projects, and utility right-of-ways.

4.3.21.2 Cumulative Impacts by Resource

Cumulative effects for all resources in the Malta Field Office are described in the Phillips Management Framework Plan (MFP) (1977), Little Rocky Mountains MFP (1977), and the UL Bend/Zortman MFP (1977), the Oil & Gas Environmental Assessment of the BLM Leasing Program – Lewistown District (September 1981) and the Judith-Valley-Phillips RMP – EIS

(approved in October 1992). Anticipated exploration and development activities 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 resources other than air, climate, and socio-economic resources. This previous analysis is hereby incorporated by reference for resources other than for air, climate, and socio-economic resources.

4.3.21.2.1 Greenhouse Gas Emissions and Cumulative Impacts on Climate Change

The cumulative effects analysis area is the Malta Field Office, with additional discussion at state-wide, national, and global scales for GHG emissions and climate change.

This section incorporates an analysis of the contributions of the Proposed Action to GHG emissions, followed by a general discussion of potential impacts to climate change. 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 Malta Field Office RFD are compared below with recent, available inventory data at the state, national, and global scales (Table 25). 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 for the sake of providing context for the potential contributions of GHGs associated with this project.

As discussed in the Air Quality section of Chapter 4, total projected BLM GHG emissions from the RFD are 134,044.9 metric tons/year CO₂e. Potential emissions under Alternative B would be approximately 0.4 percent of this total. Table 25 displays projected GHG emissions from non-BLM activities included in the Malta Field Office RFD. Total projected emissions of non-BLM activities in the RFD in Appendix B are 1,382,889.8 metric tons/year of CO₂e. When combined with projected annual BLM emissions, this totals 1,516,934.7 metric tons/year CO₂e. Potential GHG emissions under Alternative B would be 0.09 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, and Alternative C, would be minor in the context of projected GHG contributions from the entire RFD for the MCFO.

Table 25. Projected non-BLM GHG emissions associated with the Malta Field Office Reasonably Foreseeable Development Scenario for fluid mineral exploration and development.

Source	Non-BLM Long-Term Greenhouse Gas Emissions in tons/year				Emissions (metric tons/yr)
	CO ₂	CH ₄	N ₂ O	Co ₂ e	CO ₂ e
Conventional Natural Gas	545,689.1	5425.9	2.1	658,344.3	599,170.7
Coal Bed Natural Gas	274,925.2	5,330.5	0.9	387,135.7	351,302.8
Oil	422,033.9	2,576.2	1.2	476,522.7	432,416.3

Total	1,242,648.3	13,332.6	4.2	1,522,002.7	1,382,889.8
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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 added up to a total of approximately 36.8 million metric tons of CO₂e (Center for Climate Strategies (CCS) 2007). Potential emissions from development of lease parcels in Alternative B of this project represent approximately 0.0037 percent of the state-wide total of GHG emissions based on the 2005 state-wide inventory (CCS 2007).

The EPA (USEPA 2010, as summarized by 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 CO₂ sinks were considered) of CO₂e in 2008. Potential annual emissions under Alternative B of this project would amount to approximately 0.00002 percent of gross U.S. total emissions. Global GHG emissions for 2004 (IPCC 2007, summarized by the Climate Change SIR 2010) indicated approximately 49 gigatonnes (10⁹ metric tons) of CO₂e emitted. Potential annual emissions under Alternative B would amount to approximately 0.000003 percent of this global total.

As indicated 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 the Chapter 4 Air Quality section above may be in place at the APD stage to reduce GHG emissions from potential oil and gas development on lease parcels under Alternative B. This is likely because many operators working in Montana, South Dakota, and North Dakota are currently USEPA 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).

4.3.21.2.2 Cumulative Impacts of Climate Change

As previously discussed in the Air Quality section of Chapter 4, it is difficult to impossible to identify specific impacts of climate change on specific resources within the analysis 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 by 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).

4.3.21.2.3 Cumulative Impacts to Soils

In general, the aforementioned actions would have cumulative impacts on soil resources by causing surface disturbances contributing to soil compaction, erosion, and subsequent sedimentation. It is not expected that the surface disturbance associated with the proposed action and, past, present and future foreseeable actions would have consequential cumulative effects due to the implementation of stipulations, mitigation measures, BMPs, and adherence to standards and guidelines.

4.3.21.2.4 Cumulative Impacts to Wildlife

Cumulative impacts are those impacts on the environment which result “from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.” (40 CFR 1508.7). In this case, past and presently on-going actions and activities in the project vicinity include fire, farming, livestock grazing, light vehicle seasonal traffic, and any other form of human and natural disturbances.

Construction of roads, production well pads, and other facilities would result in long term (>5 years) loss of habitat and forage in the analysis area. This would be in addition to acres disturbed, or habitats fragmented from various other adjacent activities. As new development occurs, direct and indirect impacts would continue to stress wildlife populations, most likely displacing the larger, mobile animals into adjacent habitat, and increasing competition with existing local populations. Non-mobile animals would be affected by increased habitat fragmentation and interruptions to preferred nesting habitats.

Certain species are localized to some areas and rely on very key habitats during critical times of the year. Disturbance or human activities that would occur in winter range for big game, nesting and brood-rearing habitat for grouse and raptors could displace some or all of the species using a particular area or disrupt the normal life cycles of species. Wildlife and habitat in and around the project would be influenced to different degrees by various human activities. Some species and/or a few individuals from a species group may be able to adapt to these human influences over time.

With the addition of various forms of stipulations, mitigation, and terms and conditions applied during the development stage, the assessed resources of concern are not expected to approach conditions where additional stresses associated with the proposed action and, past, present and future foreseeable actions would have consequential cumulative effects.

4.3.21.2.5 Cumulative Impacts to Cultural Resources / Native American Religious Concerns

Leasing the parcels for oil and gas development will have no cumulative impacts to Cultural Resources or Native American Religious Concerns. These effects will be addressed at the time when a lease is developed.

4.3.21.2.6.4 Cumulative Impacts to Economic Conditions

The cumulative effects of Federal mineral leasing within the local economy as well as the specific effects of leasing an additional 35,275 acres under Alternative B are summarized in Tables Econ 4 (Summary Comparison of Cumulative Annual Economic Impacts by Alternative) and Econ 5 (Summary Comparison of Cumulative Employment and Income by Major Industry by Alternative). These tables also display, in comparative form, the cumulative effects of alternatives A and C. The demographic and economic characteristics of the local economy would be most noticeable in Phillips County.

4.4 Alternative C (BLM Preferred)

4.4.1 Direct Effects Common to All Resources

Under Alternative C, eight parcels, 2,768.53 surveyed federal mineral acres (2040.00 acres of federal surface and 728.53 acres of private and/or state surface) in whole (4) or part (4) would be offered for competitive oil and gas lease sale. The remaining 21 parcels, 32,506.89 surveyed acres (26,347.02 acres of federal surface and 6,159.87 acres of private and/or state surface) in whole (17) or part (4) would be deferred pending further review.

The action of leasing the lease parcels in Alternative C would, in and of itself, have no direct impact on resources. Any potential effects on resources from the sale of leases would occur during lease exploration and development activities. At the time of this review it is unknown whether a particular lease parcel would be sold and a lease issued.

4.4.2 Indirect Effects Common to All Resources

Oil and gas exploration and development activities such as construction, drilling, production, infrastructure installation, vehicle traffic and reclamation are indirect effects from leasing the lease parcels in Alternative C. It is unknown when, where, how, or if future surface disturbing activities associated with oil and gas exploration and development such as well sites, roads, facilities, and associated infrastructure would be proposed. It is also not known how many wells, if any, would be drilled and/or completed, the types of technologies and equipment would be used and the types of infrastructure needed for production of oil and gas. Thus, the types, magnitude and duration of potential impacts cannot be precisely quantified at this time, and would vary according to many factors. The potential impacts from Alternative C would be analyzed after receipt of an APD or sundry notice.

Typical impacts to resources from oil and gas exploration and development activities such as well sites, roads, facilities, and associated infrastructure are described in the Phillips Management Framework Plan (MFP) (1977), Little Rocky Mountains MFP (1977), and the UL Bend/Zortman MFP (1977) Land Use Plan.

4.4.3 Air Resources

4.4.3.1 Air Quality

4.4.3.1.1 Direct and Indirect Effects

Effects to Air Quality would be similar to those for the same as Alternative B. Fewer leased acres would likely result in less future development and fewer emissions than Alternative B. Consequently, air quality impacts under Alternative C would be less than those for Alternative B.

4.4.3.1.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.3.2 GHG Emissions

4.4.3.2.1 Direct and Indirect Effects

Under Alternative C, approximately 2,768.53 acres of lease parcels with federal minerals would be leased. These acres constitute 0.08 percent of the total federal mineral estate of approximately 3,483,000 acres identified in the HiLine District RFD. Therefore, based on the approach described above to estimate GHG emissions, 0.08 percent of the RFD total estimated BLM emissions of 134,044.9 metric tons/year would be approximately 107.2 metric tons/year of CO₂e if the parcels within Alternative C were to be developed.

4.4.3.2.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.3.3 Climate Change

4.4.3.3.1 Direct and Indirect Effects

Effects to Climate Change would be similar to those for the same as Alternative B. Fewer leased acres would likely result in less future development and fewer GHG emissions than Alternative B. Consequently, Climate Change impacts under Alternative C would be less than those for Alternative B.

4.4.3.3.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.4 Soil Resources

4.4.4.1 Direct and Indirect Effects

~~Direct and indirect impacts would be the same as Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review in the HiLine RMP.~~

~~Lease parcels/development would be subject to stipulations that protect soils on slopes over 30 percent, erodible soil on slopes over 20 percent, slumping soils, and/or wet soils. Table 25 shows the approximate acres of soils on slopes over 30 percent and erodible soils on slopes over 20 percent for each lease parcel.~~

~~There would be a 92% reduction in leased acres, due to approximately 32,507 acres of lease parcels proposed for deferral pending further review in the HiLine RMP. This would reduce the amount of~~

potential soil disturbance from development at this time. It is reasonably foreseeable for development on leased parcels, which would result in disturbances to soils. Where there is development, soils effects would be similar as those described in Alternative B. Potential site-specific effects would be addressed in more detail at the APD stage.

Lease parcels/development would be subject to stipulations that protect soils on slopes over 30 percent, erodible soil on slopes over 20 percent, slumping soils, and/or wet soils. Table 26 shows the approximate acres of soils on slopes over 30 percent and erodible soils on slopes over 20 percent for each lease parcel. There would be approximately 1,497 acres on slopes over 30 percent and erodible soils on slopes over 20 percent within the lease parcels.

Table 26. Approximate acres of soils on slopes over 30 percent and erodible soils on slopes >20 percent for each Lease Parcel. (Source: USDA-NRCS SSURGO dataset (USDA-NRCS, 2010)).

Parcel #	>30% slope Acres ¹	Erodible soils on slopes >20%	
		Acres ^{2,3}	Percent of Lease Parcel
MTM97300-KM	0	0	0
MTM97300-K1	0	936	87
MTM97300-K2	0	561	58
MTM97300-K5	0	0	0
MTM97300-PF	0	0	0
MTM97300-PE	0	0	0
MTM97300-PD	0	0	0
MTM97300-RL	0	0	0

4. Approximate acres calculated from MU RV slope where RV slope is >30%. Approximate acres based on GIS calculations. Slopes >30% would be included in the erodible soils on slopes >20% acreage figures.
5. Approximate acres calculated from MU RV slope and Water Erosion Hazard where RV slope > 20% and Water Erosion Hazard is severe. Approximate acres based on GIS calculations.
6. For analysis purposes, if a Soil Map Unit (SMU) has a RV slope >20% and severe Water Erosion Hazard rating then the entire SMU acreage is included. However, there may be areas within the SMU that could have slope values less than 20% and a less than severe Water Erosion Hazard rating. For example, SMU 1251E has a RV slope of 22% but the SMU has a slope range from 8 to 35%.

4.4.4.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.5 Water Resources

4.4.5.1 Direct and Indirect Effects

Direct and indirect impacts would be the same as Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review in the HiLine RMP, although some of the roads and pipelines would have to be built regardless of how many parcels are leased. There are 142.6 acres of wetlands present and 21.5 miles of mostly intermittent and ephemeral drainages present in the acres proposed for lease under this alternative.

4.4.5.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.6 Vegetation Resources

4.4.6.1 Direct and Indirect Effects

Direct and indirect impacts would be the same as Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review in the HiLine RMP, although some of the roads and pipelines would have to be built regardless of how many parcels are leased.

4.4.6.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.7 Riparian-Wetland Habitats

4.4.7.1 Direct and Indirect Effects

Direct and indirect impacts would be the same as Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review in the HiLine RMP, although some of the roads and pipelines would have to be built regardless of how many parcels are leased.

4.4.7.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.8 Wildlife

4.4.8.1 Direct and Indirect Effects

Direct and indirect impacts would be the same as Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review in the HiLine RMP because of Sprague's pipit and greater sage-grouse issues. Standard lease stipulations do not cover these two species adequately due to their Candidate Species status and the need to provide further mitigations to protect the species and their habitats. The amount of impact, however, would not necessarily also be reduced by 92%. There currently is no active development in the analysis area. The County Road leading to the area is not maintained in winter and in years with abundant snowfall almost no human activity occurs in the area during winter. Even with only 8% of the area possibly being developed after leasing, major infrastructure changes would have to occur in order to accommodate production. The area of impact would be much greater than 8% and all of the analysis listed under Alternative B would also apply in Alternative C. Roads and pipelines would have to be built across the entire area in order to access the available leases. Habitat loss and fragmentation would occur along these road and pipeline routes as well as on the well pads, greatly increasing the influence of any well developments. Big game animals and greater sage-grouse would be displaced from winter range, and lek attendance could decline greatly due to the high probability that roads and pipelines would have to be built through or very near leks due to the difficult topography of the area. The operator or the County would have to maintain the County Road during winter greatly influencing the extent of the disruption caused by vehicle traffic where there normally was none.

As mentioned in Chapter 3, greater sage-grouse and Sprague's pipit habitat delineations are being developed for their respective conservation alternatives in the HiLine RMP. The lease parcels with greater sage-grouse and/or Sprague's pipit habitat are deferred in this alternative and the proposed deferred parcels will not be analyzed or offered for lease under this Alternative.

Therefore, no direct, indirect, or potential additional cumulative effects to sage-grouse or Sprague's pipit within the analysis area will occur as a result of this action. Those lease parcels or portions of lease parcels lacking either greater sage-grouse or Sprague's pipit habitat will still be offered up for lease, and fish and wildlife impacts would be similar to those analyzed under Alternative B for all parcels.

4.4.8.2 Mitigation

Mitigation would be that same as Alternative B for lease parcels.

4.4.9 Special Status Plant Species

4.4.9.1 Direct and Indirect Effects

Direct and indirect impacts would be the same as Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review, although some of the roads and pipelines would have to be built regardless of how many parcels are leased. Set-backs from riparian areas (Milk River) would be the same as in Alternative B further reducing the likelihood of impacts.

4.4.9.2 Mitigation

Mitigation would be that same as Alternative B for lease parcels.

4.4.10 Cultural

4.4.10.1 Direct and Indirect Effects

Leasing the parcels would have no direct impacts on cultural resources. Any potential effects to cultural resources from sale of leases would occur at the time that leases are developed.

Indirect effects from surface disturbances associated with exploration and development activities after leasing have the potential to alter the characteristics of a significant cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Other effects to cultural resources from proposed surface disturbance activities include the destruction, damage, or alteration to all or part of the cultural resource and diminishing the property's significant historic features as a result of the introduction of visual, atmospheric, or audible elements. This could include altering or diminishing the elements of a National Register eligible property and diminish an eligible property's eligibility status. Cultural resource investigations associated with development potentially adds to our understanding of the prehistory/history of the area under investigation and discovery of sites that would otherwise remain undiscovered due to burial or omission during review inventories. Indirect effects to cultural resources within the analysis area by county are as follows:

4.4.10.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.11 Native American Religious Concerns

4.4.11.1 Direct and Indirect Effects

Direct and indirect impacts would be same as Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels

proposed for deferral pending further review, although some of the roads and pipelines would have to be built regardless of how many parcels are leased.

4.4.12 Paleontology

4.4.12.1 Direct and Indirect Effects

Direct and indirect impacts would be same as Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review, although some of the roads and pipelines would have to be built regardless of how many parcels are leased.

4.4.12.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.13 Visual Resources

4.4.13.1 Direct and Indirect Effects

Direct and indirect impacts would be same as Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review, although some of the roads and pipelines would have to be built regardless of how many parcels are leased.

4.4.13.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.14 Forest and Woodland Resources

4.4.14.1 Direct and Indirect Effects

Direct and indirect effects to forest and woodland resources would be the same as those described in Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review, although some of the roads and pipelines would have to be built regardless of how many parcels are leased.

4.4.14.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.15 Livestock Grazing

4.4.15.1 Direct and Indirect Effects

Direct and indirect effects to livestock grazing would be similar to those described under Alternative B; however the number of grazing allotments affected would be reduced from 25 to 6 as a result of approximately 32,506.89 acres (92%) of lease parcels proposed for deferral pending further review, although some of the roads and pipelines would have to be built regardless of how many parcels are leased (Table 27).

Table 27. Acreages of Grazing Allotments Leased in Alternative C.

PARCEL	ALLOTMENT	NAME	ACRES
MTM 97300-RL	Private Surface		8.87
MTM 97300-KM	Private Surface		318.99

MTM 97300-K5	Private Surface		320.09
MTM 97300-PD	State Surface		12.16
MTM 97300-PD	State Surface		0.32
MTM 97300-RL	State Surface		1.27
MTM 97300-PF	5325	Horse Camp Coulee	0.54
MTM 97300-PF	5130	Horse Camp Coulee	3.19
MTM 97300-RL	5394	Beaucoup	6.07
MTM 97300-K1	5094	Upper Cottonwood	979.00
MTM 97300-K1	5163	S. Woody Island	100.25
MTM 97300-K2	5094	Upper Cottonwood	958.23
MTM 97300-PE	5114	River Unit	0.43
MTM 97300-PE	5301	Dry Lake	31.23
MTM 97300-PE	5114	River Unit	1.54
MTM 97300-PE	5301	Dry Lake	13.43
MTM 97300-PD	5394	Beaucoup	20.61
MTM 97300-PD	5394	Beaucoup	0.90
MTM 97300-RL	5394	Beaucoup	5.07

4.4.15.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.16 Recreation and Travel Management

4.4.16.1 Direct and Indirect Effects

Direct and indirect impacts would be same as Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review, although some of the roads and pipelines would have to be built regardless of how many parcels are leased. .

4.4.16.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.17 Lands and Realty

4.4.17.1 Direct and Indirect Effects

Direct and indirect impacts would be same as Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review, although some of the roads and pipelines would have to be built regardless of how many parcels are leased. In addition, the remaining 8 parcels in whole or part, approximately 2,768.53 acres (2,040.0 acres federal surface and 728.53 acres of private and/or state surface), would be offered for lease.

4.4.17.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.18 Minerals

4.4.18.1 Fluid Minerals

4.4.18.1.1 Direct and Indirect Effects

Direct and indirect impacts would be same as Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review. Approximately 8% of the lease parcels would be offered for lease subject to major (NSO) or moderate (CSU) constraints and/or standard lease terms and conditions, although some of the roads and pipelines would have to be built regardless of how many parcels are leased.

If lease parcels are deferred, some development plans could be delayed, relocated, or completely dropped because of the need to include federal acreage as part of an exploration or development plan. In addition, less natural gas would enter the public markets.

4.4.19 Special Designations

4.4.19.1 Direct and Indirect Effects

Direct and indirect impacts would be same as Alternative B.

4.4.19.2 Mitigation

Mitigation would be the same as Alternative B.

4.4.20 Social and Economic Conditions

4.4.20.1 Social

4.4.20.1.1 Direct and Indirect Effects

Direct and indirect impacts would be same as Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review, although some of the roads and pipelines would have to be built regardless of how many parcels are leased.

While the act of leasing Federal minerals itself would result in no social impact, subsequent exploration and development may generate impacts to people living near or using the area in the vicinity of the lease. Exploration, drilling or production could create an inconvenience to people living adjacent to leases due to increased traffic and traffic delays, and light, noise and visual impacts. This could be especially noticeable in rural areas where oil and gas development has not occurred previously. The amount of inconvenience would depend on the activity affected, traffic patterns within the area, noise and light levels, length of time and season these activities occur, etc. However, these changes would be minimal compared to Alternative B. Residents who have experienced ongoing population losses may prefer the higher amount of new revenues and employment as found in Alternative B.

There would be no disproportionate effects to low income or minority populations, from leasing. Consultation with potentially affected Tribes would occur at the APD stage.

4.4.20.2 Economics

4.4.20.2.1 Direct and Indirect Impacts

Public Revenues:

Leasing an additional 2,769 acres of Federal minerals would increase average annual oil and gas leasing and rent revenues to the Federal government by an estimated \$5,000 (Table Econ.2). Average annual leasing and rent revenues that would be distributed to state/local governments would increase by an estimated \$2,000. Average annual Federal oil and gas royalties would increase by an estimated \$67,000 with Alternative C. Average annual royalties distributed to the state/counties would increase by an estimated \$29,000.

Total average annual Federal revenues related to leasing an additional 2,769 acres of Federal minerals and associated annual rent and royalty revenues related to average annual production of Federal minerals would amount to an estimated \$72,000. Total average annual revenues from leasing, rent, and royalties distributed to the state and counties would be an estimated \$31,000. Total estimated revenues distributed to Phillips County would be about \$11,000.

Local Economic Contribution:

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 less than five total jobs (full and part-time) and about \$220,000 within the local economy (IMPLAN, 2009). There would also be a corresponding increase in local population of less than 10 people and less than five households.

Conclusion:

Total Federal contribution of Alternative C (leasing an additional 2,769 acres of Federal minerals) and anticipated related exploration, development, and production of oil and gas would effects 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 three counties; but most of the effects would occur in Phillips and Hill. Leasing the additional 2,769 acres and anticipated exploration, development, and production under alternative C would provide additional funds for county functions such as enforcing laws, administering justice, collecting and disbursing tax funds, providing for orderly elections, maintaining roads and highways, providing fire protection, and keeping records. Other county functions that may be funded include administering primary and secondary education and operating clinics/hospitals, county libraries, county airports, local landfills, and county health systems. Demand for these services would also increase as total local employment and population increase. Leasing additional 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) across the three-county area.

4.4.21 Cumulative Impacts- Alternative C

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 cumulative impacts associated with this project on resources. 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 addressed in this document, more site-specific planning would be conducted in 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.

4.4.21.1 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, wildfire and prescribed fire, range improvement projects, and utility right-of-ways.

4.4.21.2 Cumulative Impacts by Resource

Cumulative effects for all resources in the Malta Field Office are described in the Phillips Management Framework Plan (MFP) (1977), and the Oil & Gas Environmental Assessment of the BLM Leasing Program – Lewistown District (September 1981) and the Judith-Valley-Phillips RMP – EIS (approved in October 1992). 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 resources other than air, climate, and socio-economics resources. This previous analysis is hereby incorporated by reference for resources other than for air, climate, and socio-economics resources.

4.4.21.3 Greenhouse Gas Emissions and Cumulative Impacts on Climate Change

Greenhouse Gas Emissions and Cumulative Impacts on Climate Change would be less than those for the same as Alternative B except for a minor decrease in emission percentage. Greenhouse gas emissions from all major sectors in Montana in 2005 added up to a total of approximately 36.8 million metric tons of CO₂e (Center for Climate Strategies (CCS) 2007). Potential emissions from development of lease parcels in Alternative C of this project represent approximately 0.00029 percent of the state-wide total of GHG emissions based on the 2005 state-wide inventory (CCS 2007).

The EPA (USEPA 2010, as summarized by 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 CO₂ sinks were considered) of CO₂e in 2008. Potential annual emissions under Alternative C of this project would amount to approximately 0.0000015 percent of gross U.S. total emissions. Global GHG emissions for 2004 (IPCC 2007, summarized by the Climate Change SIR 2010) indicated approximately 49 gigatonnes (10⁹ metric tons) of CO₂e emitted. Potential annual emissions under Alternative C would amount to approximately 0.00000022 percent of this global total.

As indicated 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 C, 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 the Chapter 4 Air Quality section above may be in place at the APD stage to reduce GHG emissions from potential oil and gas development on lease parcels

under Alternative C. This is likely because many operators working in Montana, South Dakota, and North Dakota are currently USEPA 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).

4.4.21.4 Cumulative Impacts of Climate Change

Cumulative impacts of climate change on resources would be less than those for the same as Alternative B.

4.4.21.5 Cumulative Impacts to Soils

~~Cumulative impacts to soils under this alternative would be similar to those listed under Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review.~~

Cumulative impacts to soils under this alternative would be similar to those listed under Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,507 acres of lease parcels proposed for deferral pending further review. This would reduce the amount of potential soil disturbance from the reasonably foreseeable oil and gas actions at this time. There would be 9,207 fewer acres of disturbance on soils on slopes over 30 percent and erodible soils on slopes over 20 percent for each lease parcel.

4.4.21.5 Cumulative Impacts to Wildlife

Cumulative impacts to wildlife under this alternative would be similar in nature to those listed under Alternative B; however the area potentially impacted would be reduced by 92%, due to approximately 32,506.89 acres of lease parcels proposed for deferral pending further review. Twenty-one parcels in whole or in part would be deferred within identified sage-grouse and/or Sprague's pipit habitat. Therefore, if the lease parcels are developed, potential additional cumulative impacts to wildlife would occur over less area than what is described in Alternative B, although some of the roads and pipelines would have to be built regardless of how many parcels are leased.

4.18.24.21.6 Cumulative Impacts to Cultural Resources / Native American Religious Concerns

Long term oil and gas exploration and extraction activities could compound the effects of vandalism of archaeological and paleontological materials by increased visibility and providing easier access to such localities. Non-federal undertakings on private lands as identified above can lead to artifact breakage, compaction, and mixing of temporal assemblages and vandalism. Leasing the parcels for oil and gas development will have no cumulative impacts to Cultural Resources or Native American Religious Concerns. These effects will be addressed at the time when a lease is developed.

4.4.21.7 Cumulative Impacts to Economic Conditions:

The cumulative effects of Federal mineral leasing within the local economy as well as the specific effects of leasing an additional 2,769 acres under Alternative C are summarized in Tables ~~Econ. 4~~ 18 and ~~Econ. 5~~ 19. These tables also display in comparative form the cumulative effects of alternatives A, B, and C. The total demographic and economic impacts of Alternative

C would change a relatively small amount. Local employment and income associated with Federal mineral leasing would increase by less than one percent.

5.0 CONSULTATION AND COORDINATION:

5.1 Persons, Agencies, and Organizations Consulted

Coordination with MFWP and USFWS was conducted for the 25 lease parcels being reviewed. BLM has coordinated with MFWP and USFWS in the completion of this EA in order to prepare analysis, identify protective measures, and apply stipulations associated with these parcels being analyzed.

The BLM consults with Native Americans under Section 106 of the National Historic Preservation Act. BLM sent letters to tribes in Montana on March 30, 2011, at the beginning of the 15-day scoping period informing them of the potential for the 25 parcels to be leased and inviting them to submit issues and concerns BLM should consider in the environmental analysis. Letters were sent to the Tribal Chairperson/Presidents and THPO or other cultural contacts for the Fort Peck Indian Community, Fort Belknap Indian Community, Confederated Salish and Kootenai Tribes of the Flathead Indian Nation, Blackfeet Nation, and Chippewa - Cree Indian Community. BLM will send a second letter to the tribes informing them about the 30 day public comment period for the EA and soliciting any information BLM should consider before making a decision whether to offer any or all of the 25 parcels for sale.

BLM provided an overview of the federal oil and gas leasing process as well as specific information about the 25 parcels nominated for the October 2011 competitive oil and gas lease sale.

5.2 Summary of Public Participation

Scoping

Public scoping for this project was conducted through a 15-day scoping period advertised on the BLM Montana State Office website and posting on the field office website NEPA notification log. Scoping was initiated March 31, 2011; however, scoping comments were received through April 15, 2011. Surface owner notification letters were also distributed briefly explaining the oil and gas leasing process and planning process. The surface owner notification letter requested written comments regarding any issues or concerns that should be addressed in the environmental analysis.

A Phillips County Commissioner asked questions about BLM leasing minerals under the Milk River in State Sections, and whether the deferred parcels would receive expedited processing after completion of the HiLine RMP. One surface owner called just to get an understanding of the Federal Government owning minerals under his surface, but had to hang up before expressing any concerns and never called back.

A draft Environmental Assessment was made available to the public for comment on May 16, 2011, for a 30-day comment period. No comments were received.

Table 28. List of Preparers.

Name	Title	Responsible for the Following Section(s) of this Document
Fritz Prellwitz	Wildlife Biologist	Fish & Wildlife, Migratory Birds, Special Status Species, Core Team Lead
Josh Sorlie	Soil Scientist	Soils
Josh Chase	Archaeologist	Archaeology, Paleontology
Roy Taylor	Rangeland Management Specialist	Range, Vegetation
Kathy Tribby	Outdoor Recreation Planner	Recreation, VRM, Special Designations
Tom Probert	Hydrologist	Water
Joan Trent	Social Scientist	Social Analysis
John Thompson	Planning & Environmental Specialist	Economic Analysis
Micah Lee	Realty Specialist	Lands and Realty
Amanda Anderson	GIS Specialist	Maps
Barney Whiteman	Petroleum Engineer	RFD, Existing Lease Data

In addition to the primary preparers listed above, the following individuals provided document review:

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7.0 DEFINITIONS

Definitions/Acronyms:

The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. NAICS was developed under the auspices of the Office of Management and Budget (OMB), and adopted in 1997 to replace the Standard Industrial Classification (SIC) system and to allow for a high level of comparability in business statistics among the North American countries.

IMPLAN: The IMPLAN Model is the most flexible, detailed and widely used input-output impact model system in the U.S. It provides users with the ability to define industries, economic relationships and projects to be analyzed. It can be customized for any county, region or state, and used to assess "multiplier effects" caused by increasing or decreasing spending in various parts of the economy. This can be used to assess the economic impacts of resource management decisions, facilities, industries, or changes in their level of activity in a given area. The current IMPLAN input-output database and model is maintained and sold by [MIG, Inc.](#) (Minnesota IMPLAN Group). The 2009 data set was used in this analysis.

APPENDICES

Appendix A. Descriptions of Lease Parcels and Lease Stipulations, including individual maps.

Approximately 12 pages

APPENDIX A

PARCEL NUMBER	PARCEL DESCRIPTION	PROPOSED FOR LEASING ALTERNATIVE B	PROPOSED FOR LEASING ALTERNATIVE C	PROPOSED FOR DEFERRAL/ NO LEASING ALTERNATIVE C
MTM 97300-KL	T. 33 N, R. 26 E, PMM, MT SEC. 1 LOTS 1,2,3,4; SEC. 1 S2N2; SEC. 3 S2NE,SE; SEC. 10 N2,E2SW,W2SE; SEC. 12 S2SE; SEC. 13 E2,S2SW; SEC. 15 NW; SEC. 22 W2SW; SEC. 23 E2; PHILLIPS COUNTY 2079.20 AC ACQ	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; wetlands, sharp-tailed grouse dancing grounds, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-KM	T. 33 N, R. 26 E, PMM, MT SEC. 3 LOTS 3,4; SEC. 3 S2NW,SW; SEC. 14 N2; SEC. 25 SENE; PHILLIPS COUNTY 679.93 AC PD	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-15 (ALL LANDS)	T. 33 N, R. 26 E, PMM, MT SEC. 3 LOTS 3,4; SEC. 3 S2NW,SW; SEC. 14 N2; SEC. 25 SENE; PHILLIPS COUNTY 679.93 AC 319.93 AC PD	T. 33 N, R. 26 E, PMM, MT SEC. 3 LOTS 3,4; SEC. 3 S2NW,SW; SEC. 14 N2; SEC. 25 SENE; PHILLIPS COUNTY 679.93 AC 360.0 AC PD Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-KP	T. 33 N, R. 26 E, PMM, MT SEC. 24 N2N2,S2NW,SW; SEC. 25 SWNE,NW,S2; SEC. 26 SENE,E2SE; SEC. 27 W2NW; SEC. 34 W2SW; SEC. 35 E2E2; SEC. 36 W2E2,W2; PHILLIPS COUNTY 1840.00 AC ACQ	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; wetlands, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.

APPENDIX A

PARCEL NUMBER	PARCEL DESCRIPTION	PROPOSED FOR LEASING ALTERNATIVE B	PROPOSED FOR LEASING ALTERNATIVE C	PROPOSED FOR DEFERRAL/ NO LEASING ALTERNATIVE C
MTM 97300-KW	T. 34 N, R. 26 E, PMM, MT SEC. 1 NESE; PHILLIPS COUNTY 40.00 AC PD	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; mule deer winter range, sharp-tailed grouse dancing grounds, greater sage-grouse strutting grounds, soils, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-KQ	T. 33 N, R. 27 E, PMM, MT SEC. 1 LOTS 1,2,3,4; SEC. 1 S2N2,S2; SEC. 2 LOTS 1,2,3,4; SEC. 2 S2N2,S2; SEC. 3 LOTS 1,2,3,4; SEC. 3 S2N2,S2; SEC. 8 NW; SEC. 9 NW; PHILLIPS COUNTY 2237.92 AC PD	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; mule deer winter range, soils, wetlands, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-KR	T. 33 N, R. 27 E, PMM, MT SEC. 4 LOTS 2,3,4; SEC. 4 SWNE,S2NW,SW,W2SE; SEC. 5 LOT 1; SEC. 5 SENE; SEC. 9 W2NE; SEC. 18 LOTS 1,2,3,4; SEC. 18 E2W2; SEC. 19 LOTS 1,2,3,4; SEC. 19 E2W2; SEC. 20 E2SW,W2SE; SEC. 27 SWSW; SEC. 28 S2SW; SEC. 29 NW; SEC. 30 LOTS 3,4; SEC. 31 LOTS 1,2,3,4; SEC. 31 E2,E2W2; PHILLIPS COUNTY 2438.59 AC ACO	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; mule deer winter range, soils, sharp-tailed grouse dancing grounds, wetlands, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.

APPENDIX A

PARCEL NUMBER	PARCEL DESCRIPTION	PROPOSED FOR LEASING ALTERNATIVE B	PROPOSED FOR LEASING ALTERNATIVE C	PROPOSED FOR DEFERRAL/ NO LEASING ALTERNATIVE C
MTM 97300-KS	T. 33 N, R. 27 E, PMM, MT SEC. 10 E2,E2NW; SEC. 11 E2; SEC. 12 NE,W2; SEC. 13 S2; SEC. 15 SW; PHILLIPS COUNTY 1680.00 AC PD	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; mule deer winter range, soils, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-KT	T. 33 N, R. 27 E, PMM, MT SEC. 14 SW; SEC. 23 NW,S2; PHILLIPS COUNTY 640.00 AC 50% U.S. MINERAL INTEREST ACQ	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-KU	T. 33 N, R. 27 E, PMM, MT SEC. 20 E2SE; SEC. 21 S2NE; SEC. 22 NW; SEC. 25 SENE; SEC. 26 NENE,SESE; SEC. 27 NESE; SEC. 29 NE; SEC. 30 LOTS 1,2; SEC. 30 E2SE; PHILLIPS COUNTY 799.98 AC PD	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; sharp-tailed grouse dancing grounds, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-KV	T. 33 N, R. 27 E, PMM, MT SEC. 33 ALL; PHILLIPS COUNTY 640.00 AC ACQ	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; sharp-tailed grouse dancing grounds, wetlands, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.

APPENDIX A

PARCEL NUMBER	PARCEL DESCRIPTION	PROPOSED FOR LEASING ALTERNATIVE B	PROPOSED FOR LEASING ALTERNATIVE C	PROPOSED FOR DEFERRAL/ NO LEASING ALTERNATIVE C
MTM 97300-KX	T. 34 N, R. 27 E, PMM, MT SEC. 5 NWSW; SEC. 6 SWNE,E2SE; SEC. 7 NWNE; SEC. 8 N2,N2S2,S2SE; PHILLIPS COUNTY 760.00 AC PD	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; mule deer winter range, pronghorn antelope winter range, sharp-tailed grouse dancing grounds, greater sage-grouse strutting grounds, soils, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-KH	T. 33 N, R. 28 E, PMM, MT SEC. 1 S2S2; SEC. 2 LOTS 3,4; SEC. 2 S2NW,S2; SEC. 3 LOTS 1,2,3,4; SEC. 3 S2N2,N2SW,SESW,SE; SEC. 4 LOTS 1,2,3,4; SEC. 4 S2N2,W2SW; SEC. 5 LOTS 1,2,3,4; SEC. 5 S2N2,S2; PHILLIPS COUNTY 2259.75 AC PD	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-12 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; mule deer winter range, sharp-tailed grouse dancing grounds, soils, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-KI	T. 33 N, R. 28 E, PMM, MT SEC. 8 S2; SEC. 9 NWNW,S2NW,SW,W2SE; SEC. 10 S2; SEC. 12 NE,N2SE,SWSE; SEC. 13 W2NE,W2,NWSE,S2SE; SEC. 14 N2,N2S2; SEC. 17 NW,E2SW; PHILLIPS COUNTY 2520.00 AC PD	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-12 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; mule deer winter range, sharp-tailed grouse dancing grounds, soils, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.

APPENDIX A

PARCEL NUMBER	PARCEL DESCRIPTION	PROPOSED FOR LEASING ALTERNATIVE B	PROPOSED FOR LEASING ALTERNATIVE C	PROPOSED FOR DEFERRAL/ NO LEASING ALTERNATIVE C
MTM 97300-KJ	T. 33 N, R. 28 E, PMM, MT SEC. 15 ALL; SEC. 18 LOTS 1,2,3; SEC. 18 NE,E2NW,NESW; SEC. 19 W2SE; SEC. 21 N2NW; SEC. 22 W2NE,N2NW; SEC. 23 E2SE; SEC. 24 ALL; SEC. 25 SESW,SESE; SEC. 27 N2SE; SEC. 29 SW; SEC. 34 E2NE; PHILLIPS COUNTY 2471.03 AC PD	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-12 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; mule deer winter range, sharp-tailed grouse dancing grounds, soils, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-KK	T. 33 N, R. 28 E, PMM, MT SEC. 17 W2SW; SEC. 20 SW; SEC. 29 N2NW; PHILLIPS COUNTY 320.00 AC ACQ	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-12 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; mule deer winter range, soils, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-KY	T. 34 N, R. 28 E, PMM, MT SEC. 1 LOTS 1,2,3,4; SEC. 1 S2N2; SEC. 2 LOTS 1,2,3,4; SEC. 2 S2N2,S2; SEC. 3 LOTS 1,2,3,4; SEC. 3 S2N2; SEC. 4 LOTS 1,2,3,4; SEC. 4 S2N2,S2; SEC. 5 LOTS 1,2; SEC. 5 S2NE,SE; PHILLIPS COUNTY 2311.97 AC PD	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-12 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; wetlands, sharp-tailed grouse dancing grounds, mule deer winter range, soils, migratory bird nesting, colonial bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.

APPENDIX A

PARCEL NUMBER	PARCEL DESCRIPTION	PROPOSED FOR LEASING ALTERNATIVE B	PROPOSED FOR LEASING ALTERNATIVE C	PROPOSED FOR DEFERRAL/ NO LEASING ALTERNATIVE C
MTM 97300-KZ	T. 34 N, R. 28 E, PMM, MT SEC. 1 S2; SEC. 3 S2; SEC. 11 N2; SEC. 12 ALL; SEC. 13 W2; SEC. 14 N2; PHILLIPS COUNTY 2240.00 AC ACQ	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-12 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; wetlands, sharp-tailed grouse dancing grounds, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-K1	T. 34 N, R. 28 E, PMM, MT SEC. 6 LOTS 1-7; SEC. 6 S2NE, SENW, E2SW, SE; SEC. 7 NE, E2NW, NESW, N2SE, SESE; SEC. 8 W2; SEC. 9 E2; SEC. 10 ALL; PHILLIPS COUNTY 2307.17 AC PD	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-12 (ALL LANDS) LN 14-15 (ALL LANDS)	T. 34 N, R. 28 E, PMM, MT SEC. 6 LOTS 1-7; SEC. 6 S2NE, SENW, E2SW, SE; SEC. 7 NE, E2NW, NESW, N2SE, SESE; SEC. 8 W2; SEC. 9 E2; SEC. 10 ALL; PHILLIPS COUNTY 2307.17 AC 1080 AC PD	T. 34 N, R. 28 E, PMM, MT SEC. 6 LOTS 1-7; SEC. 6 S2NE, SENW, E2SW, SE; SEC. 7 NE, E2NW, NESW, N2SE, SESE; SEC. 8 W2; SEC. 9 E2; SEC. 10 ALL; PHILLIPS COUNTY 2307.17 AC 1227.17 AC PD Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-K2	T. 34 N, R. 28 E, PMM, MT SEC. 11 S2; SEC. 13 E2; SEC. 15 N2N2; SEC. 17 N2, SW; SEC. 20 NW, S2; SEC. 21 ALL; PHILLIPS COUNTY 2400.00 AC PD	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-12 (ALL LANDS) LN 14-15 (ALL LANDS)	T. 34 N, R. 28 E, PMM, MT SEC. 11 S2; SEC. 13 E2; SEC. 15 N2N2; SEC. 17 N2, SW; SEC. 20 NW, S2; SEC. 21 ALL; PHILLIPS COUNTY 2400.00 AC 960 AC PD	T. 34 N, R. 28 E, PMM, MT SEC. 11 S2; SEC. 13 E2; SEC. 15 N2N2; SEC. 17 N2, SW; SEC. 20 NW, S2; SEC. 21 ALL; PHILLIPS COUNTY 2400.00 AC 1440 AC PD Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.

APPENDIX A

PARCEL NUMBER	PARCEL DESCRIPTION	PROPOSED FOR LEASING ALTERNATIVE B	PROPOSED FOR LEASING ALTERNATIVE C	PROPOSED FOR DEFERRAL/ NO LEASING ALTERNATIVE C
MTM 97300-K3	T. 34 N, R. 28 E, PMM, MT SEC. 15 S2N2,S2; SEC. 22 ALL; SEC. 23 W2; SEC. 24 E2; SEC. 25 N2,SW; SEC. 35 E2; PHILLIPS COUNTY 2560.00 AC ACQ	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14 5 (ALL LANDS) LN 14-12 (ALL LANDS) LN 14-15 (ALL LANDS)		ALL LANDS; sharp-tailed grouse dancing grounds, mule deer winter range, soils, migratory bird nesting, Sprague's pipit habitat. Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.
MTM 97300-K5	T. 34 N, R. 29 E, PMM, MT SEC. 6 LOTS 1,2,3,4,5,7; SEC. 6 S2NE,SE,SE,SE; SEC. 7 LOTS 1,2,3,4; SEC. 7 E2W2; SEC. 17 NE; SEC. 19 LOTS 1,2; SEC. 19 E2NW; SEC. 30 LOTS 1,2; SEC. 30 E2NW; SEC. 31 LOT 3; SEC. 31 NE,NESW,N2SE; SEC. 32 E2; PHILLIPS COUNTY 1961.28 AC ACQ	CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) LN 14 5 (ALL LANDS) LN 14-12 (ALL LANDS) LN 14-15 (ALL LANDS)	T. 34 N, R. 29 E, PMM, MT SEC. 6 LOTS 1,2,3,4,5,7; SEC. 6 S2NE,SE,SE,SE; SEC. 7 LOTS 1,2,3,4; SEC. 7 E2W2; SEC. 17 NE; SEC. 19 LOTS 1,2; SEC. 19 E2NW; SEC. 30 LOTS 1,2; SEC. 30 E2NW; SEC. 31 LOT 3; SEC. 31 NE,NESW,N2SE; SEC. 32 E2; PHILLIPS COUNTY 1961.28 AC 320 AC ACQ	T. 34 N, R. 29 E, PMM, MT SEC. 6 LOTS 1,2,3,4,5,7; SEC. 6 S2NE,SE,SE,SE; SEC. 7 LOTS 1,2,3,4; SEC. 7 E2W2; SEC. 17 NE; SEC. 19 LOTS 1,2; SEC. 19 E2NW; SEC. 30 LOTS 1,2; SEC. 30 E2NW; SEC. 31 LOT 3; SEC. 31 NE,NESW,N2SE; SEC. 32 E2; PHILLIPS COUNTY 1961.28 AC 1641.28 AC ACQ Pending further review of greater sage-grouse and/or Sprague's pipit habitat in the HiLine District RMP planning effort.

APPENDIX A

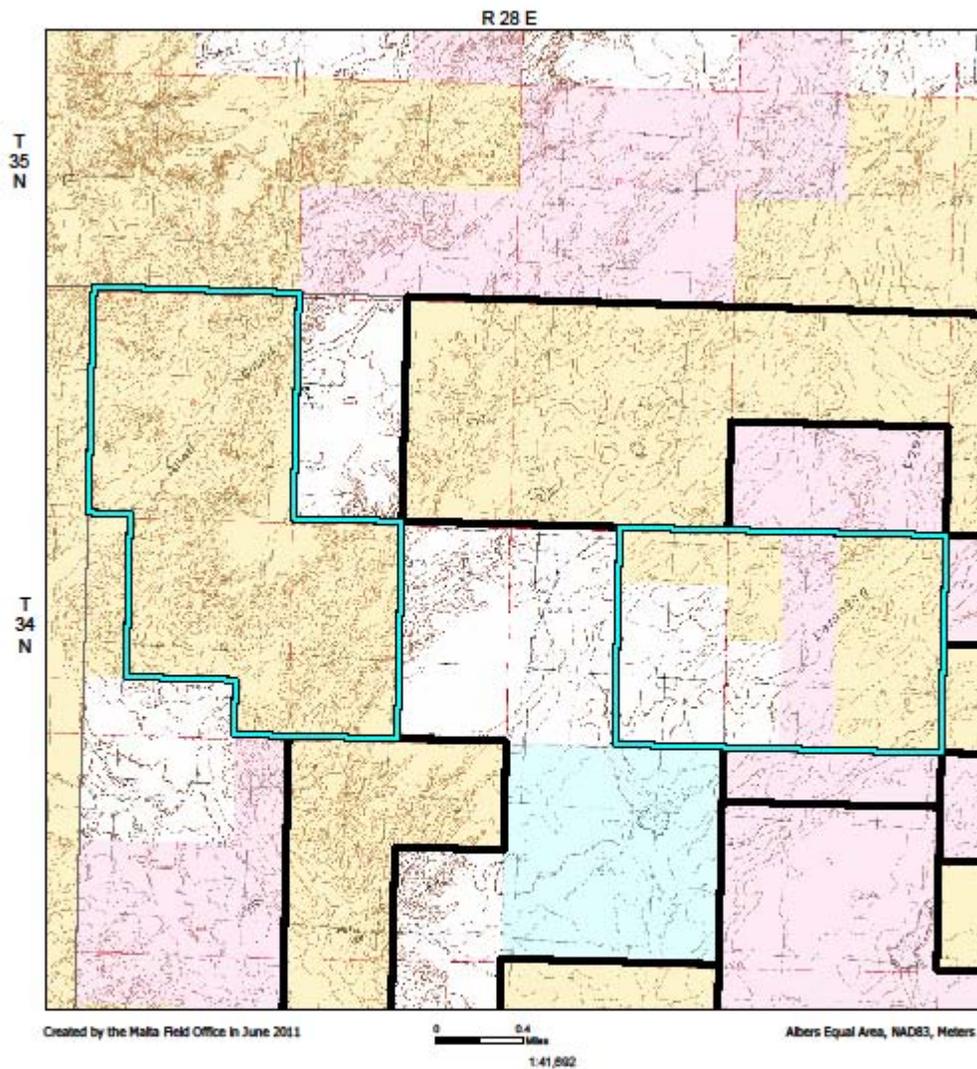
PARCEL NUMBER	PARCEL DESCRIPTION	PROPOSED FOR LEASING ALTERNATIVE B	PROPOSED FOR LEASING ALTERNATIVE C	PROPOSED FOR DEFERRAL/ NO LEASING ALTERNATIVE C
MTM 97300-PF	<p>T. 32 N, R. 30 E, PMM, MT SEC. 36 BED MILK RIV RIPAR TO LOTS 1,2; PHILLIPS COUNTY 2.75 AC PD</p> <p>THIS PARCEL IS DESCRIBED AS A PART OF TRACT NO. 64 OF THE MILK RIVER UNIT. THESE LANDS WERE COMMITTED TO THE UNIT BY THE AUTHORIZED OFFICER AT THE TIME OF UNIT APPROVAL, JOINDER TO THE UNIT IS NOT REQUIRED.</p>	<p>CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) BOR 17-1 (ALL LANDS) BOR 17-2 (ALL LANDS) LN 14-5 (ALL LANDS) LN 14-12 (ALL LANDS)</p>	<p>T. 32 N, R. 30 E, PMM, MT SEC. 36 BED MILK RIV RIPAR TO LOTS 1,2; PHILLIPS COUNTY 2.75 AC PD</p> <p>THIS PARCEL IS DESCRIBED AS A PART OF TRACT NO. 64 OF THE MILK RIVER UNIT. THESE LANDS WERE COMMITTED TO THE UNIT BY THE AUTHORIZED OFFICER AT THE TIME OF UNIT APPROVAL, JOINDER TO THE UNIT IS NOT REQUIRED.</p>	
MTM 97300-PE	<p>T. 33 N, R. 30 E, PMM, MT SEC. 36 BED MILK RIV RIPAR TO LOTS 1-11; PHILLIPS COUNTY 42.79 AC PD</p> <p>THIS PARCEL IS DESCRIBED AS A PART OF TRACT NO. 64 OF THE MILK RIVER UNIT. THESE LANDS WERE COMMITTED TO THE UNIT BY THE AUTHORIZED OFFICER AT THE TIME OF UNIT APPROVAL, JOINDER TO THE UNIT IS NOT REQUIRED.</p>	<p>CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) BOR 17-1 (ALL LANDS) BOR 17-2 (ALL LANDS) LN 14-5 (ALL LANDS)</p>	<p>T. 33 N, R. 30 E, PMM, MT SEC. 36 BED MILK RIV RIPAR TO LOTS 1-11; PHILLIPS COUNTY 42.79 AC PD</p> <p>THIS PARCEL IS DESCRIBED AS A PART OF TRACT NO. 64 OF THE MILK RIVER UNIT. THESE LANDS WERE COMMITTED TO THE UNIT BY THE AUTHORIZED OFFICER AT THE TIME OF UNIT APPROVAL, JOINDER TO THE UNIT IS NOT REQUIRED.</p>	

APPENDIX A

PARCEL NUMBER	PARCEL DESCRIPTION	PROPOSED FOR LEASING ALTERNATIVE B	PROPOSED FOR LEASING ALTERNATIVE C	PROPOSED FOR DEFERRAL/ NO LEASING ALTERNATIVE C
MTM 97300-PD	<p>T. 33 N, R. 31 E, PMM, MT SEC. 36 BED MILK RIV RIPAR TO LOTS 1-6,8,9; PHILLIPS COUNTY 21.87 AC PD</p> <p>THIS PARCEL IS DESCRIBED AS A PART OF TRACT NO. 64 OF THE MILK RIVER UNIT. THESE LANDS WERE COMMITTED TO THE UNIT BY THE AUTHORIZED OFFICER AT THE TIME OF UNIT APPROVAL, JOINDER TO THE UNIT IS NOT REQUIRED.</p>	<p>CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) BOR 17-1 (ALL LANDS) BOR 17-2 (ALL LANDS) LN 14-5 (ALL LANDS)</p>	<p>T. 33 N, R. 31 E, PMM, MT SEC. 36 BED MILK RIV RIPAR TO LOTS 1-6,8,9; PHILLIPS COUNTY 21.87 AC PD</p> <p>THIS PARCEL IS DESCRIBED AS A PART OF TRACT NO. 64 OF THE MILK RIVER UNIT. THESE LANDS WERE COMMITTED TO THE UNIT BY THE AUTHORIZED OFFICER AT THE TIME OF UNIT APPROVAL, JOINDER TO THE UNIT IS NOT REQUIRED.</p>	

APPENDIX A

PARCEL NUMBER	PARCEL DESCRIPTION	PROPOSED FOR LEASING ALTERNATIVE B	PROPOSED FOR LEASING ALTERNATIVE C	PROPOSED FOR DEFERRAL/ NO LEASING ALTERNATIVE C
MTM 97300-RL	<p>T. 33 N, R. 31 E, PMM, MT SEC. 36 BED MILK RIV RIPAR TO LOTS 7,10,11,12; PHILLIPS COUNTY 21.19 AC PD</p> <p>THE LANDS IN THIS PARCEL ARE DESCRIBED AS BEING A PART OF UNLEASED TRACT NO. 29B IN THE NORTHWEST NELSON SUBDIVISION OF THE BOWDOIN UNIT. TITLE 43 CFR 3101.3-1 REQUIRES PRIOR TO ISSUANCE OF AN OIL AND GAS LEASE FOR LANDS WITHIN AN APPROVED UNIT, THE LEASE OFFEROR SHALL FILE EVIDENCE OF HAVING JOINED IN THE UNIT AGREEMENT AND UNIT OPERATING AGREEMENT OR A STATEMENT GIVING SATISFACTORY REASONS FOR THE FAILURE TO ENTER INTO SUCH AGREEMENT. IF SUCH STATEMENT IS ACCEPTABLE, THE OFFEROR WILL BE PERMITTED TO OPERATE INDEPENDENTLY, BUT WILL BE REQUIRED TO CONFORM TO THE TERMS AND PROVISIONS OF THE UNIT AGREEMENT WITH RESPECT TO SUCH OPERATIONS.</p>	<p>CR 16-1 (ALL LANDS) Standard 16-3 (ALL LANDS) TES 16-2 (ALL LANDS) BOR 17-1 (ALL LANDS) BOR 17-2 (ALL LANDS) LN 14-5 (ALL LANDS)</p>	<p>T. 33 N, R. 31 E, PMM, MT SEC. 36 BED MILK RIV RIPAR TO LOTS 7,10,11,12; PHILLIPS COUNTY 21.19 AC PD</p> <p>THE LANDS IN THIS PARCEL ARE DESCRIBED AS BEING A PART OF UNLEASED TRACT NO. 29B IN THE NORTHWEST NELSON SUBDIVISION OF THE BOWDOIN UNIT. TITLE 43 CFR 3101.3-1 REQUIRES PRIOR TO ISSUANCE OF AN OIL AND GAS LEASE FOR LANDS WITHIN AN APPROVED UNIT, THE LEASE OFFEROR SHALL FILE EVIDENCE OF HAVING JOINED IN THE UNIT AGREEMENT AND</p>	
0			<p>THE OFFEROR WILL BE PERMITTED TO OPERATE INDEPENDENTLY, BUT WILL BE REQUIRED TO CONFORM TO THE TERMS AND PROVISIONS OF THE UNIT AGREEMENT WITH RESPECT TO SUCH OPERATIONS.</p>	



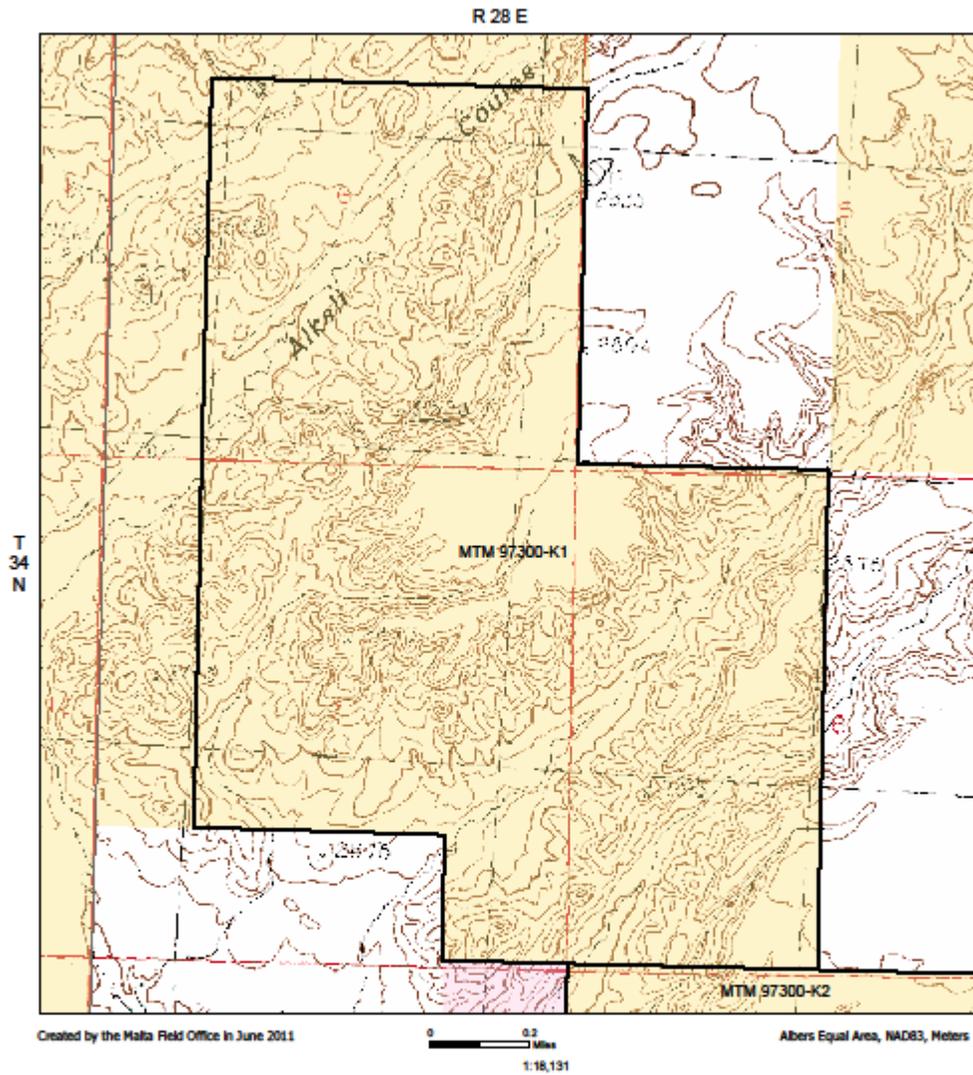
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-K1

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<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route
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Approximate location
within the HLine district



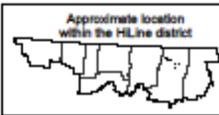
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

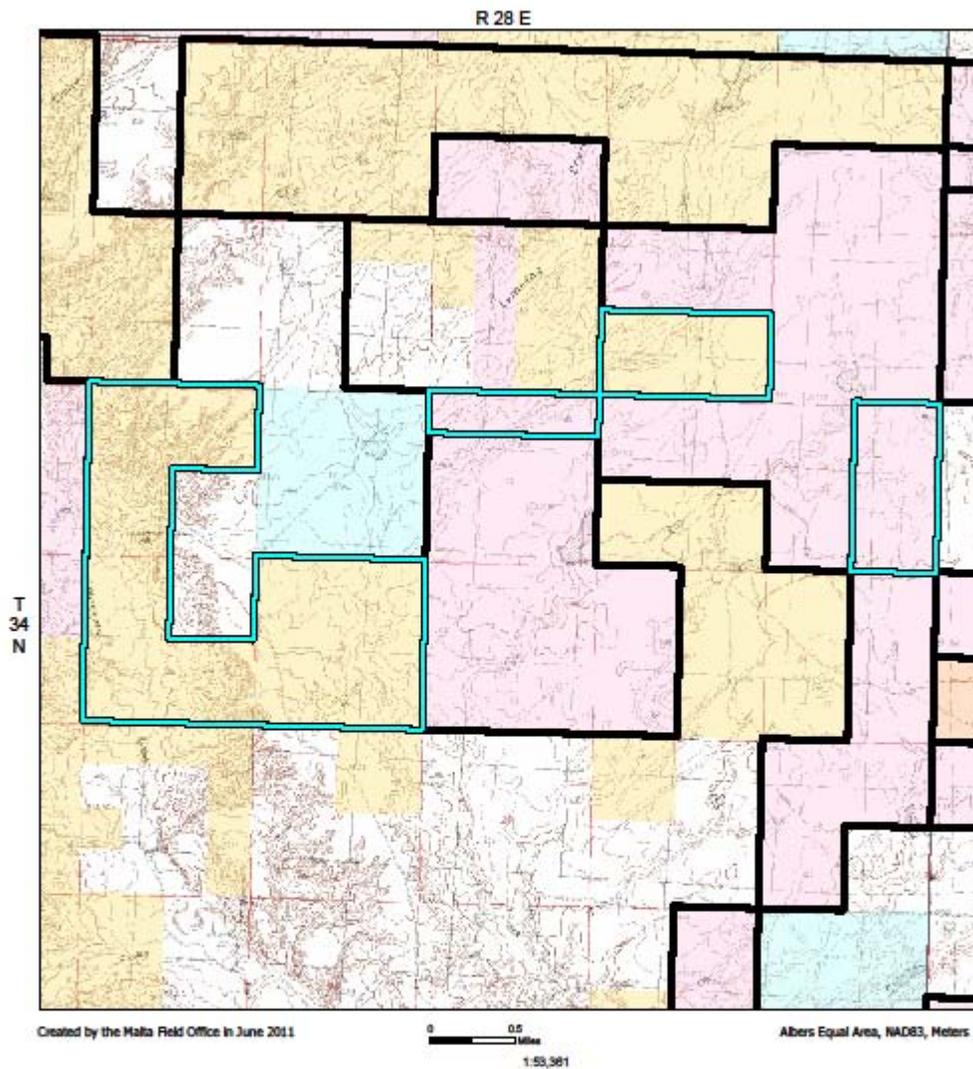
MTM 97300-K1

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	Bureau of Land Management (BLM)		County Route
	Bankhead-Jones Land Use Lands		U.S. Route
	US Fish and Wildlife National Wildlife Refuge		
	Bureau of Reclamation		
	Indian Reservation		
	State		
	Private		
	Water		

Approximate location
within the HLine district





U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

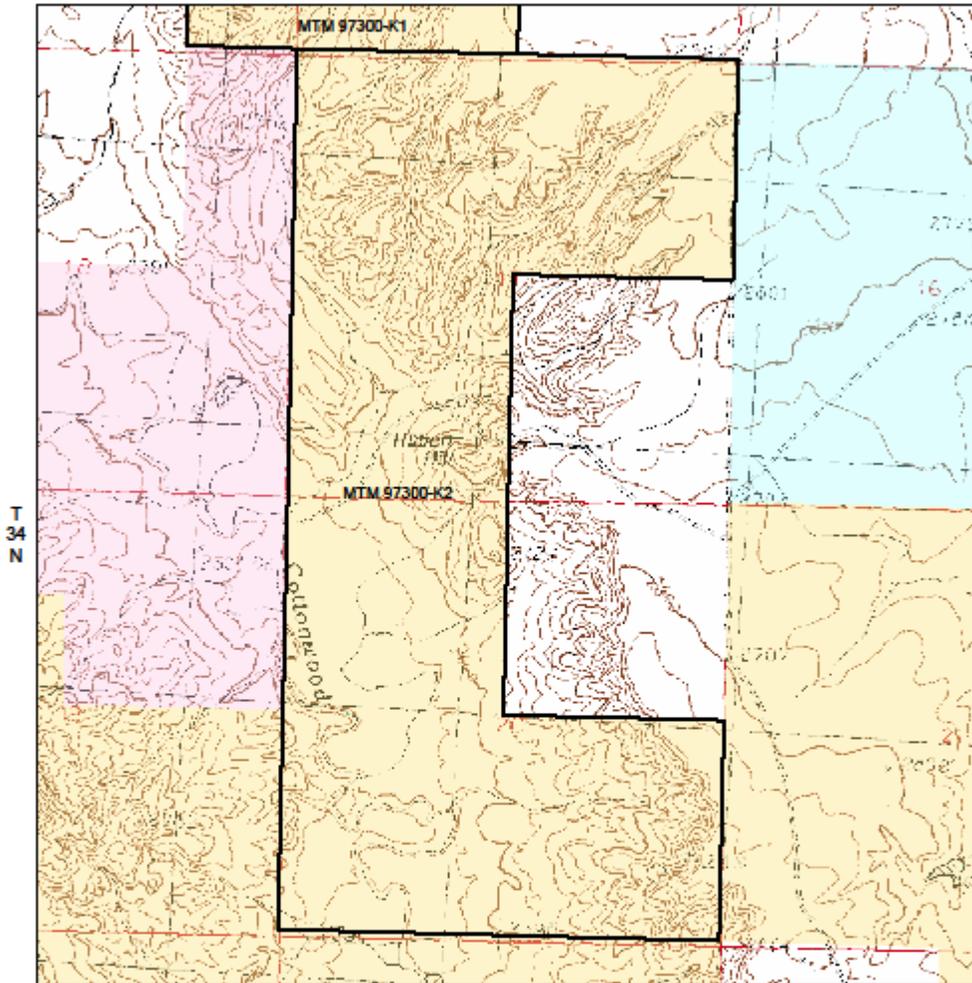
MTM 97300-K2

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<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route
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Approximate location within the HLine district

R 28 E



Created by the Malta Field Office in June 2011



Albers Equal Area, NAD83, Meters

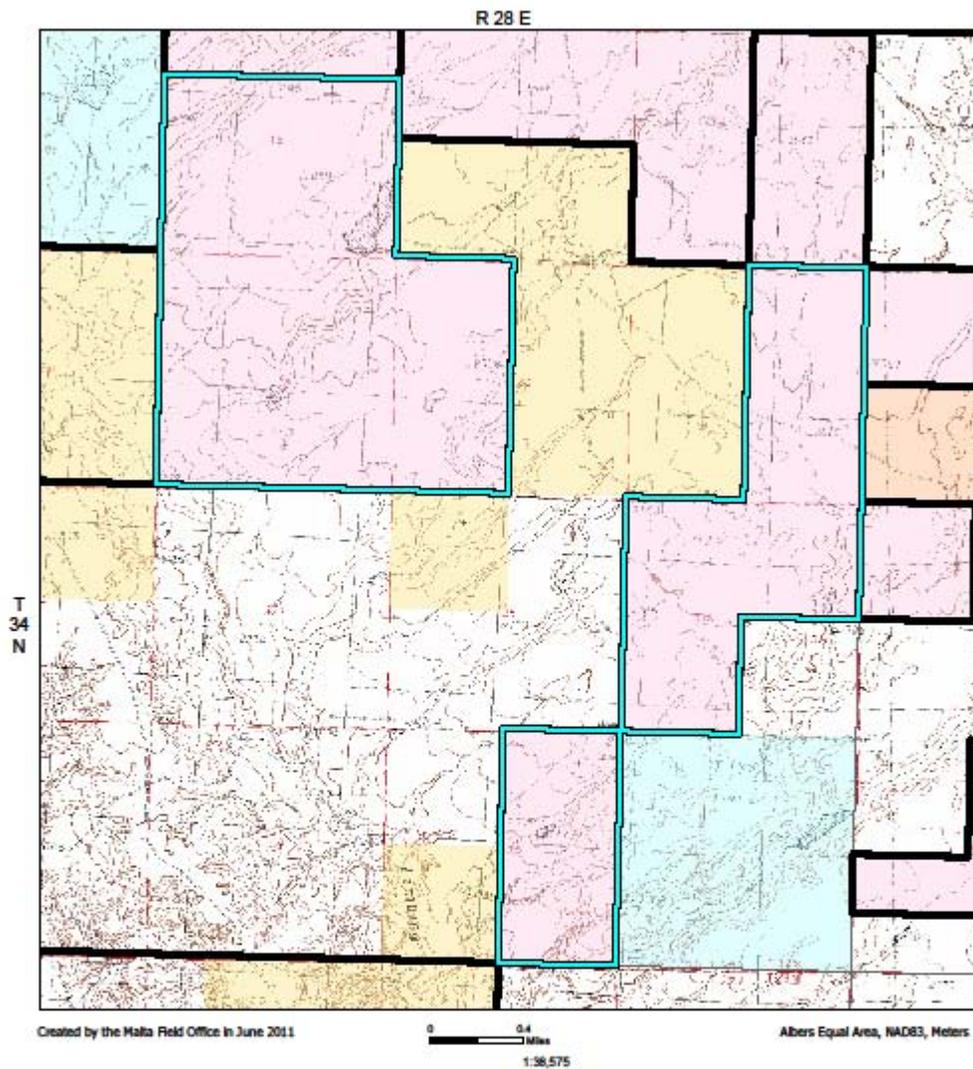
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
 HLine District

MTM 97300-K2

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- Bureau of Land Management (BLM)
- Bankhead-Jones Land Use Lands
- US Fish and Wildlife National Wildlife Refuge
- Bureau of Reclamation
- Indian Reservation
- State
- Private
- Water
- County Route
- U.S. Route

Approximate location within the HLine district



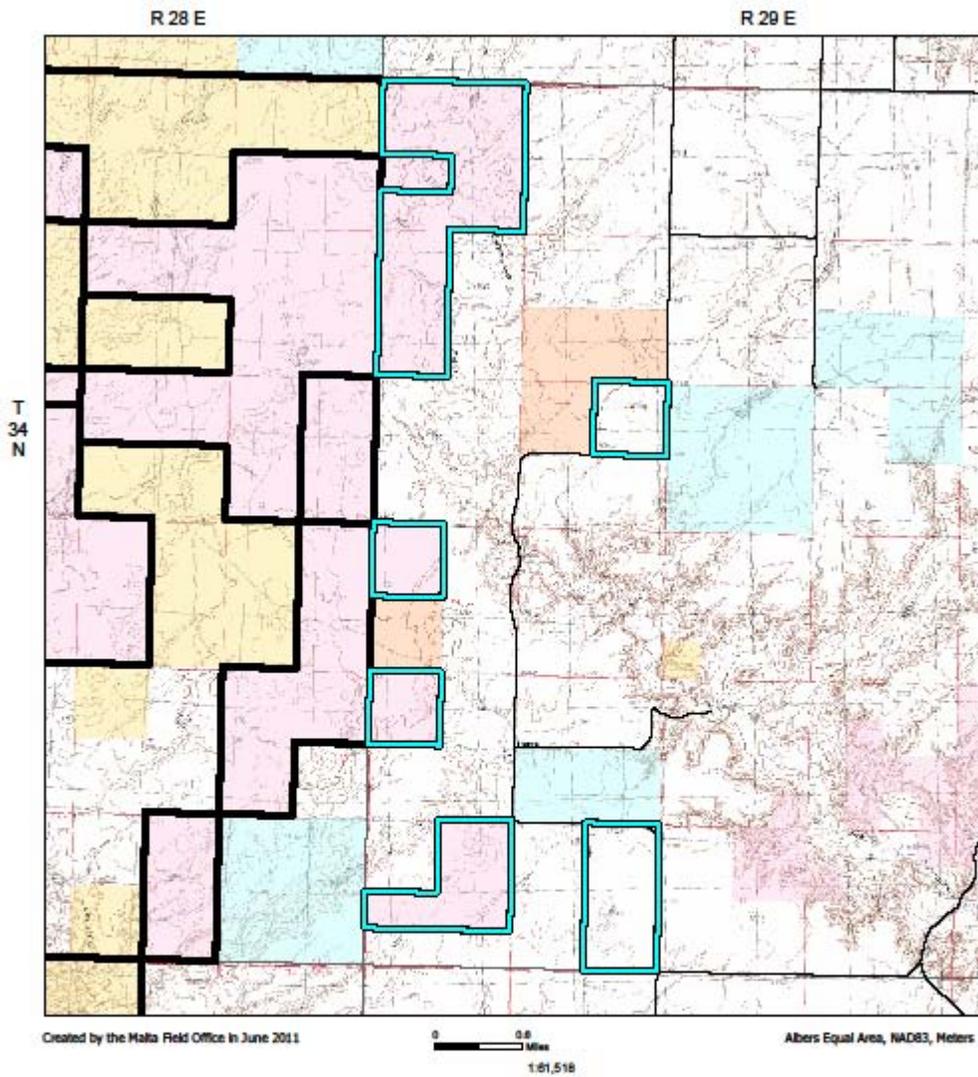
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-K3

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<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route
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Approximate location within the HLine district



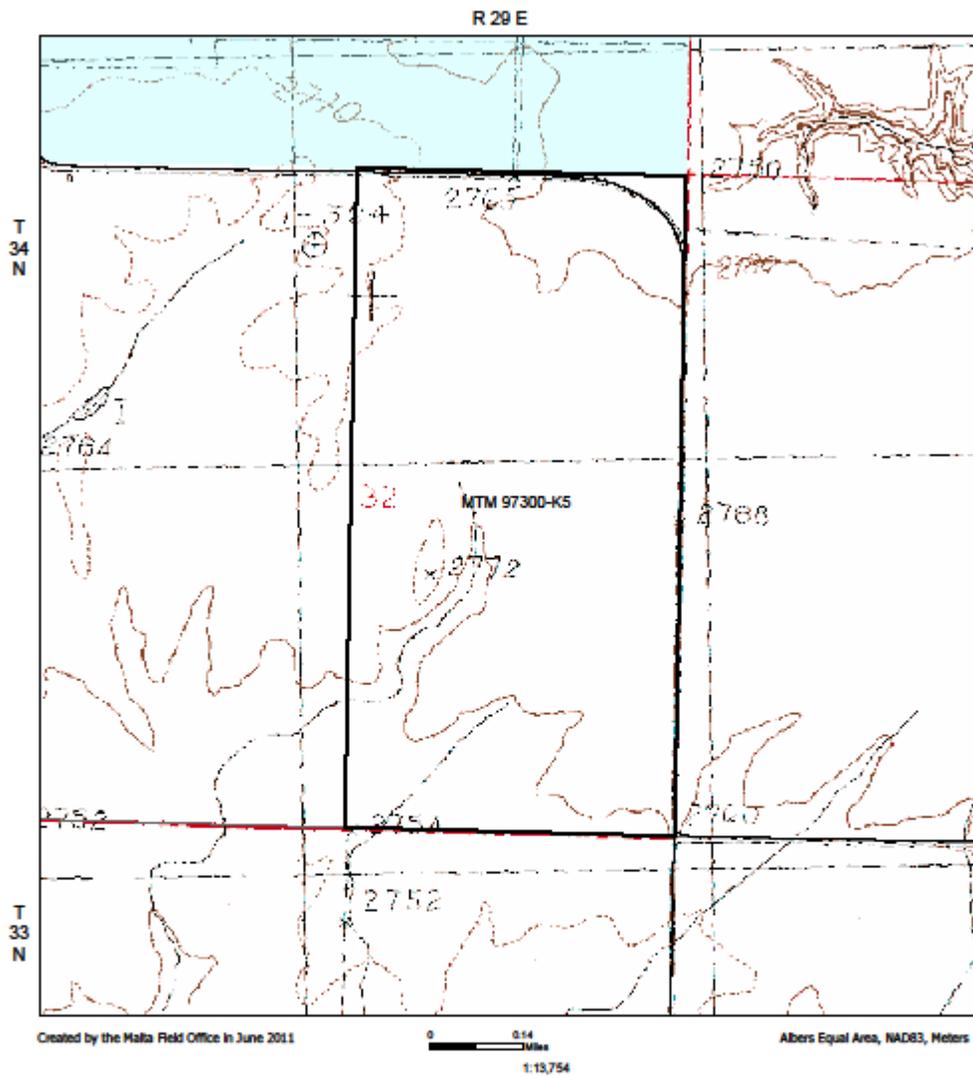
U.S. DEPARTMENT OF THE INTERIOR
 Bureau of Land Management
 HLine District

MTM 97300-K5

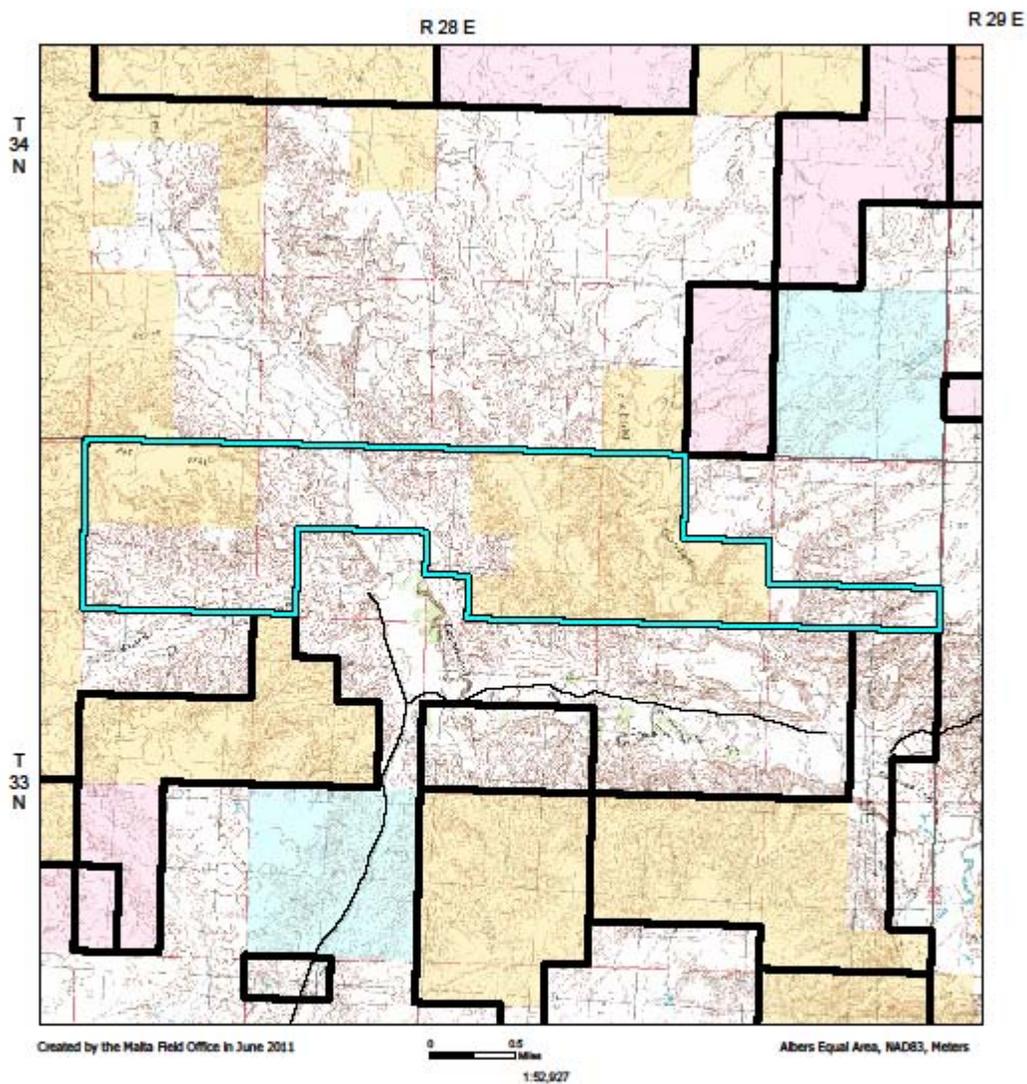
This map is intended for display purposes. No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data, or for purposes not intended by the BLM. This map may not meet National Map Accuracy Standards. This product was developed through digital means and information may be updated without notification.

- Bureau of Land Management (BLM)
- Bankhead-Jones Land Use Lands
- US Fish and Wildlife National Wildlife Refuge
- Bureau of Reclamation
- Indian Reservation
- State
- Private
- Water
- County Route
- U.S. Route

Approximate location within the HLine district



<p>U.S. DEPARTMENT OF THE INTERIOR Bureau of Land Management HLine District</p> <p style="text-align: center;">MTM 97300-K5</p> <p><small>This map is intended for display purposes. No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data, or for purposes not intended by the BLM. This map may not meet National Map Accuracy Standards. This product was developed through digital means and information may be updated without notification.</small></p>	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"> <ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water </td> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> County Route U.S. Route </td> </tr> </table>	<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route 	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p style="font-size: small;">Approximate location within the HLine district</p> </div>
<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route 			



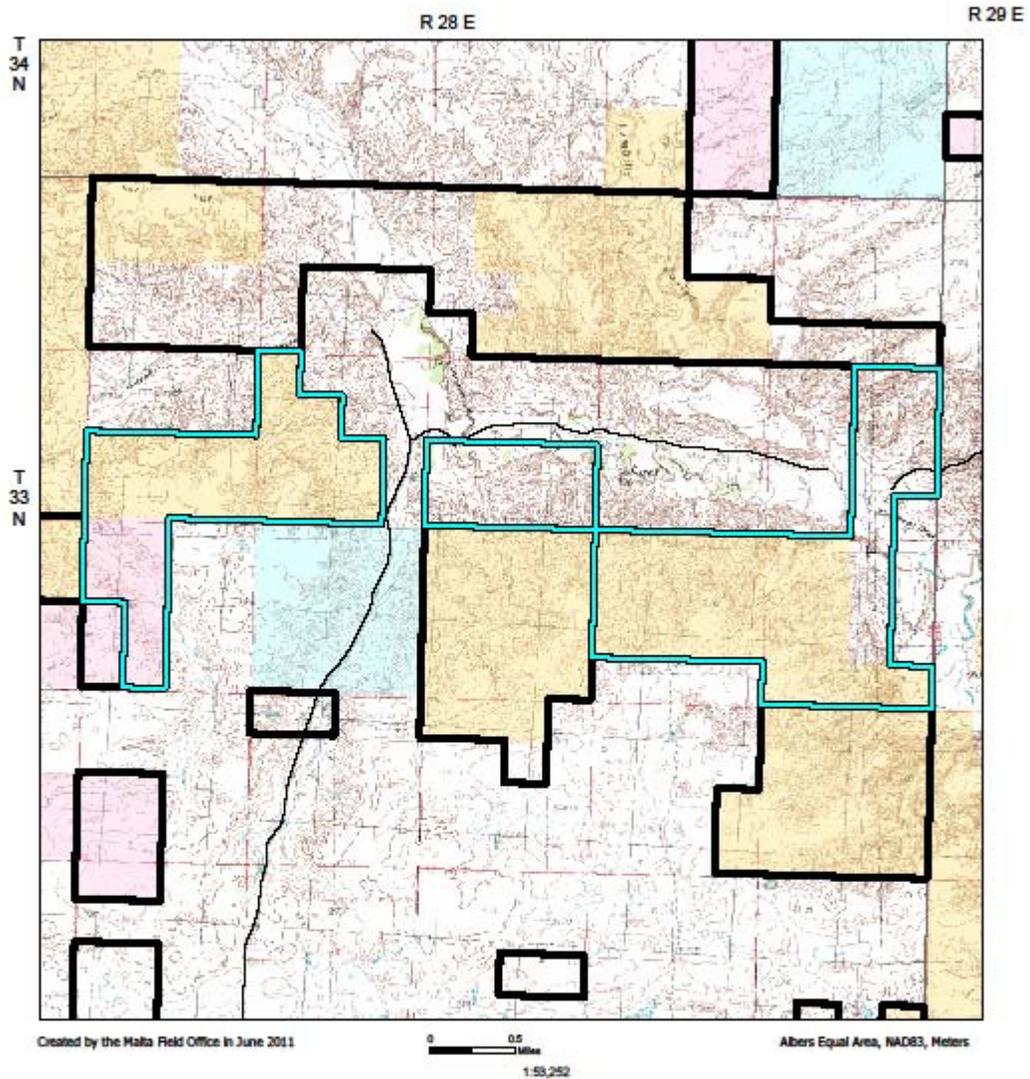
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-KH

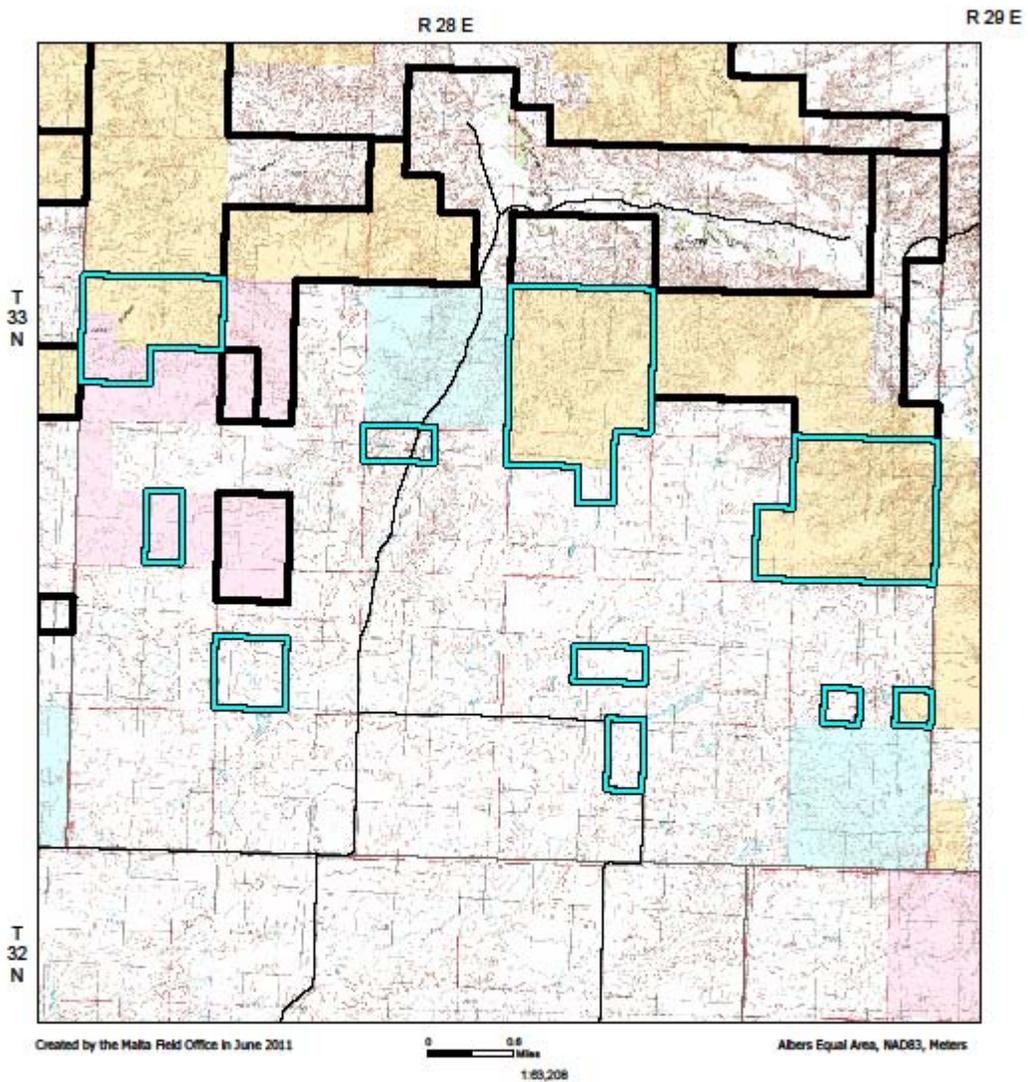
This map is intended for display purposes. No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data, or for purposes not intended by the BLM. This map may not meet National Map Accuracy Standards. This product was developed through digital means and information may be updated without notification.

<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route
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Approximate location
within the HLine district



<p>U.S. DEPARTMENT OF THE INTERIOR Bureau of Land Management HLine District</p> <p style="text-align: center;">MTM 97300-KI</p> <p><small>This map is intended for display purposes. No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data, or for purposes not intended by the BLM. This map may not meet National Map Accuracy Standards. This product was developed through digital means and information may be updated without notification.</small></p>	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"> <ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water </td> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> County Route U.S. Route </td> </tr> </table>	<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route 	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Approximate location within the HLine district</p> </div>
<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route 			



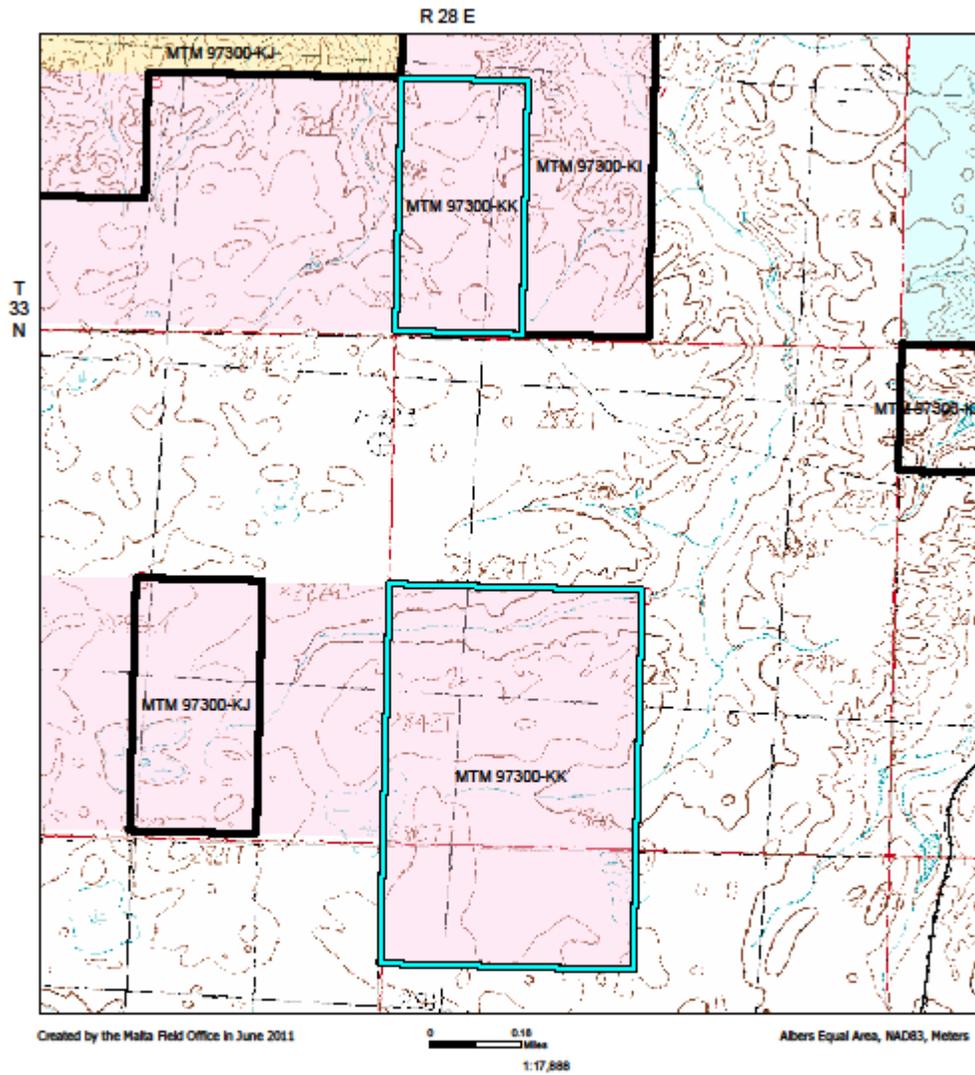
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-KJ

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<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route
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Approximate location
within the HLine district



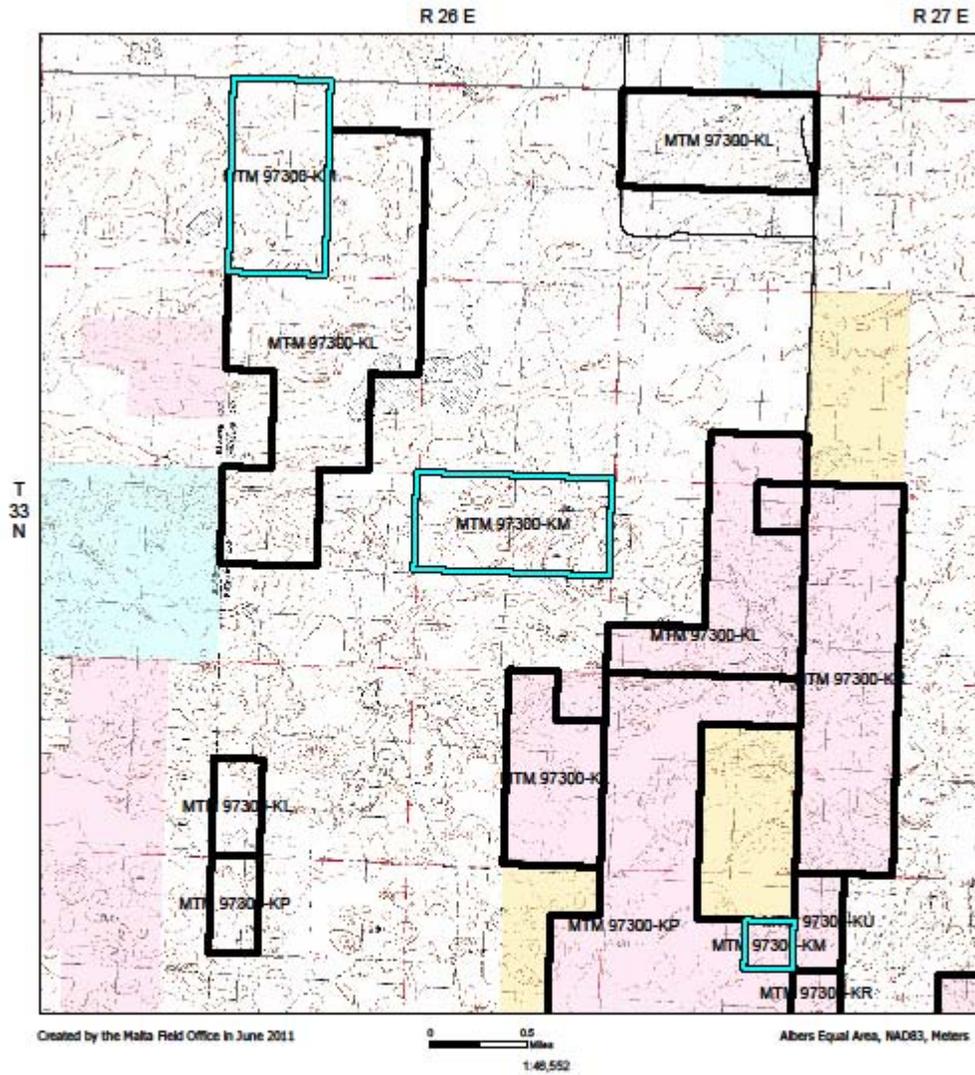
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-KK

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<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route
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Approximate location within the HLine district



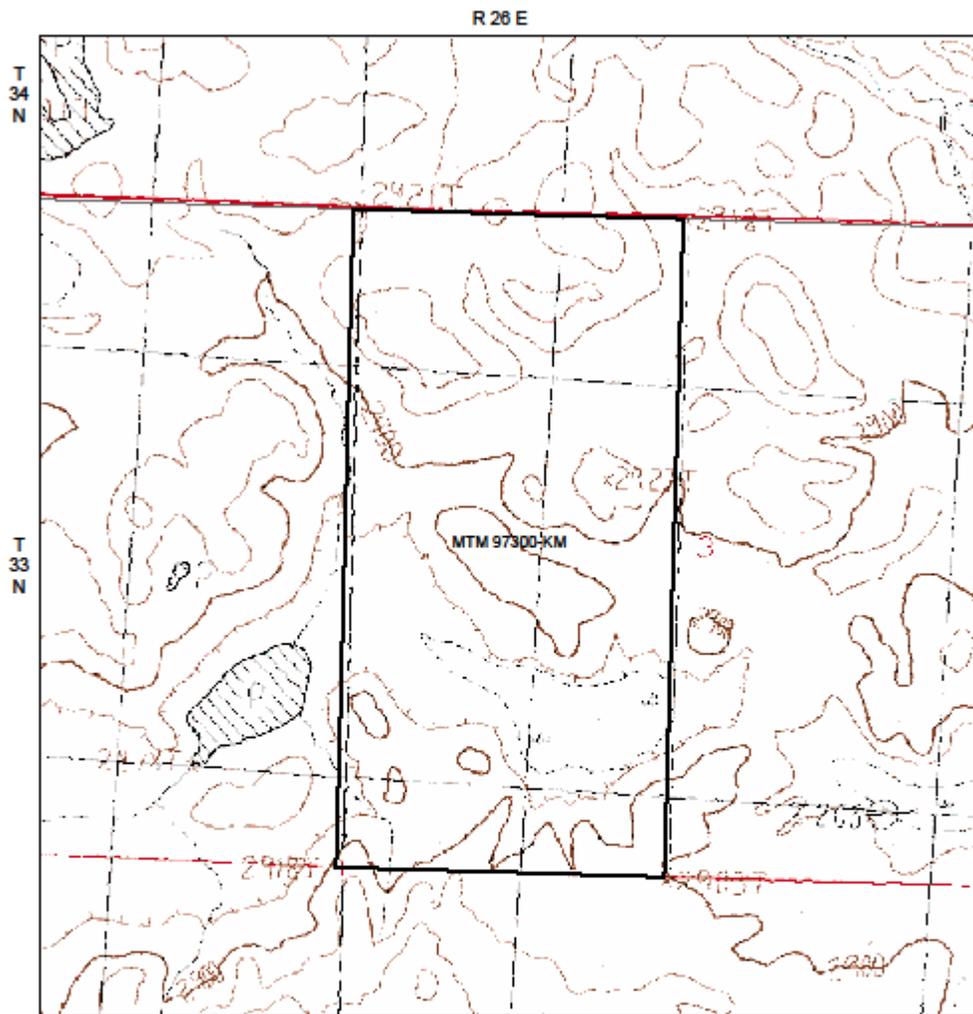
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-KM

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<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route
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Approximate location within the HLine district



Created by the Malta Field Office in June 2011



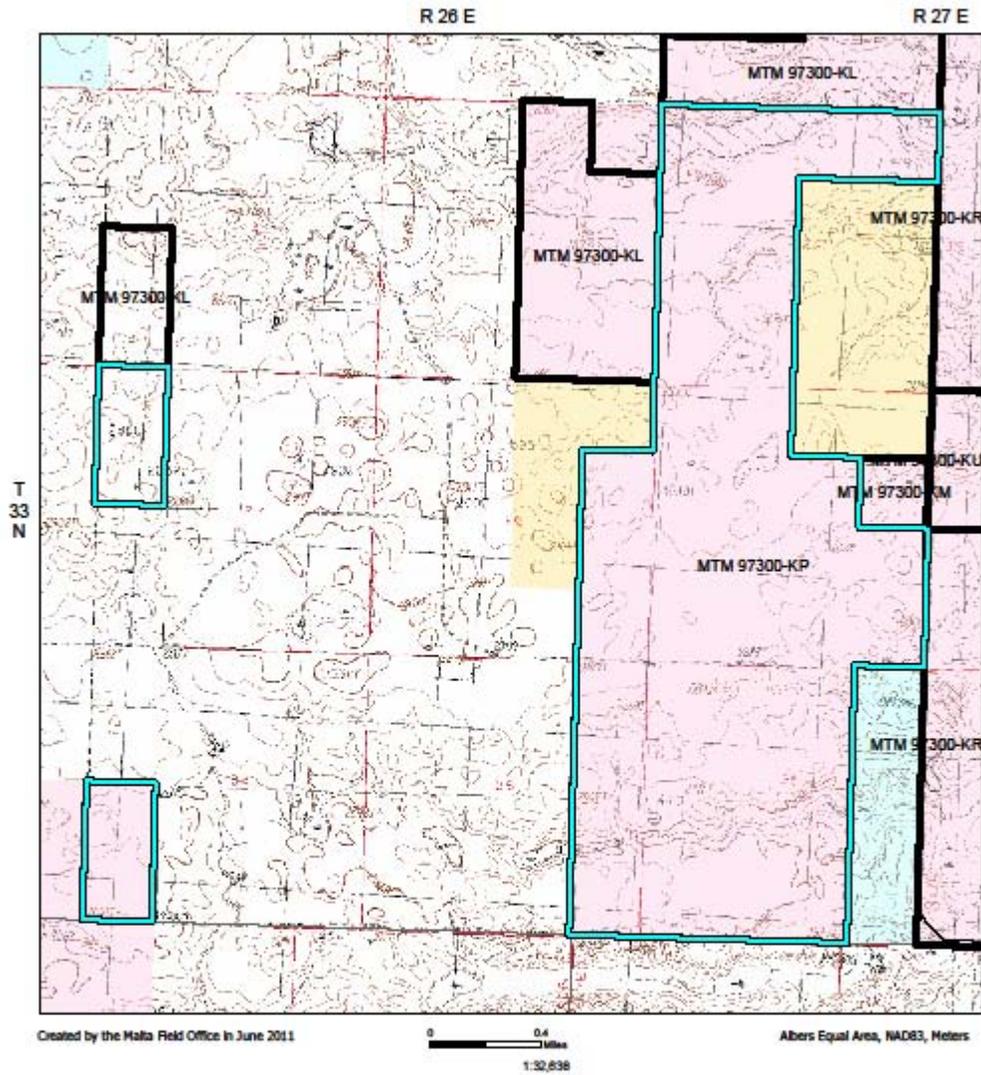
Albers Equal Area, NAD83, Meters

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-KM

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<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-top: 10px;"> <p style="text-align: center; font-size: small;">Approximate location within the HLine district</p> </div>
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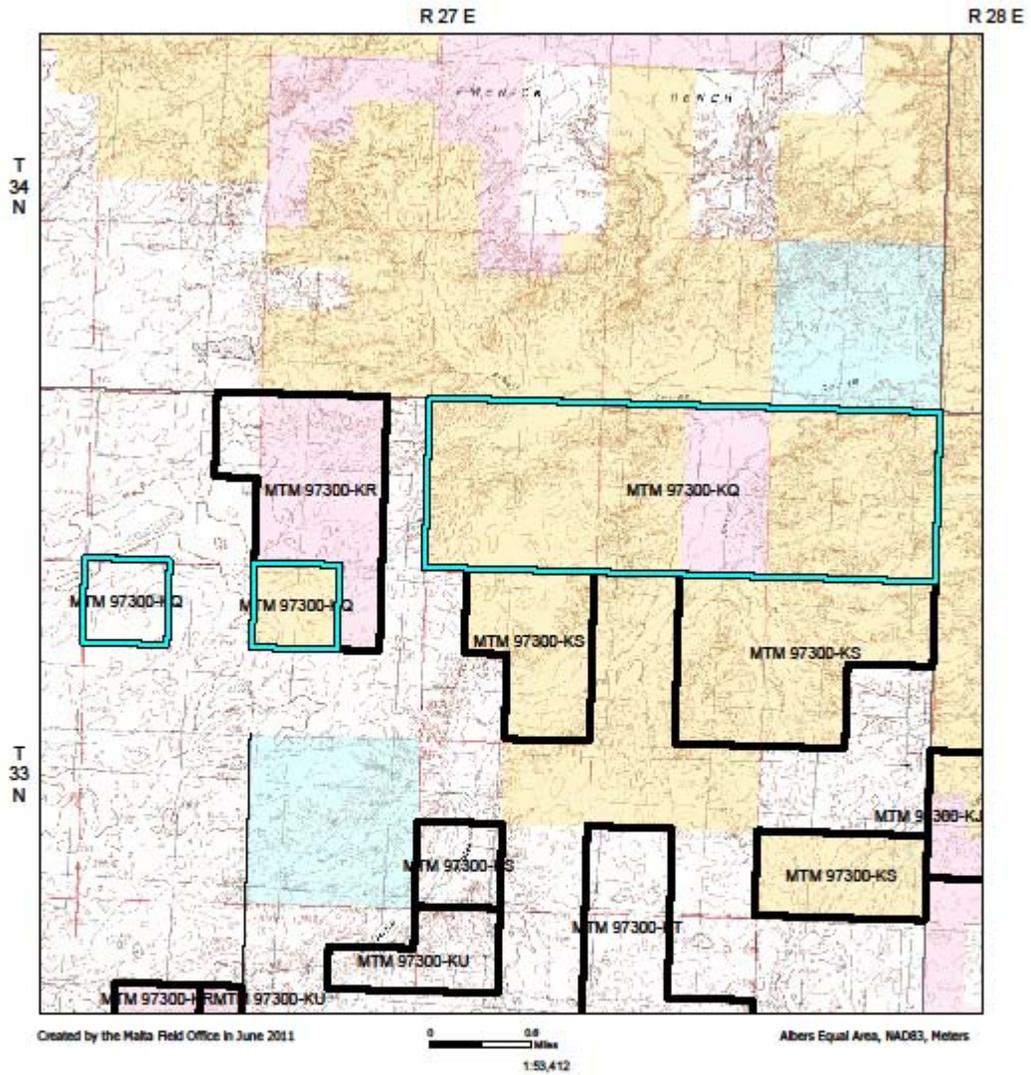
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-KP

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<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route
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Approximate location within the HLine district



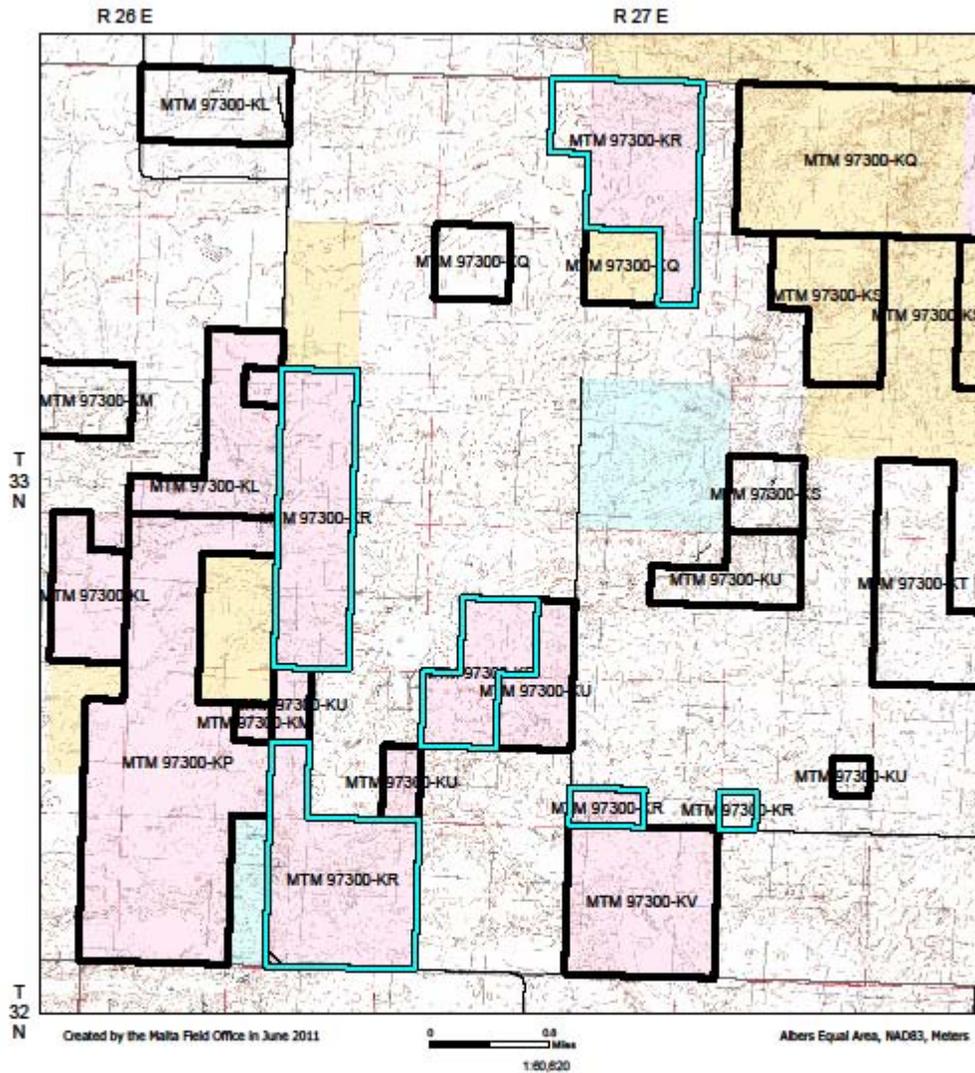
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-KQ

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<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route
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Approximate location within the HLine district



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
 HLine District

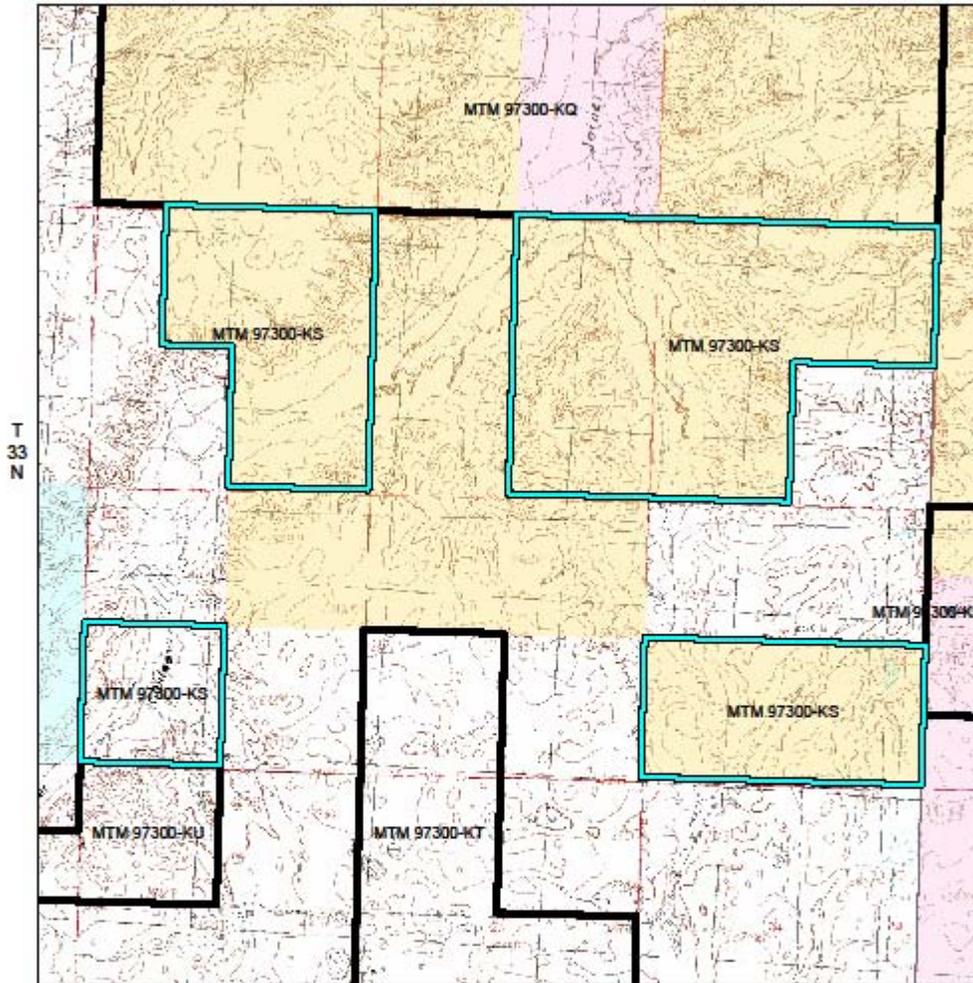
MTM 97300-KR

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- Bureau of Land Management (BLM)
- Bankhead-Jones Land Use Lands
- US Fish and Wildlife National Wildlife Refuge
- Bureau of Reclamation
- Indian Reservation
- State
- Private
- Water
- County Route
- U.S. Route

Approximate location within the HLine district

R 27 E



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Bureau of Land Management
 HLine District

MTM 97300-KS

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- Bureau of Land Management (BLM)
- Bankhead-Jones Land Use Lands
- US Fish and Wildlife National Wildlife Refuge
- Bureau of Reclamation
- Indian Reservation
- State
- Private
- Water
- County Route
- U.S. Route

Approximate location within the HLine district

R 27 E



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Albers Equal Area, NAD83, Meters

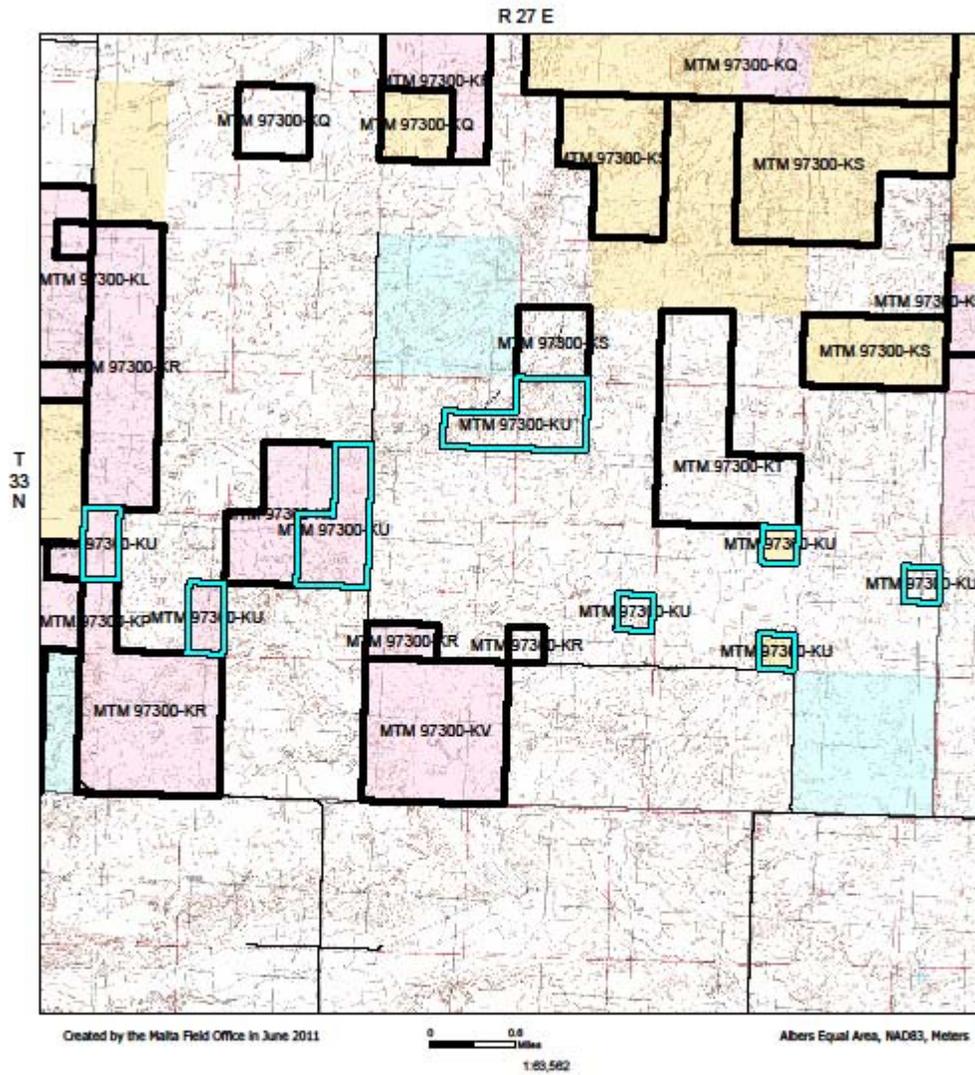
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
 HLine District

MTM 97300-KT

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- Bureau of Land Management (BLM)
- Bankhead-Jones Land Use Lands
- US Fish and Wildlife National Wildlife Refuge
- Bureau of Reclamation
- Indian Reservation
- State
- Private
- Water
- County Route
- U.S. Route

Approximate location within the HLine district



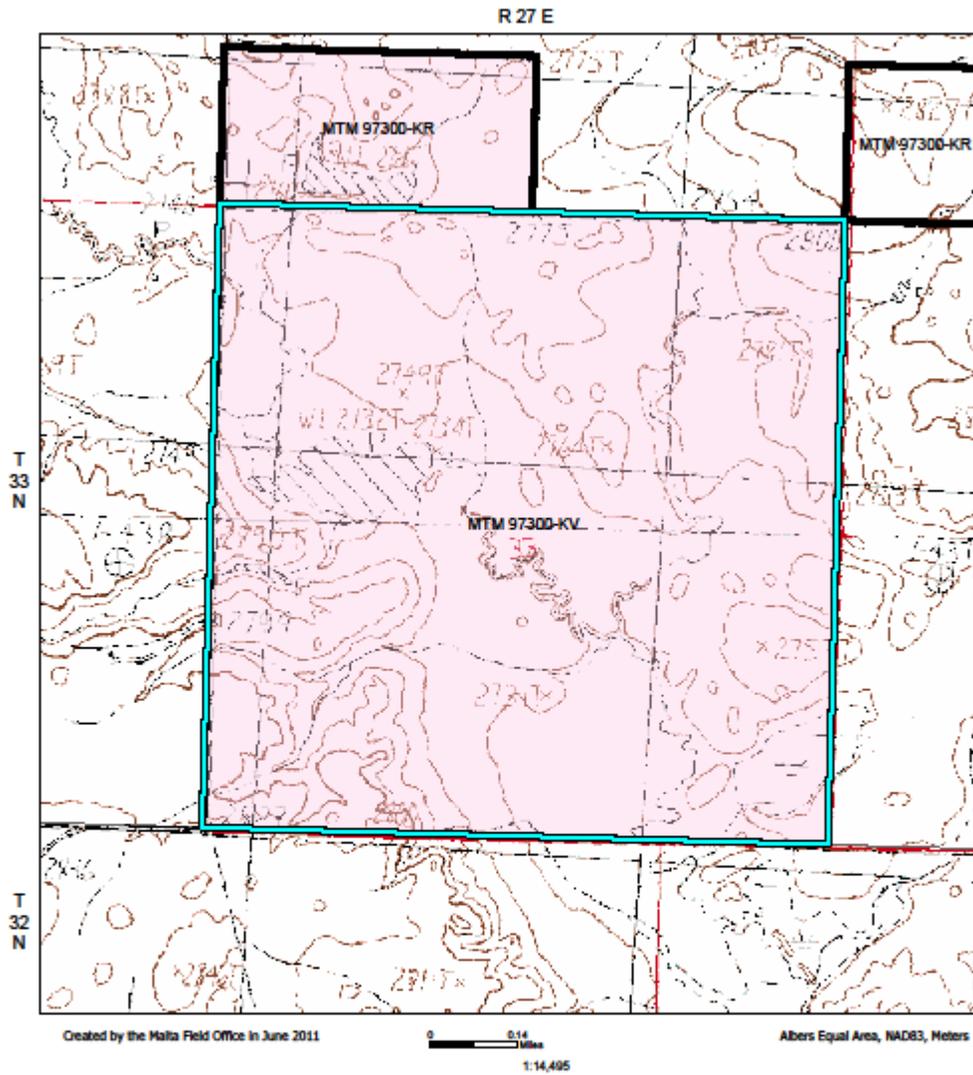
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-KU

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<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route
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Approximate location
within the HLine district



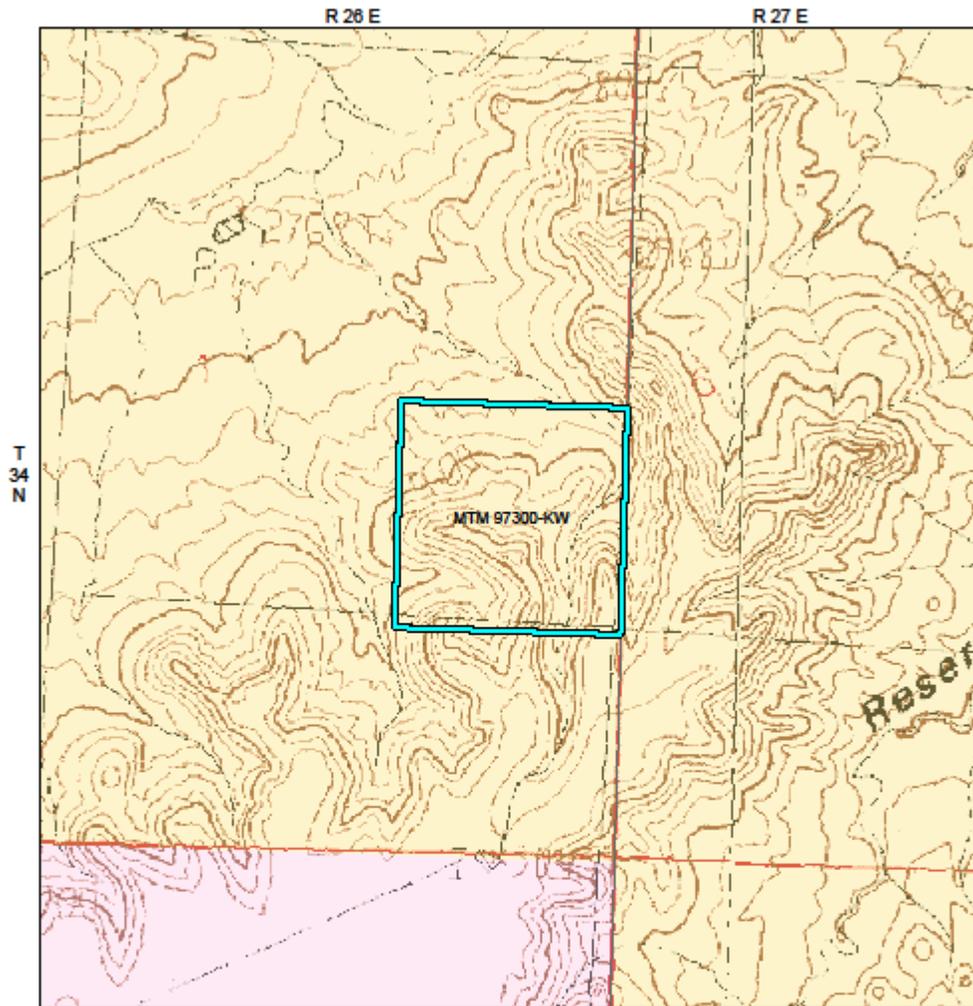
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-KV

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Bureau of Land Management (BLM)	County Route
Bankhead-Jones Land Use Lands	U.S. Route
US Fish and Wildlife National Wildlife Refuge	
Bureau of Reclamation	
Indian Reservation	
State	
Private	
Water	

Approximate location within the HLine district



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Albers Equal Area, NAD83, Meters

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

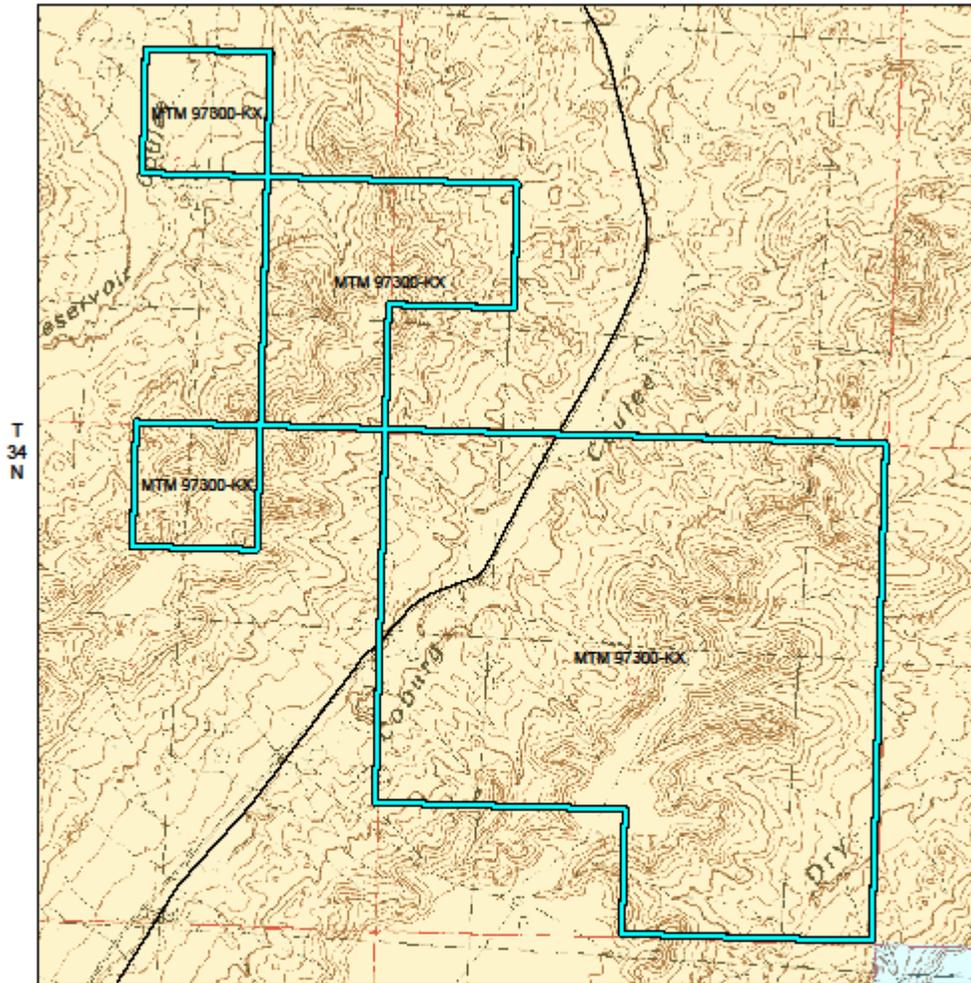
MTM 97300-KW

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- Bureau of Land Management (BLM)
- Bankhead-Jones Land Use Lands
- US Fish and Wildlife National Wildlife Refuge
- Bureau of Reclamation
- Indian Reservation
- State
- Private
- Water
- County Route
- U.S. Route

Approximate location within the HLine district

R 27 E



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0 0.15 Miles

Albers Equal Area, NAD83, Meters

1:16,179

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
 HLine District

MTM 97300-KX

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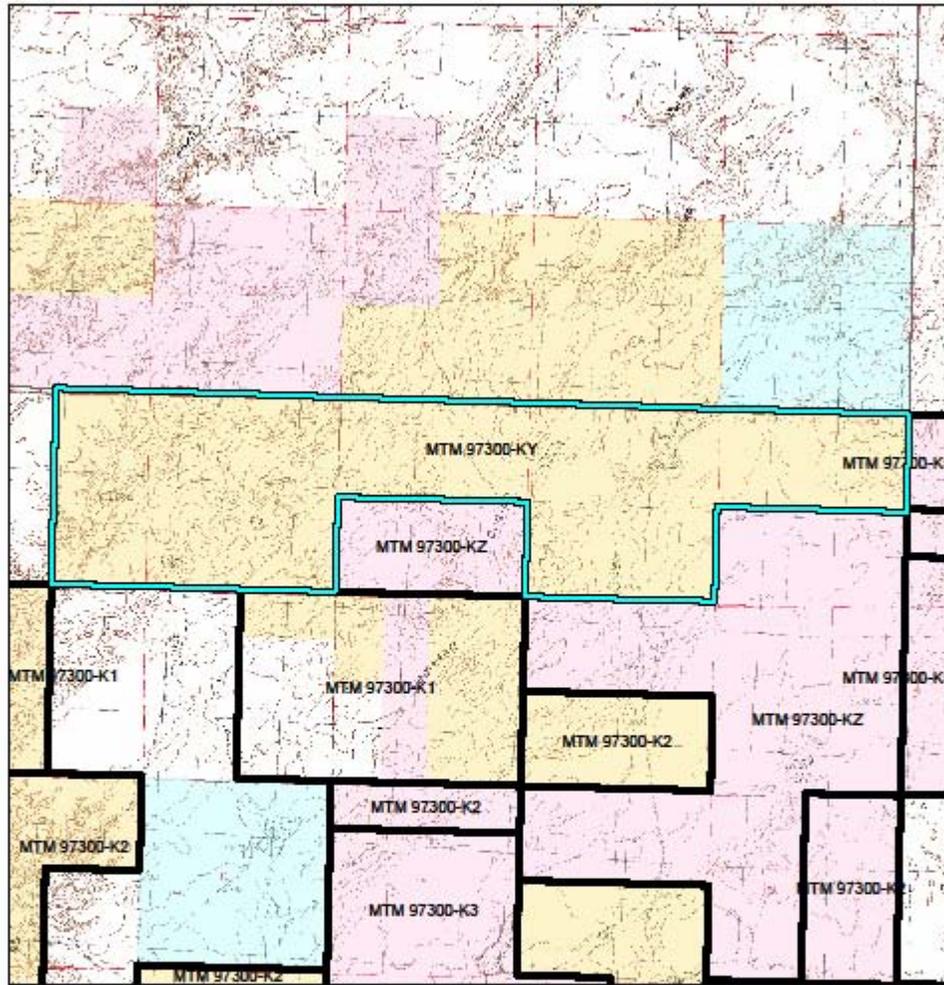
- Bureau of Land Management (BLM)
- Bankhead-Jones Land Use Lands
- US Fish and Wildlife National Wildlife Refuge
- Bureau of Reclamation
- Indian Reservation
- State
- Private
- Water
- County Route
- U.S. Route

Approximate location within the HLine district

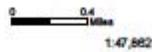
R 28 E

T 35 N

T 34 N



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Albers Equal Area, NAD83, Meters

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

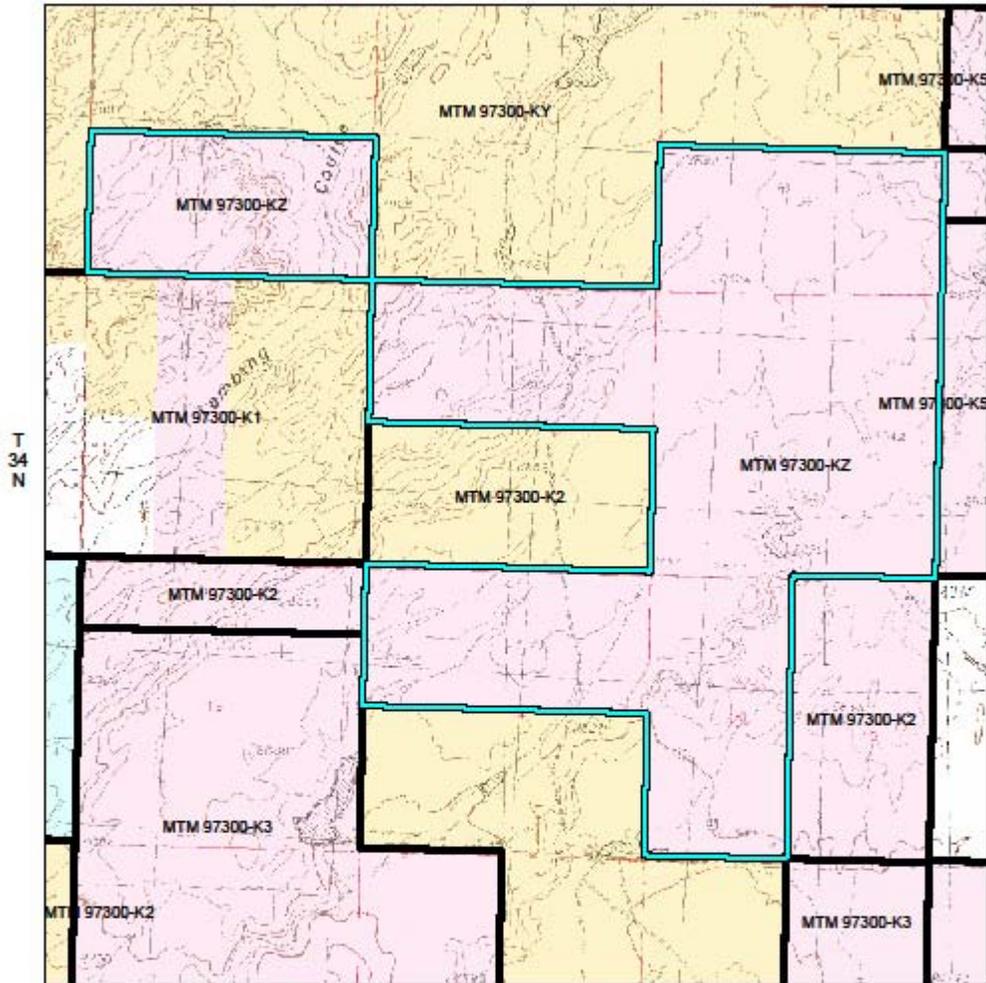
MTM 97300-KY

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<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route
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Approximate location within the HLine district

R 28 E



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1:31,800

Albers Equal Area, NAD83, Meters

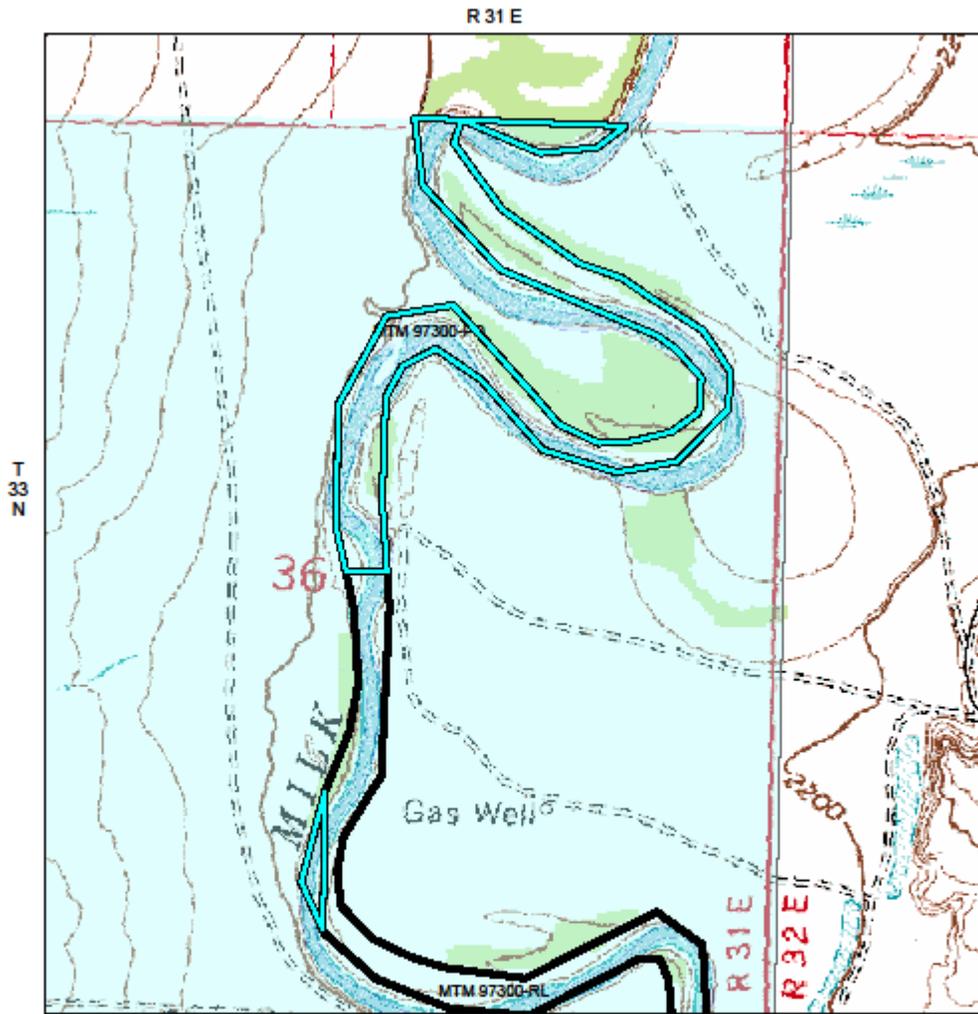
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-KZ

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<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route
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Approximate location within the HLine district

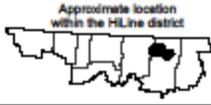


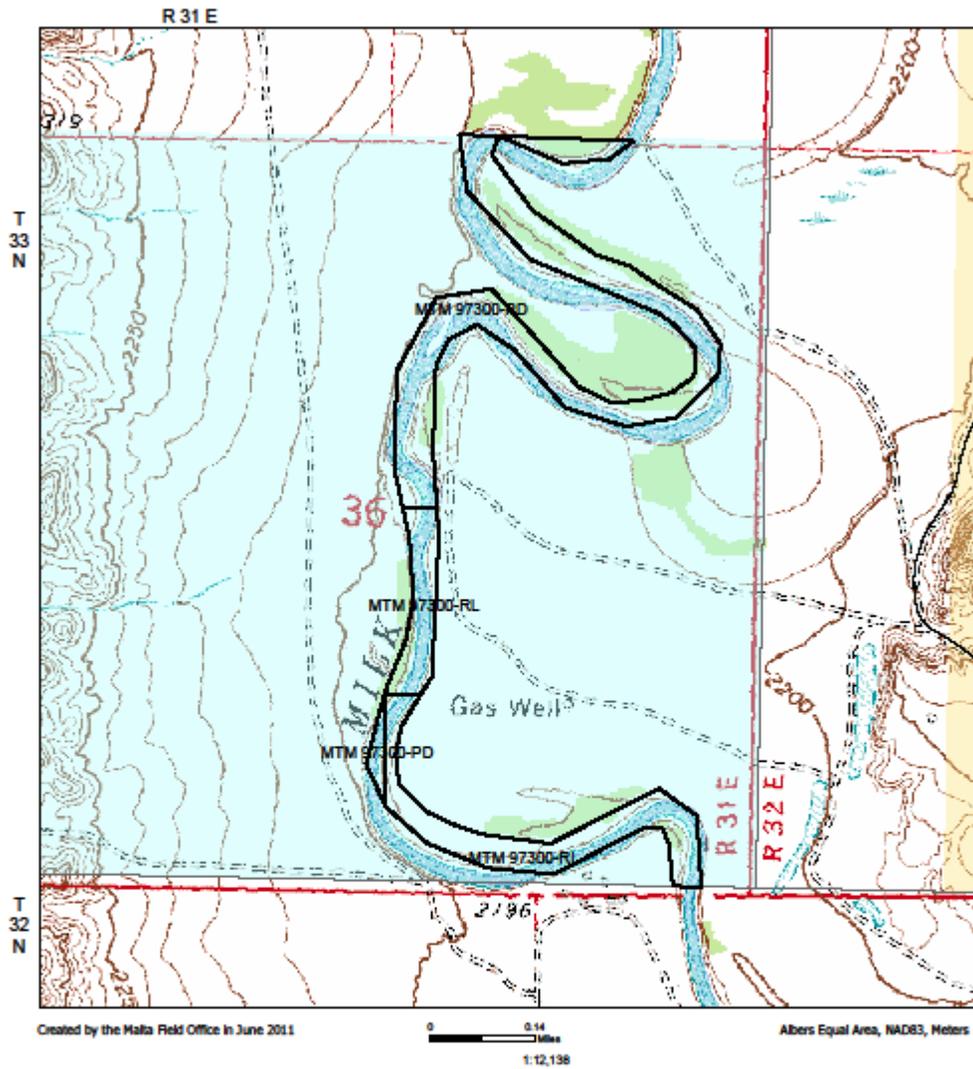
Created by the Malta Field Office in June 2011



1:10,000

Albers Equal Area, NAD83, Meters

<p>U.S. DEPARTMENT OF THE INTERIOR Bureau of Land Management HLine District</p>   <p>MTM 97300-PD</p> <p><small>This map is intended for display purposes. No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data, or for purposes not intended by the BLM. This map may not meet National Map Accuracy Standards. This product was developed through digital means and information may be updated without notification.</small></p>	<p> Bureau of Land Management (BLM)</p> <p> Bankhead-Jones Land Use Lands</p> <p> US Fish and Wildlife National Wildlife Refuge</p> <p> Bureau of Reclamation</p> <p> Indian Reservation</p> <p> State</p> <p> Private</p> <p> Water</p>	<p> County Route</p> <p> U.S. Route</p>
	<p></p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Approximate location within the HLine district</p>  </div>	



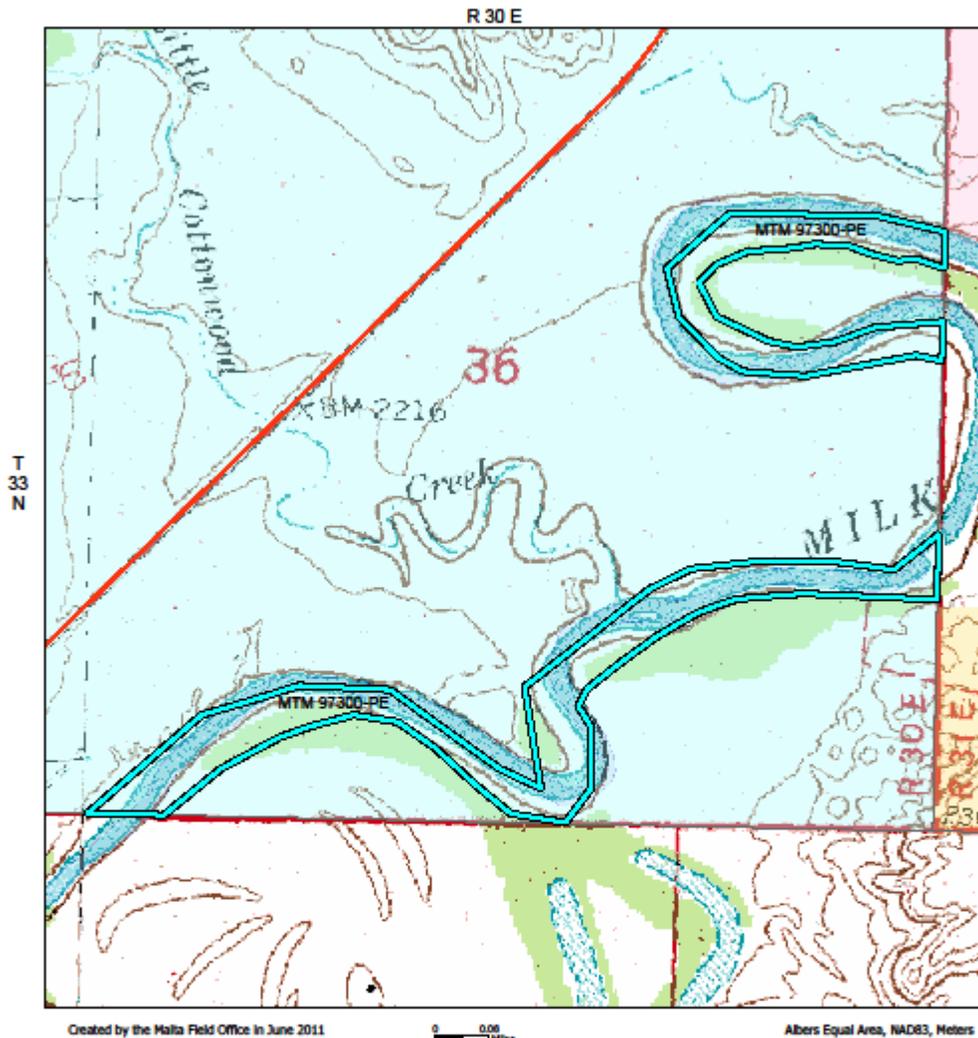
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-PD

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- Bureau of Land Management (BLM)
- Bankhead-Jones Land Use Lands
- US Fish and Wildlife National Wildlife Refuge
- Bureau of Reclamation
- Indian Reservation
- State
- Private
- Water
- County Route
- U.S. Route

Approximate location within the HLine district



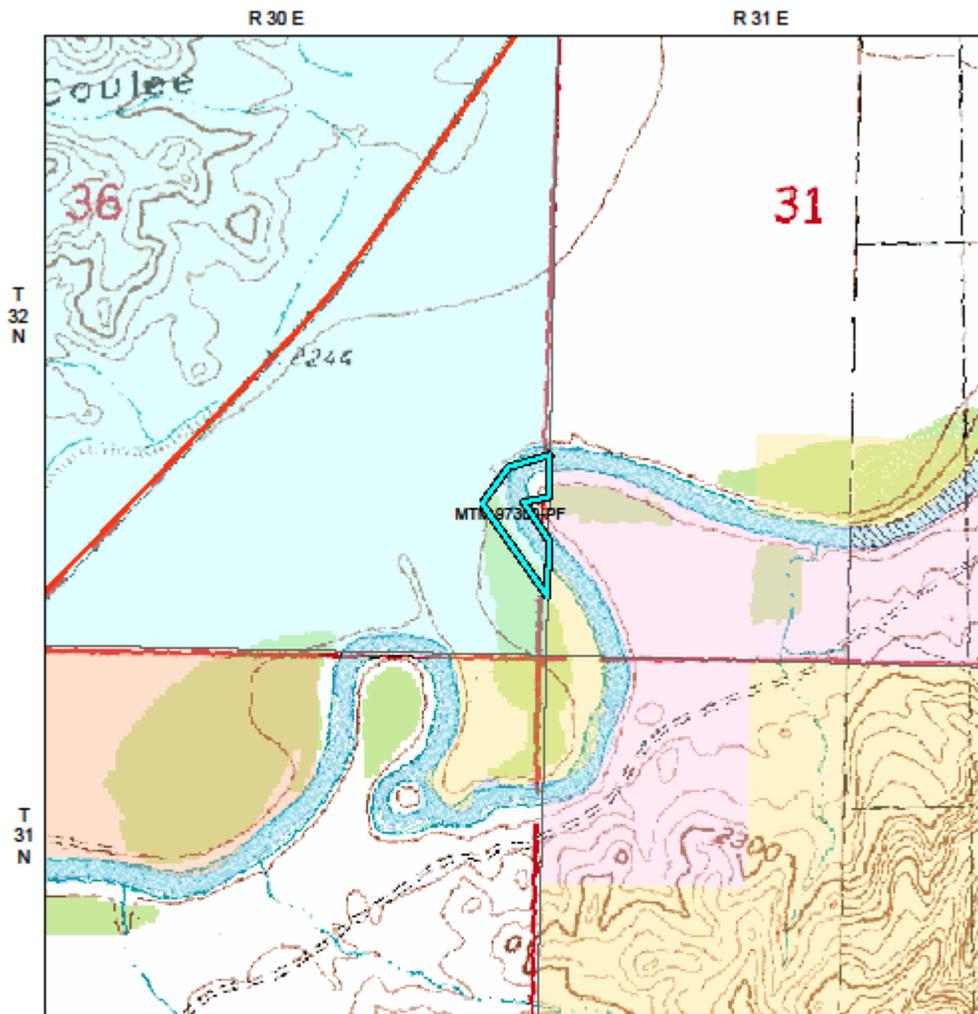
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MTM 97300-PE

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Bureau of Land Management (BLM)	County Route
Bankhead-Jones Land Use Lands	U.S. Route
US Fish and Wildlife National Wildlife Refuge	
Bureau of Reclamation	
Indian Reservation	
State	
Private	
Water	

Approximate location
within the HLine district



Created by the Malta Field Office in June 2011



1:10,000

Albers Equal Area, NAD83, Meters

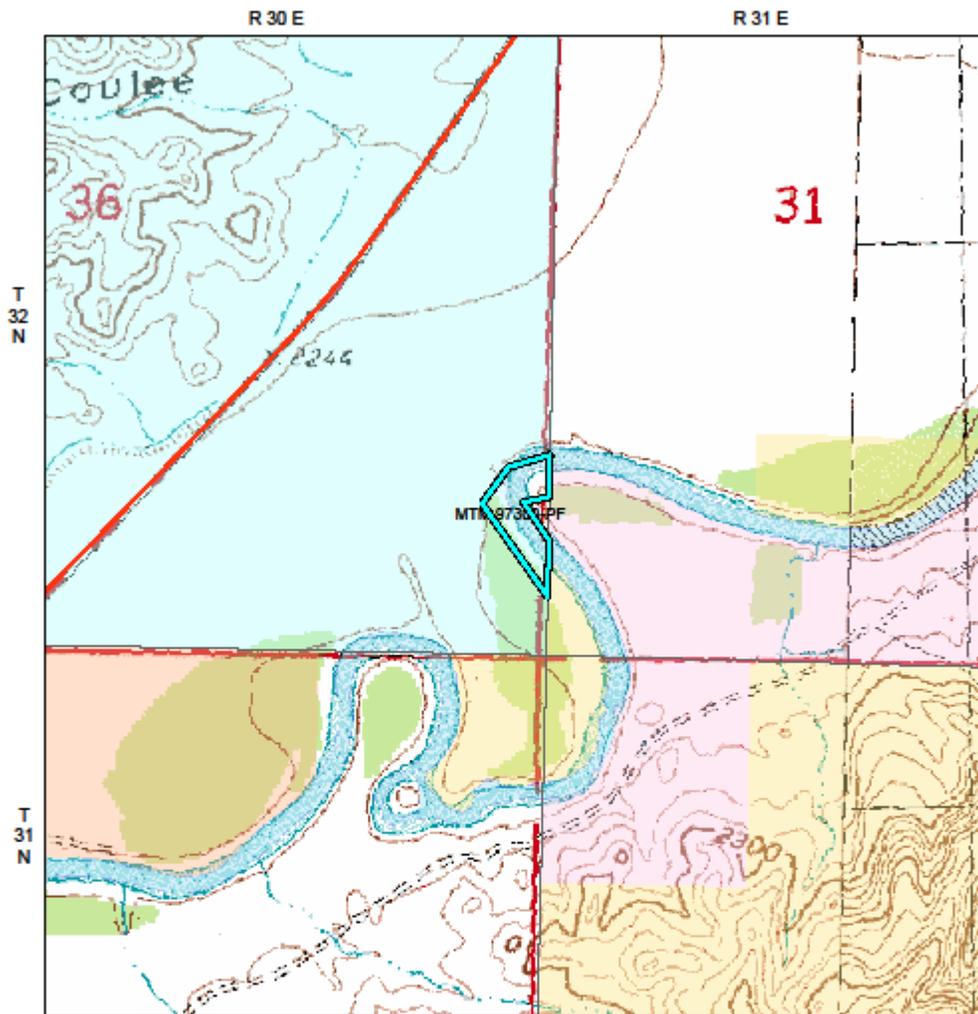
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HLine District

MTM 97300-PF

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<ul style="list-style-type: none"> Bureau of Land Management (BLM) Bankhead-Jones Land Use Lands US Fish and Wildlife National Wildlife Refuge Bureau of Reclamation Indian Reservation State Private Water 	<ul style="list-style-type: none"> County Route U.S. Route
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Approximate location
within the HLine district



Created by the Malta Field Office in June 2011
 0 0.06 Miles
 1:10,000
 Abers Equal Area, NAD83, Meters

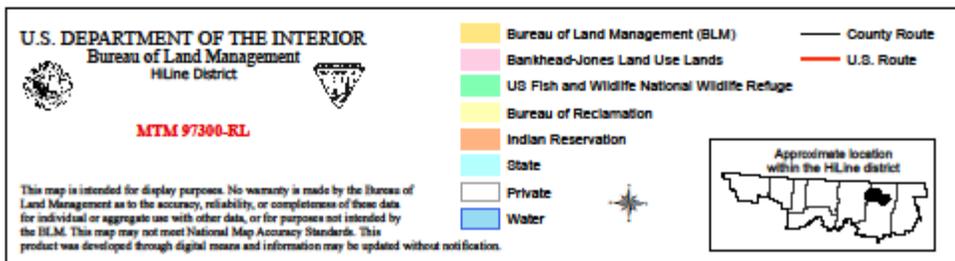
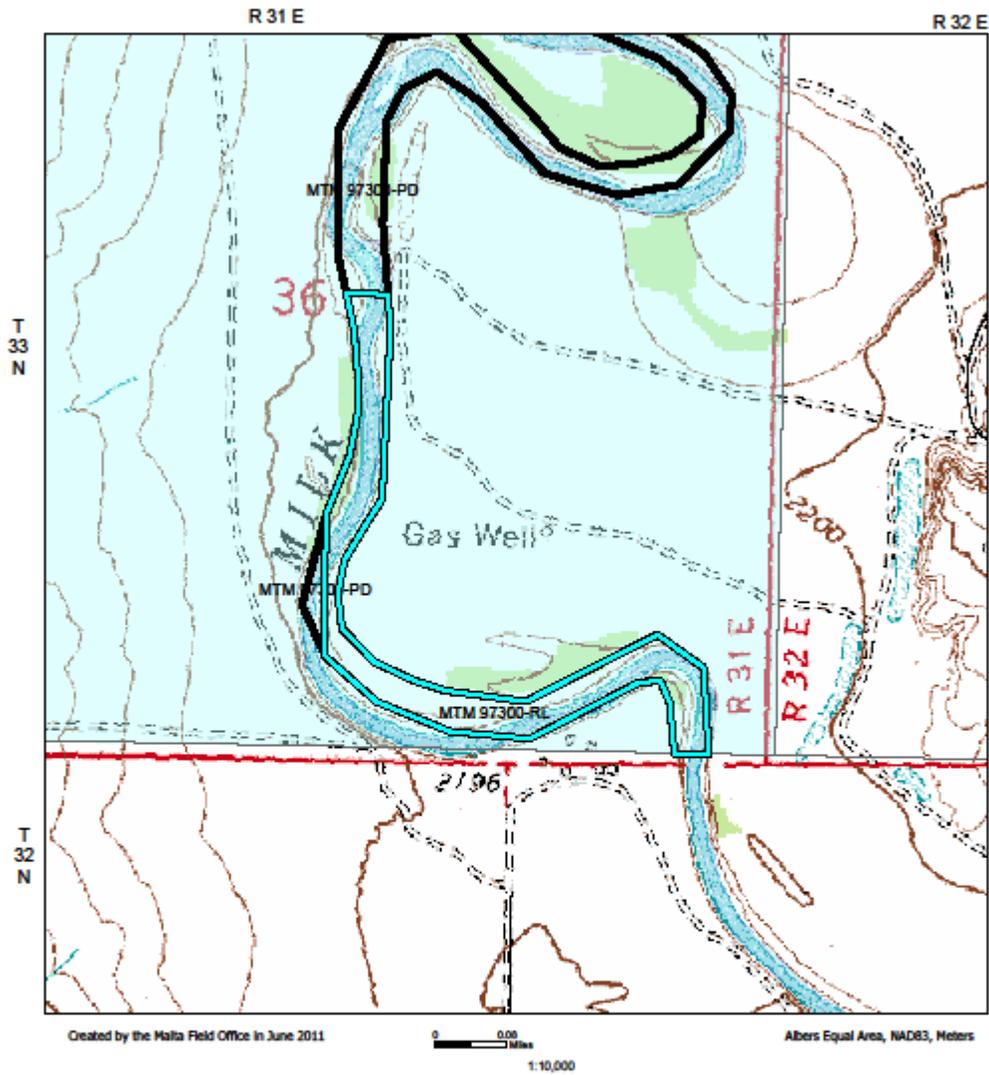
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
 HLine District

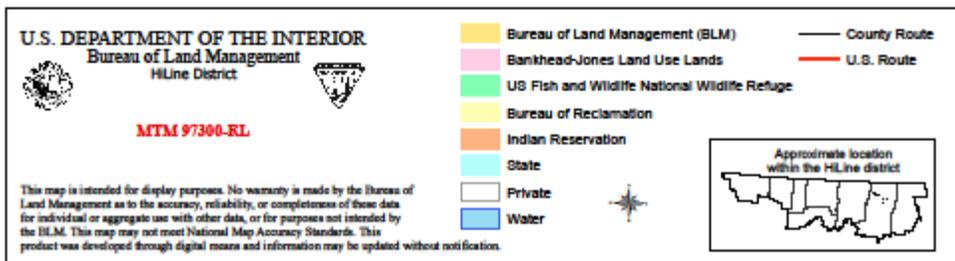
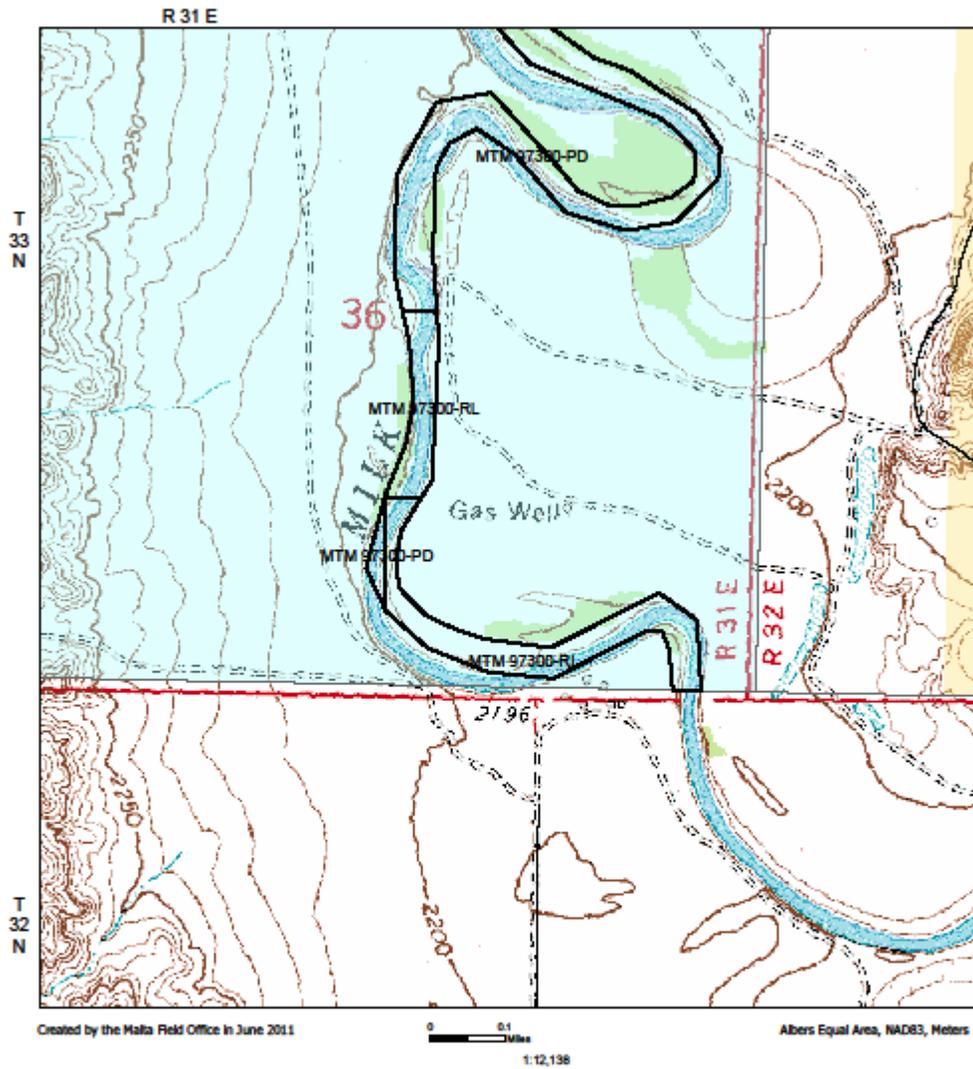
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- Bureau of Land Management (BLM)
- Bankhead-Jones Land Use Lands
- US Fish and Wildlife National Wildlife Refuge
- Bureau of Reclamation
- Indian Reservation
- State
- Private
- Water
- County Route
- U.S. Route

Approximate location within the HLine district





Appendix B: Lease Stipulation Key.

Stipulation Number	Stipulation Name/Brief Description
Bureau of Land Management	
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 12-2	CONTROLLED SURFACE USE STIPULATION Prior to surface disturbance, a surface use plan of operations (SUPO) for oil and gas activities must be approved for black-footed ferret reintroduction areas by the authorized officer in consultation with the U.S. Fish and Wildlife Service (USFWS).
CSU 12-3	CONTROLLED SURFACE USE STIPULATION Prior to surface disturbance, prairie dog colonies and complexes 80 acres or more in size will be examined to determine the absence or presence of black-footed ferrets. the findings of this examination may result in some restrictions to the operator's plans or may even preclude use and occupancy that would be in violation of the endangered species act (ESA) of 1973.
CSU 12-4	CONTROLLED SURFACE USE STIPULATION Prior to surface disturbance, a surface use plan of operations (SUPO) for oil and gas activities must be approved for black-footed ferret reintroduction areas by the authorized officer in consultation with the U.S. Fish and Wildlife Service (USFWS).
CSU 12-5	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use would be subject to the following special operating constraint: No disturbance of Riparian areas of wetlands, intermittent, ephemeral, or perennial streams and rivers would be allowed except for essential road and utility crossings.
CSU 12-6	CONTROLLED SURFACE USE STIPULATION Operations within Special Recreation Management Areas (SRMAs) must be conducted in a manner that minimizes encounters and conflicts with recreation users. Proposed activities may not alter or depreciate important recreational values located outside of developed areas but within the SRMA boundary.
CSU 12-7	CONTROLLED SURFACE USE STIPULATION Oil and gas activities will comply with all motorized vehicle use and travel plan restrictions, including seasonal restrictions and areas closed to motorized travel.
CSU 12-8	CONTROLLED SURFACE USE STIPULATION An inventory of the leased lands may be required prior to surface disturbance to determine if cultural resources or paleontological localities are present and to identify needed mitigation measures.
CSU 12-9	CONTROLLED SURFACE USE STIPULATION In areas known to have a high potential for containing significant paleontological resources, the lessee may be required to conduct a paleontological inventory prior to any surface disturbance. If inventory is required, the lessee must engage the services of a qualified paleontologist, acceptable to the Surface Managing Agency, to conduct the inventory. An acceptable inventory report is to be submitted to the BLM for review and approval at the time a surface-disturbing plan of operations is submitted.
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

Stipulation Number	Stipulation Name/Brief Description
	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 12-12	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraints. The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or requirements of the Endangered Species Act as amended, 16 U.S.C. § et seq., including completion of any required procedure for conference or consultation.
CSU 12-13	CONTROLLED SURFACE USE STIPULATION 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.
CSU 12-18	CONTROLLED SURFACE USE STIPULATION Prior to surface disturbance on areas of active mass wasting, unstable land areas, or slopes greater than 30 on non-Boulder Batholith soils or 20 percent on Boulder Batholith soils, an engineering/reclamation plan must be approved by the authorized officer. Such plan must demonstrate how the following will be accomplished: <ul style="list-style-type: none"> •site productivity will be restored. •surface runoff will be adequately controlled. •off-site areas will be protected from accelerated soil erosion. •surface disturbing activities will not be conducted during wet periods.
CSU 12-19	CONTROLLED SURFACE USE STIPULATION Operations within Special Recreation Management Areas (SRMAs) must be conducted within a manner that minimizes encounters and conflicts with recreation users. Proposed activities may not alter or depreciate important recreational values located within the SRMA boundary. This would apply to the following SRMAs for this alternative: Holter Lake/Missouri River, Sleeping Giant, Hauser Lake/Lower Missouri River, Toston Reservoir/Missouri River, Scratchgravel Hills, Sheep Mountain, Pipestone, Upper Big Hole River, and Humbug Spires.
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

Stipulation Number	Stipulation Name/Brief Description
	completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.
LN 14-1	LEASE NOTICE Land Use Authorizations incorporate specific surface land uses allowed on Bureau of Land Management (BLM) administered lands by authorized officers and those surface uses acquired by 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.
LN 14-2	LEASE NOTICE CULTURAL RESOURCES The Surface Management Agency is responsible for assuring that the leased Lands are examined to determine if cultural resources are present and to specify mitigation measures.
LN 14-3	LEASE NOTICE The lessee or operator shall immediately bring to the attention of the Surface Management Agency (SMA) any paleontological resources or any other objects of scientific interest discovered as a result of approved operations under this lease, and shall leave such discoveries intact and undisturbed until directed to proceed by the SMA.
LN 14-4	LEASE NOTICE Portions of the lands in this parcel are occupied by a cemetery. As per the Standard Stipulation (May 2001) attached to this lease, occupancy will be excluded from the cemetery and a 300 foot buffer zone around the cemetery.
LN 14-5	LEASE NOTICE CULTURAL RESOURCES An inventory of the lease lands may be required prior to surface disturbance to determine if cultural resources are present and to identify needed mitigation measures.
LN 14-7	LEASE NOTICE This parcel contains the following occupancy exclusions: 1. Exploration and development activity must be conducted with roads constructed to an appropriate standard no higher than necessary to accommodate the intended use. 2. Anti-raptor perch devices are required on all aboveground structures. 3. U.S. Fish and Wildlife (USFWS) staff responsible for the management of the Creedman Coulee National Wildlife Refuge will be notified of any exploration and development proposals by the Bureau of Land Management. This notice is necessary to provide the USFWS an opportunity to participate in the evaluation of any proposed activity on the lease, including on-site inspections before site preparation occurs.
LN 14-8	LEASE NOTICE Cultural sites are located in the _____, Sec. __ T. __, R. __. This parcel is located adjacent to the Lake Mason National Wildlife Refuge. In accordance with 43 CFR 3101.1-2, additional mitigation may be required in regard to exploration and development.
LN 14-9	LEASE NOTICE CULTURAL RESOURCES Lease is located adjacent to known sacred sites and historic properties, and contains high potential for National Register eligible historic and cultural properties. Lessees are notified that archaeological resource inventory and mitigation costs may be high within this area. A cultural plan of operations will be developed in consultation with the Billings Field Office and must be approved before field development takes place. All surface use plans will be presented to the Billings

Stipulation Number	Stipulation Name/Brief Description
	Field Office archaeologist for approval.
LN 14-11	<p>LEASE NOTICE GREATER SAGE-GROUSE HABITAT</p> <p>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.</p>
LN 14-12	<p>LEASE NOTICE PALEONTOLOGICAL RESOURCE INVENTORY REQUIREMENT</p> <p>Surface occupancy or use is subject to the following special operating constraints: The lessee/operator is given notice that this lease has been identified as being located within geologic units rated as being moderate to very high potential for containing significant paleontological resources. The locations identified meet the conditions 1 and/or 2 as set forth in the Potential Fossil Yield Classification System, IM 2008-009, Attachment 2-2. The BLM is responsible for assuring that the leased lands are examined to determine if paleontological resources are present and to specify mitigation measures. Guidance for application of this requirement can be found in IM 2008-009, 10/15/2007 and IM 2009-011, 10/10/2008. The project proponent may be required to conduct a paleontological inventory prior to any surface disturbance. If inventory is required, the project proponent must engage the services of a qualified paleontologist, acceptable to the BLM, to conduct the inventory. An acceptable inventory report is to be submitted to the BLM for review and approval at the time a surface-disturbing plan of operations is submitted. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or project proponent shall contact the BLM to determine if a paleontological resource inventory is required. If an inventory is required then;</p> <ul style="list-style-type: none"> •The lessee or project proponent will complete the required inventory. The lessee or project proponent may engage the services of a paleontological resource consultant acceptable to the BLM to conduct a paleontological resource inventory of the area of proposed surface disturbance. The project proponent will, at a minimum, inventory a 10-acre area or larger to incorporate possible project relocation which may result from environmental or other resource considerations. •Paleontological inventory may identify resources that may require mitigation to the satisfaction of the BLM as directed by IM 2009-011, 10/10/2008.
LN 14-13	<p>LEASE NOTICE GRASSLAND / WETLAND EASEMENT</p> <p>The lease parcel is encumbered with a US Fish and Wildlife wetland and/or grassland easement to restrict draining, burning, filling, or leveling of wetlands and/or protection of grassland depending on the specific easement. The operator may be required to implement specific measures to reduce the impacts of oil and gas operations on wetlands or grasslands on easements. Additional measures may be developed during the application for permit to drill during the on-site inspection as well as the environmental review process, consistent with the lease rights granted and in accordance with 43 CFR 3101.1-2.</p>
LN 14-15	<p>LEASE NOTICE SPRAGUE'S PIPIT</p> <p>The lease area may contain habitat for the federal candidate Sprague's pipit. The operator may be required to implement specific measures to reduce impacts of oil and gas operations on Sprague's pipits, their habitat, and overall population. Such measures would be developed during the application for permit to drill and environmental review processes, consistent with lease rights.</p> <p>If the USFWS lists the Sprague's pipit as threatened or endangered under ESA, BLM would enter into formal consultation on proposed permits that may affect the Sprague's pipit and its habitat. Restrictions, modifications, or denial of permits</p>

Stipulation Number	Stipulation Name/Brief Description
	could result from the consultation process.
NSO 11-1	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and directional drilling are prohibited within the boundaries of existing coal leases.
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 11-3	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited in the designated Bighorn Sheep Range.
NSO 11-4	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-quarter mile of grouse leks.
NSO 11-5	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within 1/4 mile of designated reservoirs with fisheries.
NSO 11-6	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-half mile of known bald eagle nest sites which have been active within the past 7 years and within bald eagle nesting habitat in riparian areas.
NSO 11-7	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within 1 mile of identified peregrine falcon nesting sites.
NSO 11-8	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-half mile of known ferruginous hawk nest sites which have been active within the past 2 years.
NSO 11-9	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-quarter mile of wetlands identified as piping plover habitat.
NSO 11-10	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-quarter mile of wetlands identified as interior least tern habitat.
NSO 11-11	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within sites or areas designated for conservation use, public use, or sociocultural use.
NSO 11-12	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within designated or known paleontological sites.
NSO 11-13	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within developed recreation areas and undeveloped recreation areas receiving concentrated public use.
NSO 11-14	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited in VRM Class I areas (i.e., wilderness, wild and scenic rivers, etc.).
NSO 11-15	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within the boundary of State Game Ranges administered by the Fish Wildlife and Parks.
NSO 11-16	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-half mile of North American Wetland Conservation Act/Intermountain Joint Venture (NAWCA/IMWJV) wetland projects.
NSO 11-17	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-half mile of Ferruginous Hawk nest sites.
NSO 11-18	NO SURFACE OCCUPANCY STIPULATION

Stipulation Number	Stipulation Name/Brief Description
	Surface occupancy and use is prohibited within one-half mile from centerline of stream containing known populations of 99 to 100% genetically pure Westslope Cutthroat Trout.
NSO 11-19	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-half mile from centerline of occupied or influencing habitat for fluvial and adfluvial Artic Grayling, including the North Fork of the Big Hole River, the Big Hole, the Beaverhead and Ruby Rivers, and tributaries to Upper Red Rock Lake are prohibited.
NSO 11-20	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-half mile from the centerline of Class 1 fishery streams (Blue Ribbon trout streams).
NSO 11-21	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-half mile of developed recreation sites. Currently developed recreation sites include: Axolotl Lakes Cabin and Fishing Access, Deadwood Gulch Campground, Big Sheep Creek Back Country Byway, Maiden Rock Boat Launch, East Fork Blacktail Deer Creek Campground, Ney Ranch Recreation Site, Palisades Recreation Site, Red Mountain Day Use, Red Mountain Campground, Warm Springs Day Use, Bear Trap Wilderness Trailhead, Bear Trap Boat Launch, Fall Creek Campground, Klutes Landing, and Shoshone Ridge.
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 11-23	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-half mile of the boundaries of cultural properties determined to be of particular importance to Native American groups, determined to be traditional cultural properties, and/or designated for traditional use. Such properties include (but are not limited to) burial locations, plant gathering locations, and areas considered sacred or used for religious purposes.
NSO 11-24	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-quarter mile of special status plants or populations.
NSO 11-25	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited on areas of active mass movement (landslides).
NSO 11-26	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-half mile of designated National Historic Trails. Designated National Historic Trails include the Lewis and Clark Trail and the Nez Perce (Nee Me Poo) Trail.
NSO 11-27	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-half mile of the Continental Divide National Scenic Trail.
NSO 11-28	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited on recreation and public purposes leases and patents and on leases and permits authorized under regulations found at 43 CFR 2920.

Stipulation Number	Stipulation Name/Brief Description
NSO 11-29	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within the Beaverhead Rock, Muddy-Big Sheep Creek and Everson Creek ACECs.
NSO 11-30	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within the Centennial Sandhills ACEC and within one mile of special status plants that are contained within the Centennial Sandhills ACEC.
NSO 11-31	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within the Bighorn Sheep core areas in the Hidden Pasture Area and the Greenhorn Mountains reintroduction area.
NSO 11-32	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and directional drilling are prohibited within the boundaries of the Medicine Land Sandhills Ecological Preserve.
NSO 11-33	NO SURFACE OCCUPANCY STIPULATION No surface occupancy (NSO) or use would be allowed within 200 feet of wetlands, lakes, and ponds.
NSO 11-34	NO SURFACE OCCUPANCY STIPULATION No surface occupancy (NSO) or use would be allowed within one-half mile of Prairie Falcon nests known to have been occupied at least once within the seven previous years.
NSO 11-35	NO SURFACE OCCUPANCY STIPULATION No surface occupancy (NSO) would be allowed within one-fourth mile of one-fourth mile of active Sage Grouse strutting grounds.
NSO 11-36	NO SURFACE OCCUPANCY STIPULATION No surface occupancy (NSO) would be allowed in the floodplain of the Yellowstone River.
NSO 11-37	NO SURFACE OCCUPANCY STIPULATION No surface occupancy (NSO) or use would be allowed within 200 feet of wetlands, lakes, or ponds.
NSO 11-38	NO SURFACE OCCUPANCY STIPULATION No surface occupancy (NSO) or use would be allowed within one-half mile of Golden Eagle nests known to have been occupied at least once within the seven previous years.
NSO 11-39	NO SURFACE OCCUPANCY STIPULATION No surface occupancy (NSO) of those lands within the floodplain of the Missouri River.
NSO 11-40	NO SURFACE OCCUPANCY STIPULATION No surface occupancy (NSO) or use would be allowed within a visible area within a 3.5 mile radius of the Fort Union Historic Site.
NSO 11-41	NO SURFACE OCCUPANCY STIPULATION No surface occupancy (NSO) or use would be allowed within 1,000 feet of wetlands, lakes, or ponds.
NSO 11-42	NO SURFACE OCCUPANCY STIPULATION No surface occupancy. Activity is prohibited within the bighorn sheep core areas.
NSO 11-43	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within ¼ mile of developed recreation sites, regardless of administering agency. Currently there are 49 developed BLM recreation sites: Beartooth Landing Rec Site, Bryant Creek Rec Site, Buffalo Hump Rec Site, Carbella Rec Site, Clark's Bay Rec Site, Crimson Bluff Rec Site, Crow Creek Rec Site, Departure Point Rec Site, Devil's Elbow Rec Site, Dickie Bridge Rec Site, Divide Bridge Campground, Divide Bridge Day Use, East Bank Rec Site, Four Corners OHV Trailhead, French Bar Rec Site, Galena Gulch Rec Site, Headlane Trailhead, Holter Lake Dam Rec Site, Holter Lake

Stipulation Number	Stipulation Name/Brief Description
	Rec Site, Jerry Creek BR Fishing Access, John G Mine Trailhead, Log Gulch Rec Site, Lombard Historical, Lower Toston Rec Site, Maiden Rock East, McMaster Hill East Trailhead, McMaster Hill West Trailhead, Moose Creek Trailhead, Ohio Gulch OHV Trailhead, Pintlar Creek Rec Site, Pipestone OHV Rec Site, Radersburg OHV Trailhead, Ringing Rocks Rec Site, Sawlog Creek Rec Site, Sawmill Gulch Trailhead, Sheep Camp Rec Site, Sheep Mountain Trailhead, Sleeping Giant Trailhead, Spokane Bay Rec Site, Spokane Bay Trailhead, Spokane Hills South, Titan Gulch Rec Site, Toston Dam Rec Site, Tumbleweed Lane Trailhead, Two Camps Vista, Ward Ranch Historical Site, Whiskey Gulch Trailhead, White Sandy Campground, Woodsiding Trailhead.
NSO 11-44	NO SURFACE OCCUPANCY STIPULATION Activity is prohibited within 1/2 mile of bald eagle nest sites and within bald eagle nesting habitat in riparian areas.
NSO 11-45	NO SURFACE OCCUPANCY STIPULATION Activity is prohibited within the boundary of the Recovery Zone for Grizzly Bears.
NSO 11-46	NO SURFACE OCCUPANCY STIPULATION Activity is prohibited within the boundary of any prairie dog town.
NSO 11-47	NO SURFACE OCCUPANCY STIPULATION No activity allowed within 1/2 mile from centerline of streams containing known populations of bull trout.
NSO 11-48	NO SURFACE OCCUPANCY STIPULATION No activity allowed within 1/2 mile from centerline of streams containing known populations of 90-100% genetically pure Yellowstone Cutthroat Trout.
NSO 11-49	NO SURFACE OCCUPANCY STIPULATION No activity allowed within 1/2 mile from centerline of streams that are identified by the BLM as having high restoration potential for westslope cutthroat trout, Yellowstone cutthroat trout, arctic grayling and/or bull trout.
NSO 11-50	NO SURFACE OCCUPANCY STIPULATION Surface occupancy would be prohibited in the following municipal watersheds: Missouri River Siphon, Tenmile Creek Drainage, Big Hole River Intake, and Moulton Reservoir.
NSO 11-51	NO SURFACE OCCUPANCY STIPULATION No activity allowed within 1/2 mile from centerline of stream containing known populations of 90-99% genetically pure westslope cutthroat trout.
NSO 11-52	NO SURFACE OCCUPANCY STIPULATION Activity is prohibited within 300 ft. of site boundaries and/or districts eligible for, or listed on the National Register of Historic Places. There is one known district, the Indian Creek Historic Mining District (134 acres).
NSO 11-53	NO SURFACE OCCUPANCY STIPULATION Surface occupancy would be prohibited within 1/2 mile either side of the active river channel. This would apply to the following river segment lengths: 3.1 miles of the Upper Missouri River and 2.6 miles of Muskrat Creek.
NSO 11-54	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within one-half mile of ferruginous hawk nest sites which have been active within the past 5 years.
NSO 11-55	NO SURFACE OCCUPANCY STIPULATION Surface occupancy would be prohibited on lands acquired with Land and Water Conservation Funds.
NSO 11-56	NO SURFACE OCCUPANCY STIPULATION Surface use is prohibited within Makoshika State Park and surrounding area of management concern except on designated sites identified in the 1999 Decision

Stipulation Number	Stipulation Name/Brief Description
	Record for Oil and Gas Leasing in the Makoshika State Park Area of Management Concern.
NSO 11-57	<p>NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited within the Terry Badlands limber pine areas.</p>
NSO 11-59	<p>NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited on lands administered by the U.S. Fish and Wildlife Service (FWS) within the Solberg Waterfowl Production Area.</p>
Standard 16-3	<p>STANDARD LEASE STIPULATION</p> <p>ESTHETICS--To maintain esthetic values, all surface-disturbing activities, semipermanent and permanent facilities may require special design including location, painting and camouflage to blend with the natural surroundings and meet the intent of the visual quality objectives of the Federal Surface Managing Agency (SMA).</p> <p>EROSION CONTROL--Surface-disturbing activities may be prohibited during muddy and/or wet soil periods.</p> <p>CONTROLLED OR LIMITED SURFACE USE STIPULATION --This stipulation may be modified, consistent with land use documents, when specifically approved in writing by the Bureau of Land Management (BLM) with concurrence of the SMA. Distances and/or time periods may be made less restrictive depending on the actual onground conditions. The prospective lessee should contact the SMA for more specific locations and information regarding the restrictive nature of this stipulation.</p> <p>The lessee/operator is given notice that the lands within this lease may include special areas and that such areas may contain special values, may be needed for special purposes, or may require special attention to prevent damage to surface and/or other resources. Possible special areas are identified below. Any surface use or occupancy within such special areas will be strictly controlled, or if absolutely necessary, excluded. Use or occupancy will be restricted only when the BLM and/or the SMA demonstrates the restriction necessary for the protection of such special areas and existing or planned uses. Appropriate modifications to imposed restrictions will be made for the maintenance and operations of producing oil and gas wells.</p> <p>After the SMA has been advised of specific proposed surface use or occupancy on the leased lands, and on request of the lessee/operator, the Agency will furnish further data on any special areas which may include:</p> <ul style="list-style-type: none"> • 100 feet from the edge of the rights-of-way from highways, designated county roads and appropriate federally-owned or controlled roads and recreation trails. • 500 feet, or when necessary, within the 25-year flood plain from reservoirs, lakes, and ponds and intermittent, ephemeral or small perennial streams: 1,000 feet, or when necessary, within the 100-year flood plain from larger perennial streams, rivers, and domestic water supplies. • 500 feet from grouse strutting grounds. Special care to avoid nesting areas associated with strutting grounds will be necessary during the period from March 1, to June 30. One-fourth mile from identified essential habitat of state and federal sensitive species. Crucial wildlife winter ranges during the period from December 1 to May 15, and in elk calving areas during the period from May 1 to June 30. • 300 feet from occupied buildings, developed recreational areas, undeveloped recreational areas receiving concentrated public use and sites eligible for or designated as National Register sites. • Seasonal road closures, roads for special uses, specified roads during

Stipulation Number	Stipulation Name/Brief Description
	<p>heavy traffic periods and on areas having restrictive off-road vehicle designations.</p> <ul style="list-style-type: none"> On slopes over 30 percent or 20 percent on extremely erodible or slumping soils. <p>APPLICATIONS FOR PERMIT TO DRILL (APDs)--The appropriate BLM field offices are responsible for the receipt, processing, and approval of APDs. The APDs are to be submitted by oil and gas operators pursuant to the requirements found in Onshore Oil and Gas Order No. 1 -- Approval of Operations on Onshore Federal and Indian Oil and Gas Leases (Circular No. 2538). Additional requirements for the conduct of oil and gas operations can be found in the Code of Federal Regulations Title 43, Part 3160. Copies of Onshore Oil and Gas Order No. 1, and pertinent regulations, can be obtained from the BLM field offices in which the operations are proposed. Early coordination with these offices on proposals is encouraged.</p> <p>CULTURAL AND PALEONTOLOGICAL RESOURCES--The SMA is responsible for assuring that the leased lands are examined to determine if cultural resources are present and to specify mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator, unless notified to the contrary by the SMA, shall:</p> <ul style="list-style-type: none"> Contact the appropriate SMA to determine if a site-specific cultural resource inventory is required. If an inventory is required, then: Engage the services of a cultural resource specialist acceptable to the SMA to conduct a cultural resource inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the area of proposed disturbance to cover possible site relocation which may result from environmental or other considerations. An acceptable inventory report is to be submitted to the SMA for review and approval no later than that time when an otherwise complete application for approval of drilling or subsequent surface-disturbing operation is submitted. Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as testing salvage and recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the SMA, surface occupancy on that area must be prohibited. <p>The operator shall immediately bring to the attention of the SMA any cultural or paleontological resources discovered as a result of approved operations under this lease, and not disturb such discoveries until directed to proceed by the SMA.</p> <p>ENDANGERED OR THREATENED SPECIES--The SMA is responsible for assuring that the leased land is examined prior to undertaking any surface-disturbing activities to determine effects upon any plant or animal species, listed or proposed for listing as endangered or threatened, or their habitats. The findings of this examination may result in some restrictions to the operator's plans or even disallow use and occupancy that would be in violation of the Endangered Species Act of 1973 by detrimentally affecting endangered or threatened species or their habitats.</p> <p>The lessee/operator may, unless notified by the authorized officer of the SMA that the examination is not necessary, conduct the examination on the leased lands at his discretion and cost. This examination must be done by or under the supervision of a qualified resources specialist approved by the SMA. An acceptable report must be provided to the SMA identifying the anticipated effects of a proposed action on endangered or threatened species or their habitats.</p>
TES 16-2	ENDANGERED SPECIES ACT SECTION 7 CONSULTATION

Stipulation Number	Stipulation Name/Brief Description
	<p>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.</p>
<p>TL 13-1</p>	<p>TIMING LIMITATION STIPULATION Surface use is prohibited within crucial winter range for wildlife for the time period December 1 to March 31 to protect crucial White-Tailed Deer, Mule Deer, Elk, Antelope, Moose, Bighorn Sheep, and Sage Grouse winter range from disturbance during the winter use season, and to facilitate long-term maintenance of wildlife populations.</p>
<p>TL 13-2</p>	<p>TIMING LIMITATION STIPULATION Surface use is prohibited within established spring calving range for Elk for the following time period April 1 to June 15 to protect Elk spring calving range from disturbance during the spring use season, and to facilitate long-term maintenance of wildlife populations.</p>
<p>TL 13-3</p>	<p>TIMING LIMITATION STIPULATION Surface use is prohibited within established spring calving range for Elk for the time period April 1 to June 15 to protect Elk spring calving range from disturbance during the spring use season, and to facilitate long-term maintenance of wildlife populations.</p>
<p>TL 13-4</p>	<p>TIMING LIMITATION STIPULATION Surface use is prohibited within one-half mile of Raptor nest sites which have been active within the past 2 years during the time period March 1 - August 1 to protect nest sites of Raptors which have been identified as species of special concern.</p>
<p>TL 13-5</p>	<p>TIMING LIMITATION STIPULATION No surface use would be allowed within one-half mile of occupied Ferruginous Hawk nests known to be occupied at least once within the seven previous years from March 15 to July 15 to protect Ferruginous Hawk nesting</p>
<p>TL 13-6</p>	<p>TIMING LIMITATION STIPULATION Surface use is prohibited from March 1 through June 30 in nesting and early brood-rearing habitat (defined as within three miles of leks).</p>
<p>TL 13-7</p>	<p>TIMING LIMITATION STIPULATION Surface use is prohibited from December 1 through May 15 within big game winter/spring range for wildlife.</p>
<p>TL 13-8</p>	<p>TIMING LIMITATION STIPULATION Surface use is prohibited from April 1 through June 30 in Elk calving/big game birthing areas to protect Mule Deer, Elk, Antelope, and Moose birthing areas from disturbance and facilitate long-term maintenance of wildlife populations.</p>
<p>TL 13-9</p>	<p>TIMING LIMITATION STIPULATION Surface use is prohibited from November 1 through June 30 in Bighorn rutting, winter and lambing habitat to protect Bighorn rutting, winter and lambing habitat from disturbance and facilitate long-term maintenance of Bighorn Sheep populations.</p>
<p>TL 13-10</p>	<p>TIMING LIMITATION STIPULATION Surface use is prohibited from February 1 through August 31 in a one mile radius around Bald Eagle nest sites/breeding habitat to protect Bald Eagle nesting site and/or breeding habitat in accordance with the Endangered Species Act and the Montana Bald Eagle Management Plan.</p>
<p>TL 13-11</p>	<p>TIMING LIMITATION STIPULATION Surface use is prohibited from March 1 through July 31 within one-half mile of</p>

Stipulation Number	Stipulation Name/Brief Description
	raptor nest sites which have been active within the past five years.
TL 13-12	TIMING LIMITATION STIPULATION Surface use is prohibited from April 1 through August 31 within one-half mile of waterfowl production and molting areas to protect waterfowl production and molting areas from disturbance and facilitate long-term maintenance of waterfowl populations.
TL 13-13	TIMING LIMITATION STIPULATION Surface use is prohibited from March 1 through August 31 within one mile of Ferruginous Hawk nest sites that have been active within the past five years.
TL 13-14	TIMING LIMITATION STIPULATION Surface use is prohibited from December 1 through May 15 within winter and spring range for sage grouse.
TL 13-15	TIMING LIMITATION STIPULATION No seismic exploration would be allowed within 500 feet of waterfowl nesting habitat from March 1 through July 1 to protect nesting waterfowl.
TL 13-16	TIMING LIMITATION STIPULATION No surface use would be allowed within one-half mile of occupied Prairie Falcon nests from March 15 through July 15 to protect Prairie Falcon nesting.
TL 13-17	TIMING LIMITATION STIPULATION No surface use would be allowed within two miles of active strutting grounds from March 1 to June 15 to protect Sage Grouse strutting activities.
TL 13-18	TIMING LIMITATION STIPULATION No surface use would be allowed on Bighorn Sheep lambing range from April 1 to June 15 to protect Bighorn Sheep lambing activities.
TL 13-19	TIMING LIMITATION STIPULATION No surface use would be allowed on Bighorn Sheep winter range from December 1 to April 1 to protect Bighorn Sheep winter range activities.
TL 13-20	TIMING LIMITATION STIPULATION Surface use for drilling and construction activity is prohibited from April 1 through August 15 to protect Creedman Coulee National Wildlife Refuge wildlife populations and habitats.
TL 13-21	TIMING LIMITATION STIPULATION No surface use would be allowed within one-half mile of occupied Golden Eagle nests from February 15 to July 15 to protect Golden Eagle nesting.
TL 13-22	TIMING LIMITATION STIPULATION No surface use would be allowed for Elk calving from June 1 to July 1 to protect Elk calving.
TL 13-23	TIMING LIMITATION STIPULATION No surface use would be allowed on Elk winter range from November 30 to May 1 to protect wintering Elk.
TL 13-24	TIMING LIMITATION STIPULATION Surface use is prohibited within one-half mile of occupied Golden Eagle nests known to be occupied at least once within the seven previous years from February 15 to July 15 to protect Golden Eagle nesting.
TL 13-25	TIMING LIMITATION STIPULATION No activity from March 1 through July 31, within 1/2 mile of raptor nest sites which have been active within the past five years. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.
TL 13-26	TIMING LIMITATION STIPULATION No activity is allowed from February 1 through August 31 in a one mile radius

Stipulation Number	Stipulation Name/Brief Description
	around bald eagle nest sites. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.
TL 13-27	TIMING LIMITATION STIPULATION Activity is prohibited from November 1 through June 30 in bighorn rutting, winter and lambing habitat. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.
TL 13-28	TIMING LIMITATION STIPULATION No activity from December 1 through May 15 within winter range for wildlife.
TL 13-29	TIMING LIMITATION STIPULATION Activity is prohibited from April 1 through June 30 in big game birthing areas.
TL 13-30	TIMING LIMITATION STIPULATION Activity is restricted from March 1 through June 30 in nesting and early brood rearing habitat (defined as within three miles of leks).
TL 13-31	TIMING LIMITATION STIPULATION Activity is prohibited from April 1 to June 30 and from September 15 – October 15 in the grizzly bear distribution zone.
TL 13-32	TIMING LIMITATION STIPULATION Activity is prohibited within a 1 mile buffer around wolf dens or rendezvous sites from April 15 to June 30 in the Northwest Montana Recovery Area. This stipulation would be applied to the Northwest Montana Recovery Area (94,700 acres), but there are no known den or rendezvous sites currently mapped in this area.
Region 1 Forest Service	
DPG 13d (McKenzie RD)	FOREST SERVICE - Agency lease stipulations.
DPG 13d (Medora RD)	FOREST SERVICE - Agency lease stipulations.
DPG NSO 14-1	NO SURFACE OCCUPANCY STIPULATION Surface occupancy and use is prohibited on slopes greater than 40 percent to protect soil resources from loss of productivity, prevent erosion on steep slopes, soil mass movement, and resultant sedimentation.
DPG NSO 14-4	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within 0.25 mile (line of sight) of prairie falcon and burrowing owl nests to prevent reduced reproductive success and adverse habitat loss.
DPG NSO 14-5	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within 0.5 mile (line of sight) of golden eagle, merlin, and ferruginous hawk nests; to prevent reduced reproductive success and adverse habitat loss.
DPG NSO 14-6	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within bighorn sheep habitat MA 3.51 to achieve optimum habitat suitability for bighorn sheep.
DPG NSO 14-7	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within 0.25 mile (line of sight) of a sharp-tailed grouse and sage grouse display ground to prevent abandonment of display grounds, reduced reproductive success, and adverse habitat loss
DPG NSO 14-9	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the established boundaries of Bear Den-Bur Oak, Cottonwood Creek Badlands, Little Missouri River, Mike's Creek,

Stipulation Number	Stipulation Name/Brief Description
	Ponderosa Pines, Limber Pine, and Two Top/Big Top Research Natural Areas; to maintain natural conditions for research purposes and protect against activities, which directly or indirectly modify the natural occurring ecological processes within the RNA.
DPG NSO 14-11	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within the boundaries of Battle of the Badlands, Custer Trail/Davis Creek, and Square Buttes Special Interest Areas to protect the heritage resources.
DPG NSO 14-13	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within developed recreation sites to maintain the recreation opportunities and settings within developed recreation sites.
DPG NSO 14-14	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within boundaries of backcountry non-motorized management areas to retain recreation opportunities in a natural-appearing landscape.
DPG NSO 14-15	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within ¼ mile each side of the Little Missouri River, to maintain the recreation opportunities and settings within the river corridor.
DPG NSO 14-16	NO SURFACE OCCUPANCY STIPULATION No surface occupancy or use is allowed within National Register eligible heritage sites to protect the immediate environment of the site.
DPG TL 15-1	TIMING LIMITATION STIPULATION No surface use is allowed during the following time period(s) March 1 – June 15 within 1 mile (line of sight) of active sharp-tailed grouse display grounds. This stipulation applies to drilling, testing, new construction projects, and does not apply to operation and maintenance of production facilities.
DPG TL 15-2	TIMING LIMITATION STIPULATION No surface use is allowed during the time period(s) March 1 through June 15 within 2 miles (line of sight) of a sage grouse display ground. This stipulation applies to drilling, testing, new construction projects, and does not apply to operation and maintenance of production facilities.
DPG TL 15-4	TIMING LIMITATION STIPULATION No surface use is allowed during the time period(s) January 1 through March 31 to maintain the health, vigor, and physical condition of wintering pronghorn by minimizing disturbance on winter range during the critical period.. This stipulation applies to drilling and testing and new construction projects, and does not apply to operation and maintenance of production facilities.
DPG TL 15-6	TIMING LIMITATION STIPULATION No surface use is allowed during the time period(s) May 1 through December 1 within 0.25 miles of the established boundaries of Burning Coal Vein, Buffalo Gap, Sather Lake, CCC, Campgrounds and Summit, Whitetail Picnic Areas, and the 6 Maa Daa Hey Trail overnight camps; Wannagan, Roosevelt, Elkhorn, Magpie, Beicegel, and Bennett to maintain the recreation opportunities and settings within the area surrounding campgrounds, picnic areas, and recreation trail overnights... This stipulation does not apply to operation and maintenance of production facilities.
DPG TL 15-7	TIMING LIMITATION STIPULATION No surface use is allowed during the time period(s) April 1 through June 15 within 1 mile (line-of-sight) of lambing areas to safeguard lamb survival and prevent bighorn sheep displacement from lambing areas.. This stipulation applies to drilling and testing and new construction projects, and does not apply to operation or maintenance of production facilities.

Stipulation Number	Stipulation Name/Brief Description
DPG TL 15-8	TIMING LIMITATION STIPULATION No surface use is allowed during the time period(s)October 16 – June 14 to provide quality forage, cover, escape terrain and solitude for bighorn sheep. This stipulation applies to drilling and testing of wells and new construction projects, and does not apply to operation and maintenance of production facilities. Limit on-lease activities (operation and maintenance of facilities) to the period from 10 am to 4 pm except in emergency situations.
DPG CSU 16-1	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to special operating constraints. to protect key paleontological resources from disturbance, or mitigate the effects of disturbance to conserve scientific and interpretive values, and the interests of the surface owner.
DPG CSU 16-2	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraints: Try to locate activities and facilities away from the water’s edge and outside the riparian areas, woody draws, wetlands, and floodplains.
DPG CSU 16-5	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraints: Operations may be moved or modified to preserve certain geologic type sections for future scientific research, education, and interpretation.
DPG CSU 16-6	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraints. Surface occupancy and use is subject to operational constraints to maintain the Scenic Integrity Objective (SIO) for areas identified as high.
DPG CSU 16-7	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraints: Surface occupancy and use is subject to operational constraints to maintain the Scenic Integrity Objective (SIO) for areas identified as moderate.
DPG CSU 16-8	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to special operating constraints: New developments, including new facilities, roads, and concentrations of humans, within 1 mile of bighorn sheep lambing areas may be moved or modified to be out of view of the lambing areas. This stipulation applies to drilling and testing and new construction projects, not to operation or maintenance of production.
DPG TES 18a	FOREST SERVICE - Agency lease stipulations.
DPG 22b	LEASE NOTICE - ROADLESS AREA CONSERVATION RULE Operations such as road construction or reconstruction may be prohibited by the Roadless Area Conservation Rule or subsequent modifications thereof.
DPG 22c	LEASE NOTICE - ROADLESS AREA CONSERVATION RULE Operations such as road construction or reconstruction may be prohibited by the Roadless Area Conservation Rule or subsequent modifications thereof.
DPG 23	LEASE NOTICE - LITTLE MISSOURI BADLANDS MILITARY COMPLEX/DAVIS CREEK AND SQUARE BUTTE AREAS Each proposed well, both inside and outside the critical area, will be evaluated individually, and allowed if they can be mitigated to the level of no adverse effect.
Region 2 Forest Service	
R2-FS-2820-13	FOREST SERVICE - Agency Lease Stipulation
R2-FS-2820-16	CONTROLLED SURFACE USE STIPULATION Surface occupancy or use is subject to the following special operating constraints: Surface occupancy and use is subject to operational constraints to maintain the Scenic Integrity Objective (SIO) for areas identified as moderate.
Bureau of Reclamation	
BOR 17-1	BUREAU OF RECLAMATION - Agency lease stipulations.
BOR 17-2	BUREAU OF RECLAMATION - Agency special stipulations.

Stipulation Number	Stipulation Name/Brief Description
Corps of Engineers	
COE 18-1	CORPS OF ENGINEERS - Agency lease stipulations.
COE 18-2	CORPS OF ENGINEERS - Agency lease stipulations.
COE 18-3	CORPS OF ENGINEERS - Agency lease stipulations.
COE 18-4	CORPS OF ENGINEERS - Agency lease stipulations.
COE 18-5	CORPS OF ENGINEERS - Agency lease stipulations.
COE 18-6	CORPS OF ENGINEERS - Agency lease stipulations.
COE 18-7	CORPS OF ENGINEERS - Agency lease stipulations.
Federal Energy Regulatory Commission	
FERC 19-1	Federal Energy Regulatory Commission - Agency lease stipulations.
International Boundary Commission	
IBC 18-8	International Boundary Commission - Agency lease stipulations.

Appendix C: Soil Map Units, by alternative, and associated acres, ratings, and interpretations for Lease Area Parcels based on dominant condition of each Soil Map Unit. (Source: USDA-NRCS SSURGO dataset (USDA-NRCS, 2011)).

Alternative B

Parcel	Map Unit	Acres ¹	Water Erosion Hazard ²	Wind Erosion Hazard ³	BLM-Reclamation Suitability (MT) ⁴	
					Rating Class	Limiting Feature(s)
MTM97300-KL	1090B	17	Slight	Moderate	Moderately Suited	Wind Erosion Sodium Content
	1221F	20	Severe	Moderate	Poorly Suited	Water Erosion
	1332C	423	Slight	Slight	Poorly Suited	Sodium Content
	1441D	26	Slight	Slight	Well Suited	-
	170A	91	Slight	Slight	Well Suited	-
	221D	155	Slight	Moderate	Moderately Suited	Wind Erosion
	221E	17	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion
	28A	73	Slight	Slight	Well Suited	-
	30A	53	Slight	Moderate	Moderately Suited	Water Erosion Sodium Content
	332B	28	Slight	Slight	Well Suited	-
	334C	433	Slight	Slight	Well Suited	-
	33B	16	Slight	Slight	Well Suited	-
	381B	22	Slight	Slight	Well Suited	-
	38B	7	Slight	Slight	Well Suited	-
	392B	7	Slight	Slight	Well Suited	-
	442C	55	Slight	Slight	Well Suited	-
	562C	12	Slight	Slight	Well Suited	-
	563C	80	Slight	Slight	Well Suited	-
	564C	148	Slight	Slight	Well Suited	-
	566C	21	Slight	Slight	Well Suited	-
921D	202	Slight	Moderate	Moderately Suited	Wind Erosion	
923F	76	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion	
MTM97300-KM	1441D	40	Slight	Slight	Well Suited	-
	224D	156	Slight	Moderate	Moderately Suited	Wind Erosion
	28A	52	Slight	Slight	Well Suited	-

	332B	63	Slight	Slight	Well Suited	-
	334C	108	Slight	Slight	Well Suited	-
	33B	6	Slight	Slight	Well Suited	-
	38B	17	Slight	Slight	Well Suited	-
	564C	98	Slight	Slight	Well Suited	-
	921D	133	Slight	Moderate	Moderately Suited	Wind Erosion
MTM97300-KP	1332C	872	Slight	Slight	Poorly Suited	Sodium Content
	1441D	660	Slight	Slight	Well Suited	-
	170A	59	Slight	Slight	Well Suited	-
	221D	14	Slight	Moderate	Moderately Suited	Wind Erosion
	28A	16	Slight	Slight	Well Suited	-
	332B	133	Slight	Slight	Well Suited	-
	334C	76	Slight	Slight	Well Suited	-
MTM97300-KW	1972F	40	Severe	Severe	Poorly Suited	Water Erosion Wind Erosion Droughtiness
MTM97300-KQ	1030D	400	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion Sodium Content
	1090B	66	Slight	Moderate	Moderately Suited	Wind Erosion Sodium Content
	1221F	870	Severe	Moderate	Poorly Suited	Water Erosion
	1441D	419	Slight	Slight	Well Suited	-
	1920F	47	Severe	Moderate	Poorly Suited	Water Erosion
	1970F	107	Severe	Moderate	Poorly Suited	Water Erosion
	28A	36	Slight	Slight	Well Suited	-
	302B	124	Slight	Moderate	Poorly Suited	Sodium Content
	332B	23	Slight	Slight	Well Suited	-
	564C	27	Slight	Slight	Well Suited	-
	923C	114	Slight	Moderate	Moderately Suited	Wind Erosion
MTM97300-KR	1221F	277	Severe	Moderate	Poorly Suited	Water Erosion
	1332C	360	Slight	Slight	Poorly Suited	Sodium Content
	1441D	1138	Slight	Slight	Well Suited	-
	170A	68	Slight	Slight	Well Suited	-

	221D	34	Slight	Moderate	Moderately Suited	Wind Erosion
	221E	79	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion
	381B	63	Slight	Slight	Well Suited	-
	444C	83	Slight	Slight	Well Suited	-
	561B	6	Slight	Slight	Well Suited	-
	562C	37	Slight	Slight	Well Suited	-
	563C	59	Slight	Slight	Well Suited	-
	564C	154	Slight	Slight	Well Suited	-
	566C	5	Slight	Slight	Well Suited	-
	921D	43	Slight	Moderate	Moderately Suited	Wind Erosion
	923F	12	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion
MTM97300-KS	1030D	299	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion Sodium Content
	1221F	762	Severe	Moderate	Poorly Suited	Water Erosion
	1441D	314	Slight	Slight	Well Suited	-
	221E	32	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion
	302B	91	Slight	Moderate	Poorly Suited	Sodium Content
	381B	107	Slight	Slight	Well Suited	-
	563C	12	Slight	Slight	Well Suited	-
	564C	24	Slight	Slight	Well Suited	-
	921D	8	Slight	Moderate	Moderately Suited	Wind Erosion
	923C	7	Slight	Moderate	Moderately Suited	Wind Erosion
	923F	14	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion
MTM97300-KT	28A	104	Slight	Slight	Well Suited	-
	33B	11	Slight	Slight	Well Suited	-
	444C	5	Slight	Slight	Well Suited	-
	521B	13	Slight	Slight	Poorly Suited	Sodium Content
	563C	504	Slight	Slight	Well Suited	-
MTM97300-KU	1221F	99	Severe	Moderate	Poorly Suited	Water Erosion
	1441D	144	Slight	Slight	Well Suited	-
	221D	19	Slight	Moderate	Moderately Suited	Wind Erosion

	221E	164	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion
	28A	28	Slight	Slight	Well Suited	-
	312B	16	Slight	Slight	Well Suited	-
	381B	11	Slight	Slight	Well Suited	-
	444C	27	Slight	Slight	Well Suited	-
	561B	33	Slight	Slight	Well Suited	-
	563C	228	Slight	Slight	Well Suited	-
	923F	24	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion
MTM97300-KV	1332C	362	Slight	Slight	Poorly Suited	Sodium Content
	1441D	42	Slight	Slight	Well Suited	-
	28A	25	Slight	Slight	Well Suited	-
	381B	43	Slight	Slight	Well Suited	-
	38B	35	Slight	Slight	Well Suited	-
	444C	38	Slight	Slight	Well Suited	-
	561B	33	Slight	Slight	Well Suited	-
	562C	6	Slight	Slight	Well Suited	-
MTM97300-KX	563C	36	Slight	Slight	Well Suited	-
	1332C	13	Slight	Slight	Poorly Suited	Sodium Content
	1441D	14	Slight	Slight	Well Suited	-
MTM97300-KH	1972F	735	Severe	Severe	Poorly Suited	Water Erosion Wind Erosion Droughtiness
	1022F	182	Severe	Moderate	Poorly Suited	Water Erosion
	1030D	9	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion Sodium Content
	1090B	58	Slight	Moderate	Moderately Suited	Wind Erosion Sodium Content
	110C	18	Slight	Slight	Well Suited	-
	1221F	236	Severe	Moderate	Poorly Suited	Water Erosion
	1441D	133	Slight	Slight	Well Suited	-
	1920F	71	Severe	Moderate	Poorly Suited	Water Erosion
	1971F	1088	Severe	Moderate	Poorly Suited	Water Erosion
301C	81	Slight	Moderate	Poorly Suited	Sodium Content	

	30A	38	Slight	Moderate	Moderately Suited	Water Erosion Sodium Content
	311B	50	Slight	Slight	Well Suited	-
	334C	18	Slight	Slight	Well Suited	-
	561B	25	Slight	Slight	Well Suited	-
	562C	77	Slight	Slight	Well Suited	-
	563C	49	Slight	Slight	Well Suited	-
	56B	16	Slight	Slight	Well Suited	-
	90A	102	Slight	Moderate	Moderately Suited	Wind Erosion
MTM97300-KI	1022F	417	Severe	Slight	Poorly Suited	Water Erosion
	1030D	26	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion Sodium Content
	1221F	336	Severe	Moderate	Poorly Suited	Water Erosion
	1441D	276	Slight	Slight	Well Suited	-
	1920F	389	Severe	Moderate	Poorly Suited	Water Erosion
	1971F	494	Severe	Moderate	Poorly Suited	Water Erosion
	37C	14	Slight	Slight	Well Suited	-
	38C	81	Slight	Slight	Well Suited	-
	563C	239	Slight	Slight	Well Suited	-
	564C	5	Slight	Slight	Well Suited	-
	60A	13	Slight	Slight	Well Suited	-
	792C	26	Slight	Moderate	Moderately Suited	Wind Erosion
	79C	28	Slight	Slight	Well Suited	-
	90A	124	Slight	Moderate	Moderately Suited	Wind Erosion
923F	51	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion	
MTM97300-KJ	1022F	102	Severe	Moderate	Poorly Suited	Water Erosion
	1030D	59	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion Sodium Content
	1221F	569	Severe	Moderate	Poorly Suited	Water Erosion
	1441D	385	Slight	Slight	Well Suited	-
	1971F	372	Severe	Moderate	Poorly Suited	Water Erosion
	212B	7	Slight	Slight	Well Suited	-

	28A	27	Slight	Slight	Well Suited	-
	334C	11	Slight	Slight	Well Suited	-
	444C	93	Slight	Slight	Well Suited	-
	561B	28	Slight	Slight	Well Suited	-
	563C	243	Slight	Slight	Well Suited	-
	564C	154	Slight	Slight	Well Suited	-
	56B	46	Slight	Slight	Well Suited	-
	921D	68	Slight	Moderate	Moderately Suited	Wind Erosion
	923C	19	Slight	Moderate	Moderately Suited	Wind Erosion
	923F	281	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion
MTM97300-KK	1221F	5	Severe	Slight	Poorly Suited	Water Erosion
	1441D	64	Slight	Slight	Well Suited	-
	28A	7	Slight	Slight	Well Suited	-
	444C	32	Slight	Slight	Well Suited	-
	564C	113	Slight	Slight	Well Suited	-
	921D	63	Slight	Moderate	Moderately Suited	Wind Erosion
	923F	35	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion
MTM97300-KY	1221F	97	Severe	Moderate	Poorly Suited	Water Erosion
	1251E	424	Severe	Moderate	Poorly Suited	Water Erosion
	1332C	110	Slight	Slight	Poorly Suited	Sodium Content
	1441D	642	Slight	Slight	Well Suited	-
	221D	5	Slight	Moderate	Moderately Suited	Wind Erosion
	250E	590	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion Sodium Content
	25C	36	Slight	Moderate	Moderately Suited	Wind Erosion Sodium Content
	302B	133	Slight	Moderate	Poorly Suited	Sodium Content
	332B	50	Slight	Slight	Well Suited	-
	402B	65	Slight	Slight	Poorly Suited	Sodium Content
	48A	20	Slight	Slight	Poorly Suited	Sodium Content
	561B	24	Slight	Slight	Well Suited	-
563C	68	Slight	Slight	Well Suited	-	

	923F	17	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion
MTM97300-KZ	1221F	6	Severe	Moderate	Poorly Suited	Water Erosion
	1251E	151	Severe	Moderate	Poorly Suited	Water Erosion
	1332C	1109	Slight	Slight	Poorly Suited	Sodium Content
	1441D	607	Slight	Slight	Well Suited	-
	211B	73	Slight	Slight	Poorly Suited	Sodium Content
	250E	85	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion Sodium Content
	302B	59	Slight	Moderate	Poorly Suited	Sodium Content
	402B	38	Slight	Slight	Poorly Suited	Sodium Content
	561B	88	Slight	Slight	Well Suited	-
	563C	22	Slight	Slight	Well Suited	-
MTM97300-K1	1030D	29	Slight	Slight	Moderately Suited	Water Erosion Wind Erosion Sodium Content
	1251E	834	Severe	Moderate	Poorly Suited	Water Erosion
	1332C	17	Slight	Slight	Poorly Suited	Sodium Content
	1441D	43	Slight	Slight	Well Suited	-
	1972F	523	Severe	Moderate	Poorly Suited	Water Erosion Wind Erosion Droughtiness
	221D	17	Slight	Moderate	Moderately Suited	Wind Erosion
	250E	126	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion Sodium Content
	302B	256	Slight	Moderate	Poorly Suited	Sodium Content
	312B	51	Slight	Slight	Well Suited	-
	332B	120	Slight	Slight	Well Suited	-
	402B	83	Slight	Slight	Poorly Suited	Sodium Content
	521B	137	Slight	Slight	Poorly Suited	Sodium Content
	561B	16	Slight	Slight	Well Suited	-
567C	52	Slight	Slight	Poorly Suited	Sodium Content	
MTM97300-K2	1030D	178	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion Sodium Content
	1090B	173	Slight	Slight	Moderately Suited	Wind Erosion Sodium Content
	1221F	95	Severe	Moderate	Poorly Suited	Water Erosion

	1251E	732	Severe	Moderate	Poorly Suited	Water Erosion
	1332C	439	Slight	Slight	Poorly Suited	Sodium Content
	1441D	359	Slight	Slight	Well Suited	-
	1971F	46	Severe	Moderate	Poorly Suited	Water Erosion
	211B	58	Slight	Slight	Poorly Suited	Sodium Content
	221D	5	Slight	Moderate	Moderately Suited	Wind Erosion
	311B	52	Slight	Slight	Well Suited	-
	332B	88	Slight	Slight	Well Suited	-
	561B	115	Slight	Slight	Well Suited	-
	563C	38	Slight	Slight	Well Suited	-
	564C	14	Slight	Slight	Well Suited	-
MTM97300-K3	1221F	161	Severe	Moderate	Poorly Suited	Water Erosion
	1251E	43	Severe	Moderate	Poorly Suited	Water Erosion
	1332C	306	Slight	Slight	Poorly Suited	Sodium Content
	1392B	25	Slight	Slight	Poorly Suited	Sodium Content
	1441D	1437	Slight	Slight	Well Suited	-
	211B	57	Slight	Slight	Poorly Suited	Sodium Content
	28A	49	Slight	Slight	Well Suited	-
	311B	15	Slight	Slight	Well Suited	-
	332B	376	Slight	Slight	Well Suited	-
	561B	7	Slight	Slight	Well Suited	-
	563C	28	Slight	Slight	Well Suited	-
	566C	25	Slight	Slight	Well Suited	-
	923F	8	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion
MTM97300-K5	1441D	39	Slight	Slight	Well Suited	-
	211B	250	Slight	Slight	Poorly Suited	Sodium Content
	25C	67	Slight	Moderate	Moderately Suited	Wind Erosion Sodium Content
	28A	33	Slight	Slight	Well Suited	-
	332B	69	Slight	Slight	Well Suited	-
	33B	191	Slight	Slight	Well Suited	-

	48A	63	Slight	Slight	Poorly Suited	Sodium Content
	503C	96	Slight	Slight	Well Suited	-
	521B	82	Slight	Slight	Poorly Suited	Sodium Content
	561B	385	Slight	Slight	Well Suited	-
	563C	199	Slight	Slight	Well Suited	-
	56B	282	Slight	Slight	Well Suited	-
	601A	16	Slight	Slight	Well Suited	-
	921D	36	Slight	Moderate	Moderately Suited	Wind Erosion
	923F	148	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion
MTM97300-PF	811A	1	Slight	Slight	Well Suited	-
MTM97300-PE	60A	10	Slight	Slight	Well Suited	-
	811A	15	Slight	Slight	Well Suited	-
MTM97300-PD	811A	21	Slight	Slight	Well Suited	-
MTM97300-RL	811A	11	Slight	Slight	Well Suited	-

Alternative C

Parcel	Map Unit	Acres ¹	Slope Range (Percent)	Water Erosion Hazard ^{2,5}	Wind Erosion Hazard ^{3,5}	BLM-Reclamation Suitability (MT) ^{4,5}	
						Rating Class	Limiting Feature(s)
MTM97300-KM	28A	30	0-2	Slight	Slight	Well Suited	-
	332B	62	0-4	Slight	Slight	Well Suited	-
	334C	14	2-8	Slight	Slight	Well Suited	-
	564C	73	2-8	Slight	Slight	Well Suited	-
	921D	133	8-15	Slight	Moderate	Moderately Suited	Wind Erosion
MTM97300-K1	1030D	29	2-15	Slight	Slight	Moderately Suited	Water Erosion Wind Erosion Sodium Content
	1251E	597	8-35	Severe	Moderate	Poorly Suited	Water Erosion
	1332C	17	0-8	Slight	Slight	Poorly Suited	Sodium Content
	1441D	6	2-15	Slight	Slight	Well Suited	-
	1972F	339	8-45	Severe	Moderate	Poorly Suited	Water Erosion Wind Erosion Droughtiness
	332B	71	0-4	Slight	Slight	Well Suited	-
	561B	16	0-4	Slight	Slight	Well Suited	-

MTM97300-K2	1030D	178	2-15	Moderate	Moderate	Moderately Suited	Water Erosion Wind Erosion Sodium Content
	1090B	136	0-4	Slight	Slight	Moderately Suited	Wind Erosion Sodium Content
	1251E	526	8-35	Severe	Moderate	Poorly Suited	Water Erosion
	1332C	6	0-8	Slight	Slight	Poorly Suited	Sodium Content
	1971F	35	25-70	Severe	Moderate	Poorly Suited	Water Erosion
	561B	28	0-4	Slight	Slight	Well Suited	-
	563C	28	2-8	Slight	Slight	Well Suited	-
	564C	14	2-8	Slight	Slight	Well Suited	-
MTM97300-K5	33B	151	0-4	Slight	Slight	Well Suited	-
	56B	169	0-4	Slight	Slight	Well Suited	-
MTM97300-PF	811A	1	0-2	Slight	Slight	Well Suited	-
MTM97300-PE	60A	10	0-2	Slight	Slight	Well Suited	-
	811A	15	0-2	Slight	Slight	Well Suited	-
MTM97300-PD	811A	21	0-2	Slight	Slight	Well Suited	-
MTM97300-RL	811A	11	0-2	Slight	Slight	Well Suited	-

1. Approximate acres of each MU ≥ 5 acres in size within the lease parcel with the exception of Lease MTM97300-NZ. Approximate acres based on GIS calculations.
2. The water erosion hazard for bare, non-compacted, soil is estimated by using the formula: Water Erosion Hazard = Kw factor x Representative Value (RV) Slope. The soil erodibility factor (Kw) quantifies soil detachment by runoff and raindrop impact. This erodibility factor is an index used to predict the long-term average soil loss, from sheet and rill erosion. The Kw factor applies to the whole soil, which includes rock fragments. Kw is based primarily on percentage of silt, sand, and organic matter, soil structure, saturated hydraulic conductivity, and rock fragments (USDA-NRCS, 2010). Representative Value (RV) Slope indicates the expected slope value for a given MU (USDA-NRCS, 2010).
3. The wind erosion hazard is estimated from the Wind erosion Index (WEI). The WEI is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. This index is divided into three rating classes: slight (0, 38, 48, 56), moderate (86), and severe (134, 160, 180, 220, 250, 310) (USDA-NRCS, 2010).
4. Vulnerability to degradation is a function of resistance to degradation. Resistance to degradation of a rangeland or woodland site is a measure of its ability to function without change throughout a disturbance. The magnitude of decline in the capacity to function determines the degree of resistance to change. Resistance to degradation thus could be described as an areas buffering capacity. This depends upon soil type, vegetation, climate, land use, disturbance regime, temporal and spatial scales. The disturbance regime determines the type of stresses placed upon the soil, vegetation, and wildlife components of the site. Thus, soil factors of vulnerability to degradation will vary based upon the disturbance regime for a particular site. The Hazard to site degradation ratings represent the soil factors that dominate these processes. Factors for vulnerability to site degradation include relative risk of water and wind erosion, salinization, sodification, organic matter and nutrient depletion and/or redistribution, loss of adequate rooting depth to maintain desired plant communities. Dynamic soil properties which vary with time, e.g. microbial biomass/diversity and carbon/nitrogen ratio, are not used since they are not contained within STATSGO or SSURGO databases. This rating should be used with the objective to protect vulnerable sites from the type of degradation that would result in accelerated erosion, reduction in water and air quality, invasion by annual grasses or noxious weeds, and other large scale potential natural plant community conversions. When degradation of soil and natural plant community characteristics goes beyond the threshold for the ecological site, the ecological site characteristics cannot be restored without intensive inputs of energy (USDA-NRCS, 2010).
5. If a Soil Map Unit (SMU) has a severe or poorly suited rating then the entire SMU is rated severe. However, there may be areas within the SMU that could have a slight, moderate, or well suited rating. For example, SMU 1251E has a severe erosion hazard and poorly suited reclamation rating. Slopes 22% and greater would have a severe erosion hazard and poorly suited reclamation rating but slopes less than 22% would have a slight/well or moderate rating. The opposite could be true for an SMU with a slight/well or moderate rating. There could be areas within the SMU with a severe or poorly suited rating.

Appendix D: National Wetland Inventory Data, National Hydrography Dataset, and Geologic Map Information for Lease Area Parcels. (Source: USFWS, USGS & EPA, and MBMG).

<u>Parcel</u>	<u>Location Description</u>	<u>National Wetland Inventory</u>	<u>National Hydrography Dataset</u>	<u>MTBMG Geologic Map</u>
MTM 97300- KL	T.33N., R.26E., sec 1, L1&L2&L3&L4	There are 5 wetlands present (2=PEMA, 2=PEMC, 1=PABFh) that cover 7.36% of the area (0.2%=PEMA, 0.46%=PEMC, 6.69%=PABFh).	0.39 miles of an unnamed tributary of an Interior Drainage flows in T.33N., R.26E., sec 1, L2&L3&L4.	Kb
	T.33N., R.26E., sec 1, S2N2	There are 6 wetlands present (3=PEMA, 3=PEMC) that cover 6.42% of the area (3.88%=PEMA, 2.54%=PEMC).	0.27 miles of an unnamed tributary of an Interior Drainage flows through T.33N., R.26E., sec 1, SWNW. Another unnamed tributary of an Interior Drainage flows through T.33N., R.26E., sec 1, S2NE for 0.45 miles.	Kb
	T.33N., R.26E., sec 3, S2NE	There are 2 wetlands (PEMA) present that cover 4.95% of the area.	No flowlines present.	Kb & Qal
	T.33N., R.26E., sec 3, SE	There are 6 wetlands present (3=PEMA, 3=PEMC) that cover 10.73% of the area (0.4%=PEMA, 10.33%=PEMC).	0.18 miles of an unnamed tributary of an Interior Drainage flows through T.33N., R.26E., sec 3, SESE.	Kb & Qal
	T.33N., R.26E., sec 10, N2	There are 6 wetlands present (3=PEMA, 2=PEMC, 1=PABFh) that cover 8.6% of the area (0.59%=PEMA, 7.65%=PEMC, 0.36%=PABFh).	0.09 miles of the headwaters of an unnamed tributary of Frey Coulee flows in T.33N., R.26E., sec 3, NWNW. 0.99 miles of the headwaters of an unnamed tributary of an Interior Drainage flows through T.33N., R.26E., sec 3, S2N2.	Kb & Qal
	T.33N., R.26E., sec 10, E2SW	There are 2 contiguous wetlands present (1=PEMA, 1=PEMC) that cover 14.91% of the area (3.39%=PEMA, 11.52%=PEMC).	0.26 miles of the headwaters of an unnamed tributary of an Interior Drainage flows through T.33N., R.26E., sec 10, NESW. Another branch of an unnamed tributary of an Interior Drainage flows for 0.26 miles through T.33N., R.26E., sec 10, E2SW.	Kb & Qal
	T.33N., R.26E., sec 10, W2SE	There are 2 contiguous wetlands present (1=PEMA, 1=PEMC) that cover 42.68% of the area (2.51%=PEMA, 40.18%=PEMC).	0.12 miles of an unnamed tributary of an Interior Drainage flows through T.33N., R.26E., sec 10, NWSE before draining into another unnamed tributary of an Interior Drainage in T.33N., R.26E., sec 10, NWSE that is 0.27 miles in length.	Kb & Qal
	T.33N., R.26E., sec 12, S2SE	There are 3 wetlands present (2=PEMA, 1=PEMC) that cover 6.59% of the area (2.9%=PEMA, 3.68%=PEMC).	No flowlines present.	Kb
	T.33N., R.26E., sec 13, E2	There are 8 wetlands present (6=PEMA, 1=PEMC, 1=PEM/ABFh) that cover 11.89% of the area (1.54%=PEMA, 0.46%=PEMC, 9.89%=PEM/ABFh).	The North Fork of Dodson Creek flows in T.33N., R.26E., sec 13, S2SE for a distance of 0.37 miles. Meanwhile there are four unnamed tributaries to the North Fork of Dodson Creek which flow for a combined total of 1.27 miles in T.33N., R.26E., sec 13, E2.	Kb & Qal
	T.33N., R.26E., sec 13, S2SW	There are 2 wetlands present (1=PEMC, 1=PEM/ABFh) that cover 9.40% of the area	An unnamed tributary to the North Fork of Dodson Creek flows in T.33N., R.26E., sec 13, SWSW for a distance of 0.07 miles.	Kb & Qal

		(8.7%=PEMC, 0.7%=PEM/ABFh).		
	T.33N., R.26E., sec 15, NW	No wetlands present.	0.06 miles of the headwaters of an unnamed tributary of an Interior Drainage flows through T.33N., R.26E., sec 15, NWNWNW. An unnamed tributary to the North Fork of Dodson Creek flows in T.33N., R.26E., sec 15, NENW for a distance of 0.26 miles. Another unnamed tributary to the North Fork of Dodson Creek flows in T.33N., R.26E., sec 15, SENW for a distance of 0.26 miles.	Kb
	T.33N., R.26E., sec 22, W2SW	There are 5 wetlands present (2=PEMA, 3=PEMC; 1 PEMA and 1 PEMC are contiguous wetlands) that cover 22.71% of the area (1%=PEMA, 21.71%=PEMC).	No flowlines present.	Kb
	T.33N., R.26E., sec 23, E2	There are 14 wetlands present (11=PEMA, 2=PEMC, 1=PEM/ABFh) that cover 9.36% of the area (1.74%=PEMA, 0.38%=PEMC, 7.24%=PEM/ABFh).	The North Fork of Dodson Creek flows in T.33N., R.26E., sec 24, NE for a distance of 0.69 miles. The headwaters of an unnamed tributary to the North Fork of Dodson Creek flows in T.33N., R.26E., sec 23, E2 for a distance of 0.66 miles before draining into the North Fork of Dodson Creek.	Kb & Qal
MTM 97300- KM	T.33N., R.26E., sec 3, L3&L4	There are 3 wetlands (PEMA) present that cover 3.35% of the area.	No flowlines present.	Kb
	T.33N., R.26E., sec 3, S2NW	There is 1 wetland (PEMA) present that covers 5.5% of the area.	0.06 miles of an unnamed tributary of Frey Coulee flows in T.33N., R.26E., sec 3, E2S2NW.	Kb
	T.33N., R.26E., sec 3, SW	There are 2 wetlands present (1=PEMA, 1=PEMC) that cover 19.75% of the area (0.61%=PEMA, 19.14%=PEMC).	0.19 miles of an unnamed tributary of Frey Coulee flows in T.33N., R.26E., sec 3, SWSW.	Kb & Qal
	T.33N., R.26E., sec 14, N2	There are 19 wetlands present (17=PEMA, 2=PEMC) that cover 10.72% of the area (4.83%=PEMA, 5.89%=PEMC).	0.35 miles of the headwaters of an unnamed tributary of Dodson Creek flows in T.33N., R.26E., sec 14, W2NW.	Kb
	T.33N., R.26E., sec 25, SENE	There are 2 wetlands present (1=PEMA, 1=PEMC) that cover 20.56% of the area (6.71%=PEMA, 13.85%=PEMC).	0.13 miles of the headwaters of an unnamed tributary of Dodson Creek flows in T.33N., R.26E., sec 25, NESENE.	Kb
MTM 97300- KP	T.33N., R.26E., sec 24, N2N2	There are 4 wetlands present (3=PEMC, 1=PEM/ABFh) that cover 30.94% of the area (1.86%=PEMC, 29.07%=PEM/ABFh).	The North Fork of Dodson Creek flows in T.33N., R.26E., sec 24, N2N2 for a distance of 0.89 miles. An unnamed tributary to the North Fork of Dodson Creek flows in T.33N., R.26E., sec 24, NWNWNW for a distance of 0.13 miles before draining into the North Fork of Dodson Creek.	Kb & Qal
	T.33N., R.26E., sec 24, S2NW	There is 1 wetland (PEMA) present that covers 0.4% of the area.	An unnamed tributary to the North Fork of Dodson Creek flows in T.33N., R.26E., sec 24, SENW for a distance of 0.26 miles.	Kb
	T.33N., R.26E., sec	There are 5 wetlands present (3=PEMA,	The headwaters of an unnamed tributary to the North Fork of Dodson	Kb

	24, SW	2=PEMC) that cover 10.68% of the area (0.28%=PEMA, 10.41%=PEMC).	Creek flows in T.33N., R.26E., sec 24, SW for a distance of 0.36 miles.	
	T.33N., R.26E., sec 25, SWNE	There are 4 wetlands present (3=PEMA, 1=PEMC) that cover 5.63% of the area (4.53%=PEMA, 1.1%=PEMC).	No flowlines present.	Kb
	T.33N., R.26E., sec 25, NW	There are 9 wetlands present (6=PEMA, 3=PEMC) that cover 15.34% of the area (2.13%=PEMA, 13.2%=PEMC).	No flowlines present.	Kb
	T.33N., R.26E., sec 25, S2	There are 16 wetlands present (11=PEMA, 5=PEMC) that cover 10.52% of the area (5.72%=PEMA, 4.8%=PEMC).	The headwaters of an unnamed tributary to Dodson Creek flows in T.33N., R.26E., sec 25, SESE for a distance of 0.17 miles.	Kb
	T.33N., R.26E., sec 26, SENE	There are 3 wetlands (PEMA) present that cover 8.63% of the area.	No flowlines present.	Kb
	T.33N., R.26E., sec 26, E2SE	There are 6 wetlands (PEMA) present that cover 1.41% of the area.	No flowlines present.	Kb
	T.33N., R.26E., sec 27, W2NW	There are 5 wetlands present (2=PEMA, 3=PEMC) that cover 18.43% of the area (0.64%=PEMA, 17.79%=PEMC).	No flowlines present.	Kb
	T.33N., R.26E., sec 34, W2SW	There are 6 wetlands (PEMA) present that cover 5.54% of the area.	No flowlines present.	Kb
	T.33N., R.26E., sec 35, E2E2	There are 5 wetlands present (2=PEMA, 3=PEMC, 1=PABFh; 1 PEMA and 1 PEMC are contiguous wetlands) that cover 7.39% of the area (4.24%=PEMA, 1.24%=PEMC, 1.91%=PABFh).	The headwaters of an unnamed tributary to Dodson Creek flows in T.33N., R.26E., sec 35, E2E2 for a distance of 0.45 miles.	Kb
	T.33N., R.26E., sec 36, W2E2	There are 6 wetlands present (4=PEMA, 1=PEMC, 1=PABFh) that cover 5.29% of the area (1.31%=PEMA, 0.73%=PEMC, 3.25%=PABFh).	An unnamed tributary to Dodson Creek flows in T.33N., R.26E., sec 36, W2E2 for a distance of 0.3 miles. Another unnamed tributary to Dodson Creek flows in T.33N., R.26E., sec 36, NWNE for a distance of 0.32 miles.	Kb & Qal
	T.33N., R.26E., sec 36, W2	There are 7 wetlands present (4=PEMA, 3=PEMC) that cover 6.37% of the area (2.82%=PEMA, 3.55%=PEMC).	The headwaters of an unnamed tributary to Dodson Creek flows in T.33N., R.26E., sec 36, N2N2NENW for a distance of 0.09 miles. Another unnamed tributary to Dodson Creek flows in T.33N., R.26E., sec 36, N2SW for a distance of 0.57 miles.	Kb
MTM 97300-KW	T.34N., R.26E., sec 1, NESE	No wetlands present.	An unnamed tributary to Black Coulee flows in T.34N., R.26E., sec 1, NESE for a distance of 0.29 miles.	Kb & Tsg
MTM	T.33N., R.27E., sec 1,	There are 2 wetlands (PEMC) present that	There is a 0.22 mile long reach of Alkali Coulee that flows in T.33N.,	Kb & Qal

97300-KQ	L1&L2&L3&L4	cover 0.63% of the area.	R.27E., sec 1, N2L4. Joiner Coulee flows through T.33N., R.27E., sec 1, L4 for a distance of 0.42 miles. There are a total of 1.69 miles of unnamed tributaries of Joiner Coulee in T.33N., R.27E., sec 1, L1&L2&L3&L4. This total length is composed of 9 unnamed tributaries of Joiner Coulee distributed throughout all four Lots.	
	T.33N., R.27E., sec 1, S2N2	There are 2 wetlands present (1=PEMC, 1=PABFh) that cover 0.73% of the area (0.15%=PEMC, 0.58%=PABFh).	There are a total of 1.71 miles of unnamed tributaries of Joiner Coulee in location T.33N., R.27E., sec 1, S2N2. This total length is composed of 1 unnamed main stem and 7 unnamed branch tributaries of Joiner Coulee.	Kb & Qal
	T.33N., R.27E., sec 1, S2	There is 1 wetland (PABFh) present that covers 0.51% of the area.	There are a total of 3.69 miles of unnamed tributaries of Joiner Coulee in location T.33N., R.27E., sec 1, S2. This total length is composed of 2 main stems and 13 unnamed branch tributaries of Joiner Coulee.	Kb & Qal
	T.33N., R.27E., sec 2, L1&L2&L3&L4	No wetlands present.	The main drainage of Alkali Coulee flows for a distance of 0.75 miles in T.33N., R.27E., sec 2, L1&L3&L4. There are also 3 unnamed tributaries of Alkali Coulee that flow in T.33N., R.27E., sec 2, L1&L2&L3&L4 for a distance of 1.19 miles. An unnamed tributary of Joiner Coulee is present in T.33N., R.27E., sec 2, SESEL1 and flows for a distance of nearly 0.07 miles.	Kb & Qal
	T.33N., R.27E., sec 2, S2N2	There is 1 wetland (PEMC) present that covers 0.34% of the area.	There is a 0.62 mile long reach of an unnamed tributary of Joiner Coulee in T.33N., R.27E., sec 2, S2NW. An additional unnamed tributary of Joiner Coulee flows across T.33N., R.27E., sec 2, S2N2 for a distance of 0.82 miles. A 0.4 mile long reach of Joiner Coulee crosses T.33N., R.27E., sec 2, SENE. There are 2 unnamed tributaries of Joiner Coulee that flow for a summed total of 0.37 miles in T.33N., R.27E., sec 2, SENE.	Kb & Qal
	T.33N., R.27E., sec 2, S2	There are 4 wetlands present (3=PEMA, 1=PABFh) that cover 0.69% of the area (0.2%=PEMA, 0.49%=PABFh).	There are a total of 3.65 miles of unnamed tributaries of Joiner Coulee in location T.33N., R.27E., sec 2, S2. This total length is composed of 2 unnamed main stems and 10 unnamed branch tributaries of Joiner Coulee. A 0.77 mile long reach of Joiner Coulee flows through T.33N., R.27E., sec 2, E2SE.	Kb & Qal
	T.33N., R.27E., sec 3, L1&L2&L3&L4	No wetlands present.	There are a total of 1.33 miles of unnamed tributaries of Alkali Coulee in T.33N., R.27E., sec 3, Lots 1-4. This total length is composed of 1 unnamed main stem and 3 unnamed branch tributaries of Alkali Coulee.	Kb & Qal
	T.33N., R.27E., sec 3, S2N2	There is 1 one wetland present (PEMC) in T.33N., R.27E., sec 3, S2SENE that covers 0.03% of the area.	There are a total of 1.27 miles of unnamed tributaries of Alkali Coulee in T.33N., R.27E., sec 3, S2N2. This total length is composed of 1 unnamed main stem and 4 unnamed branch tributaries of Alkali Coulee. There is a 0.08 mile long reach of an unnamed tributary of Joiner Coulee in T.33N., R.27E., sec 3, SENE.	Kb & Qal
	T.33N., R.27E., sec 3, S2	There are 11 wetlands present (5=PEMA, 6=PEMC) that cover 3.05% of the area	There are three branches totaling 0.34 miles of unnamed tributaries of Joiner Coulee in T.33N., R.27E., sec 3, E2SE. There are 4 branches	Kb & Qal

		(0.43%=PEMA, 2.62%=PEMC).	totaling 1.07 miles of unnamed tributaries of Alkali Coulee in T.33N., R.27E., sec 3, S2.	
	T.33N., R.27E., sec 8, NW	There are 8 wetlands present (4=PEMA, 4=PEMC) that cover 5.35% of the area (2.13%=PEMA, 3.22%=PEMC).	No flowlines present.	Kb
	T.33N., R.27E., sec 9, NW	There are 3 wetlands (PEMC) present that cover 22.93% of the area.	There are a total of 0.92 miles of unnamed tributaries of an Interior Drainage in T.33N., R.27E., sec 9, NW.	Kb
MTM 97300- KR	T.33N., R.27E., sec 4, L2&L3&L4	There is 1 wetland (PEMA) present that covers 0.19% of the area.	There are 5 branches totaling 0.98 miles of unnamed tributaries of Alkali Coulee in T.33N., R.27E., sec 4, L2&L3&L4.	Kb & Qal
	T.33N., R.27E., sec 4, SWNE	There are 2 wetlands present (1=PEMA, 1=PABFh) that cover 0.74% of the area (0.53%=PEMA, 0.22%=PABFh).	There are 2 branches totaling 0.35 miles of unnamed tributaries of Alkali Coulee in T.33N., R.27E., sec 4, SWNE.	Kb & Qal
	T.33N., R.27E., sec 4, S2NW	There are 2 wetlands (PABFh) present that cover 0.89% of the area.	There are 5 branches totaling 1.13 miles of unnamed tributaries of Alkali Coulee in T.33N., R.27E., sec 4, S2NW.	Kb & Qal
	T.33N., R.27E., sec 4, SW	There are 3 wetlands present (2=PEMA, 1=PEMC) that cover 1.44% of the area (0.29%=PEMA, 1.14%=PEMC).	There are 3 unnamed headwater tributaries of Alkali Coulee totaling 0.63 miles in length that flow through T.33N., R.27E., sec 4, SW.	Kb
	T.33N., R.27E., sec 4, W2SE	There are 2 wetlands (PEMC) present that cover 4.71% of the area.	There is one unnamed tributary of Alkali Coulee that flows in T.33N., R.27E., sec 4, N2SWSE for a distance of 0.28 miles.	Kb
	T.33N., R.27E., sec 5, L1	There is 1 wetland (PEMA) present that covers 0.15% of the area.	There is one unnamed tributary of Alkali Coulee that flows in T.33N., R.27E., sec 5, S2L1 for a distance of 0.21 miles.	Kb & Qal
	T.33N., R.27E., sec 9, W2NE	There are 3 wetlands (PEMC) present that cover 3.4% of the area.	There is one unnamed tributary of Alkali Coulee that flows in T.33N., R.27E., sec 9, N2NWNE for a distance of 0.1 miles.	Kb
	T.33N., R.27E., sec 18, L1&L2&L3&L4	There is 1 wetland (PABFh) present that covers 0.25% of the area.	There are 4 unnamed tributaries of the North Fork of Dodson Creek totaling 1.11 miles in length that flow through T.33N., R.27E., sec 18, L1&L2&L3&L4.	Kb
	T.33N., R.27E., sec 18, E2W2	There are 2 wetlands (PEMA) present that cover 0.21% of the area.	The headwaters of 4 unnamed tributaries of the North Fork of Dodson Creek flow through T.33N., R.27E., sec 18, E2W2 for a summed total of 1.28 miles.	Kb
T.33N., R.27E., sec 19, L1&L2&L3&L4	There are 5 wetlands present (2=PEMA, 3=PEMC, 1=L2ABFh) that cover 2.79% of the area (2.7%=PEMA, 0.07%=PEMC, 0.004%=L2ABFh).	In T.33N., R.27E., sec 19, L1, two (2) unnamed tributaries to the North Fork of Dodson Creek flow for a combined distance of 0.16 miles. The North Fork of Dodson Creek flows in T.33N., R.27E., sec 19, S2L1 for a distance of 0.3 miles. In T.33N., R.27E., sec 19, L2&L3, two (2) unnamed tributaries to Dodson Creek flow for a combined distance of 0.63 miles. In T.33N., R.27E., sec 19, L4, the headwaters of an unnamed tributary of Dodson Creek flows for a distance of 0.25 miles.	Kb	

T.33N., R.27E., sec 19, E2W2	There are 4 wetlands present (2=PABFh, 2=L2ABFh) that cover 18.38% of the area (11.79%=PABFh, 6.58%=L2ABFh).	The North Fork of Dodson Creek flows in T.33N., R.27E., sec 19, S2NENW for a distance of 0.32 miles. An unnamed tributary to the North Fork of Dodson Creek flows for 0.14 miles in T.33N., R.27E., sec 19, W2NENW. Three (3) unnamed tributaries to Dodson Creek flow for a combined distance of 0.92 miles in T.33N., R.27E., sec 19, E2SW.	Kb & Qal
T.33N., R.27E., sec 20, E2SW	There are 3 wetlands present (2=PEMA, 1=PEMC; 1 PEMA and 1 PEMC are contiguous wetlands) that cover 2.26% of the area (1.16%=PEMA, 1.1%=PEMC).	The headwaters of an unnamed tributary to Dodson Creek flows in T.33N., R.27E., sec 20, W2E2SW for a distance of 0.13 miles.	Kb
T.33N., R.27E., sec 20, W2SE	There are 5 wetlands (PEMA) present that cover 3.57% of the area.	An unnamed tributary to Dodson Creek flows in T.33N., R.27E., sec 20, SWSE for a distance of 0.34 miles.	Kb
T.33N., R.27E., sec 27, SWSW	No wetlands present.	An unnamed tributary to the North Fork of Dodson Creek flows in T.33N., R.27E., sec 27, N2N2SWSW for a distance of nearly 0.1 miles. Another unnamed tributary to the North Fork of Dodson Creek flows in T.33N., R.27E., sec 27, SESWSW for a distance of 0.15 miles.	Kb
T.33N., R.27E., sec 28, S2SW	There are 2 wetlands present (1=PEMA, 1=PEMC) that cover 7.41% of the area (0.25%=PEMA, 7.16%=PEMC).	An unnamed tributary to Dodson Creek flows in T.33N., R.27E., sec 28, S2SW for a distance of 0.49 miles.	Kb
T.33N., R.27E., sec 29, NW	There are 8 wetlands present (2=PEMA, 5=PEMC, 1=PABFh) that cover 6.97% of the area (1.76%=PEMA, 4.68%=PEMC, 0.54%=PABFh).	An unnamed tributary to Dodson Creek flows in T.33N., R.27E., sec 29, S2NW for a distance of 0.56 miles. An unnamed tributary to an Interior Drainage flows for 0.03 miles in T.33N., R.27E., sec 29, NENENW.	Kb & Qal
T.33N., R.27E., sec 30, L3&L4	There are 2 wetlands present (1=PEMA, 1=PEMC) that cover 8.33% of the area (4.53%=PEMA, 3.79%=PEMC).	An unnamed tributary to Dodson Creek flows in T.33N., R.27E., sec 30, E2SEL4 for a distance of 0.03 miles.	Kb
T.33N., R.27E., sec 31, L1&L2&L3&L4	There are 3 wetlands present (2=PEMC, 1=PABFh) that cover 18.32% of the area (16.04%=PEMC, 2.27%=PABFh).	There are 4 unnamed tributaries to Dodson Creek totaling 1.65 miles in length that flow through T.33N., R.27E., sec 31, L1&L2&L3&L4.	Kb & Qal
T.33N., R.27E., sec 31, E2	There are 8 wetlands present (3=PEMA, 1=PEMC, 1=PABFh, 1=PABFx, 1=contiguous PABFh & PEMCh, 1=contiguous PEMC & PEMA) that cover a total of 6.27% of the area (1.84%=PEMA, 0.78%=PEMC, 1.14%=PABFh, 2.39%=PEMCh, 0.12%=PABFx)	An unnamed tributary of Dodson Creek flows for 0.6 miles in the T.33N., R.27E., sec 31, N2NE. Two (2) unnamed headwater tributaries to Dodson Creek begin in T.33N., R.27E., sec 31, SWNE and flow for a combined distance of 0.18 miles. Another unnamed headwater tributary to Dodson Creek flows in T.33N., R.27E., sec 31, S2SE for 0.49 miles. Two (2) additional unnamed tributary headwaters to Dodson Creek begin in T.33N., R.27E., sec 31, E2SE and flow for a combined distance of 0.2 miles.	Kb & Qal
T.33N., R.27E., sec 31, E2W2	There are 2 wetlands present (1=PEMC, 1=PEMCh) that cover 21.41% of the area	There are a total of 1.58 miles of unnamed tributaries of Dodson Coulee in location T.33N., R.27E., sec 31, E2W2. This total length is composed	Kb & Qal

		(20.9%=PEMC, 0.5%=PEMCh).	of 2 unnamed main stems and 5 unnamed branch tributaries of Dodson Coulee.	
MTM 97300- KS	T.33N., R.27E., sec 10, E2	There are 11 wetlands present (8=PEMA, 1=PABFh, 1=PUSA, 1=contiguous PEMA & PUSA) that cover a total of 1.19% of the area (0.72%=PEMA, 0.22%=PABFh, 0.25%=PUSA).	Joiner Coulee flows through T.33N., R.27E., sec 10, SE for a distance of 0.61 miles. There are a total of 8 unnamed tributaries to Joiner Coulee that flow through T.33N., R.27E., sec 10, E2 for a compiled total distance of 2.59 miles.	Kb & Qal
	T.33N., R.27E., sec 10, E2NW	There are 5 wetlands present (3=PEMA, 2=PEMC) that cover 3.21% of the area (2.75%=PEMA, 0.45%=PEMC).	Two (2) unnamed headwater tributaries to Joiner Coulee begin in T.33N., R.27E., sec 10, E2NW and flow for a combined total distance of 0.28 miles.	Kb & Qal
	T.33N., R.27E., sec 11, E2	No wetlands present.	Four (4) unnamed tributaries to Joiner Coulee flow through T.33N., R.27E., sec 11, NE for a combined total distance of 0.85 miles. Joiner Coulee flows through T.33N., R.27E., sec 11, N2NE for 0.44 miles. Nine (9) additional unnamed headwater tributaries to Joiner Coulee begin in T.33N., R.27E., sec 11, E2 and flow for a combined total distance of 2.1 miles.	Kb & Qal
	T.33N., R.27E., sec 12, NE	There is 1 wetland (PEMA) present that covers 0.01% of the area.	Two (2) unnamed headwater tributaries to Wilson Coulee begin in T.33N., R.27E., sec 12, E2NE and flow for a combined total distance of 0.71 miles. An unnamed headwater tributary to Joiner Coulee begins in T.33N., R.27E., sec 12, W2NWNE and flows for 0.22 miles.	Kb & Qal
	T.33N., R.27E., sec 12, W2	No wetlands present.	There are 10 branches of unnamed tributaries to Joiner Coulee that flow in T.33N., R.27E., sec 12, W2 for a combined total distance of 2.47 miles. The main stem of this unnamed tributary to Joiner Coulee flows in T.33N., R.27E., sec 12, W2W2 for 0.94 miles.	Kb & Qal
	T.33N., R.27E., sec 13, S2	There are 5 wetlands present (3=PEMA, 2=PABFh) that cover 2.68% of the area (0.76%=PEMA, 1.92%=PABFh).	There are 3 branches of unnamed tributaries to Joiner Coulee that flow in T.33N., R.27E., sec 13, E2SW for a combined total distance 0.49 miles. An unnamed headwater tributary to Joiner Coulee begins in T.33N., R.27E., sec 13, SW and flows for 0.56 miles before draining into a main stem. This main stem of an unnamed tributary to Joiner Coulee flows in T.33N., R.27E., sec 13, SW for 0.76 miles. In T.33N., R.27E., sec 13, SE, Wilson Coulee flows for 0.66 miles. An unnamed tributary to Wilson Coulee flows in T.33N., R.27E., sec 13, E2SE for 0.36 miles before draining into Wilson Coulee.	Kb & Qal
	T.33N., R.27E., sec 15, SW	There are 2 wetlands present (1=PEMA, 1=contiguous PABFh & PEMAh) that cover a total of 2.32% of the area (0.39%=PEMA, 0.83%=PABFh, 1.09%=PEMAh).	Six (6) unnamed tributaries to Joiner Coulee flow through T.33N., R.27E., sec 15, SW for a combined total distance of 1.29 miles. Joiner Coulee flows through T.33N., R.27E., sec 15, SW for 0.65 miles.	Kb & Qal

MTM 97300- KT	T.33N., R.27E., sec 14, SW	There are 8 wetlands present (1=PEMA, 6=PEMC, 1=contiguous PEMA & PEMC) that cover a total of 21.95% of the area (1.48%=PEMA, 20.48%=PEMC).	No flowlines present.	Kb
	T.33N., R.27E., sec 23, NW	There are 9 wetlands present (3=PEMA, 5=PEMC, 1=PABFh) that cover 5.22% of the area (1.36%=PEMA, 3.74%=PEMC, 0.12%=PABFh).	There is one unnamed lone flowline in T.33N., R.27E., sec 23, E2NENW that runs for 0.07 miles.	Kb
	T.33N., R.27E., sec 23, S2	There are 5 wetlands present (4=PEMC, 1=PABFh) that cover 10.77% of the area (10.08%=PEMC, 0.69%=PABFh).	There is one unnamed lone flowline in T.33N., R.27E., sec 23, SWSE that runs for 0.24 miles. Three (3) unnamed headwater tributaries to Joiner Coulee begin in T.33N., R.27E., sec 23, SE and flow for a combined total distance of 0.8 miles.	Kb
MTM 97300- KU	T.33N., R.27E., sec 20, E2SE	There are 7 wetlands present (6=PEMA, 1=PEMA) that cover 7.22% of the area (2.03%=PEMA, 5.19%=PEMC).	An unnamed tributary of Dodson Creek flows for 0.26 miles in T.33N., R.27E., sec 20, E2SE.	Kb
	T.33N., R.27E., sec 21, S2NE	There are 4 wetlands (PEMA) present that cover 3.65% of the area.	Three (3) unnamed headwater tributaries to Joiner Coulee begin in T.33N., R.27E., sec 21, S2NE and flow for a combined distance of 0.38 miles.	Kb & Qal
	T.33N., R.27E., sec 22, NW	There is 1 wetland (PABFh) present that covers 2.48% of the area.	An unnamed tributary to Joiner Coulee flows for 0.3 miles in T.33N., R.27E., sec 22, E2NW. Three (3) unnamed headwater tributaries to Joiner Coulee begin in T.33N., R.27E., sec 22, NW and flow for a combined distance of 1.17 miles.	Kb & Qal
	T.33N., R.27E., sec 25, SENE	There is 1 wetland (PEMC) present that covers 7.28% of the area.	No flowlines present.	Kb
	T.33N., R.27E., sec 26, NENE	No wetlands present.	No flowlines present.	Kb & Qal
	T.33N., R.27E., sec 26, SESE	No wetlands present.	No flowlines present.	Kb & Qal
	T.33N., R.27E., sec 27, NESE	There are 2 wetlands present (1=PEMA, 1=PEMC) that cover 13.75% of the area (4.91%=PEMA, 8.84%=PEMC).	No flowlines present.	Kb
	T.33N., R.27E., sec 29, NE	There are 6 wetlands present (2=PEMA, 1=PEMC, 3=PABFh) that cover 10.96% of the area (1.53%=PEMA, 7.45%=PEMC, 1.98%=PABFh).	There is one unnamed lone flowline in T.33N., R.27E., sec 29, NE that runs for 0.33 miles. There is one unnamed tributary to an Interior Drainage that begins in T.33N., R.27E., sec 29, W2W2NE and flows for 0.38 miles.	Kb & Qal
	T.33N., R.27E., sec 30, L1&L2	There is 1 wetland (PEMA) present that covers 0.86% of the area.	An unnamed tributary to the North Fork of Dodson Creek flows in T.33N., R.27E., sec 30, L1&L2 for 0.34 miles.	Kb

	T.33N., R.27E., sec 30, E2SE	There are 2 wetlands present (1=PABFh, 1=contiguous PABFh & PEMCh) that cover a total of 4.61% of the area (3.94%=PABFh, 0.67%=PEMCh).	Two (2) unnamed tributaries to Dodson Creek flow through T.33N., R.27E., sec 30, E2SE for a combined total distance of 0.63 miles.	Kb & Qal
MTM 97300-KV	T.33N., R.27E., sec 33, ALL	There are 8 wetlands present (3=PEMA, 2=PEMC, 1=PEMCh, 1=PABFx, 1=contiguous PEMCh & PEMC & PABFx) that cover a total of 8.58% of the area (0.3%=PEMA, 1.22%=PEMC, 4.13%=PEMCh, 2.93%=PABFx).	There are a total of 11 branches of unnamed tributaries to the North Fork of Dodson Creek in T.33N., R.27E., sec 33 which flow into a main stem. The main stem of this unnamed tributary to the North Fork of Dodson Creek begins below the BLM's stockwater reservoir (PR-98) in T.33N., R.27E., sec 33, SENW and meanders for 1.59 miles before flowing out of Section 33 at the southern edge. The totaled length of all 11 branches of unnamed tributaries to the North Fork of Dodson Creek in T.33N., R.27E., sec 33 is 4.70 miles.	Kb & Qal
MTM 97300-KX	T.34N., R.27E., sec 5, NWSW	No wetlands present.	Two (2) unnamed headwater tributaries to Coburg Coulee begin in T.34N., R.27E., sec 5, NWSW and flow from the west to the east for a combined distance of 0.53 miles.	Kb & Qls & Tsg
	T.34N., R.27E., sec 6, SWNE	No wetlands present.	Reservoir Coulee flows from south to north for 0.33 miles in T.34N., R.27E., sec 6, W2SWNE. An unnamed tributary to Reservoir Coulee flows from east to west for 0.16 miles and drains into Reservoir Coulee in T.34N., R.27E., sec 6, N2SWNE	Qls & Qal & Kb
	T.34N., R.27E., sec 6, E2SE	No wetlands present.	There are 3 branches of unnamed headwater tributaries to Reservoir Coulee that flow in T.34N., R.27E., sec 6, E2SE for a combined total distance of 0.70 miles. There are 3 branches of unnamed headwater tributaries to Coburg Coulee that flow in T.34N., R.27E., sec 6, E2SE for a combined total distance of 0.26 miles.	Kb & Tsg & Qls
	T.34N., R.27E., sec 7, NWNE	No wetlands present.	There are 2 branches of unnamed headwater tributaries to Reservoir Coulee that flow in T.34N., R.27E., sec 7, NWNE for a combined total distance of 0.28 miles. There are 2 branches of unnamed headwater tributaries to Coburg Coulee that flow in T.34N., R.27E., sec 7, E2NWNE for a combined total distance of 0.13 miles.	Kb & Tsg
	T.34N., R.27E., sec 8, N2	There is 1 wetland (PABFh) present that covers 0.24% of the area.	Coburg Coulee flows through T.34N., R.27E., sec 8, NW for 1.1 miles. There are 14 branches of unnamed tributaries to Coburg Coulee that flow in T.34N., R.27E., sec 8, N2 for a combined total distance of 2.92 miles. There are 3 branches of unnamed tributaries to Dry Coulee that flow in T.34N., R.27E., sec 8, NW for a combined total distance 0.81 miles.	Kb & Qal & Qls & Tsg
	T.34N., R.27E., sec 8, N2S2	No wetlands present.	Coburg Coulee flows through T.34N., R.27E., sec 8, NWNWSW for 0.08 miles. There are 4 branches of unnamed tributaries to Coburg Coulee that flow in T.34N., R.27E., sec 8, N2SW for a combined total distance of	Kb & Qal & Qls & Tsg

			1.02 miles. Dry Coulee flows through T.34N., R.27E., sec 8, SENESE for 0.07 miles. There are 2 branches of unnamed tributaries to Dry Coulee that flow in T.34N., R.27E., sec 8, N2S2 for a combined total distance 0.65 miles.	
	T.34N., R.27E., sec 8, S2SE	No wetlands present.	Dry Coulee flows through T.34N., R.27E., sec 8, SESE for 0.4 miles. There are 3 branches of unnamed tributaries to Dry Coulee that flow in T.34N., R.27E., sec 8, S2SE for a combined total distance 0.61 miles.	Kb & Qls & Tsg
MTM 97300- KH	T.33N., R.28E., sec 1, S2S2	No wetlands present.	There are 4 branches of unnamed tributaries to Cottonwood Creek that flow in T.33N., R.28E., sec 1, S2S2 for a combined total distance 1.21 miles.	Kb & Tsg & Kjr
	T.33N., R.28E., sec 2, L3&L4	No wetlands present.	Lambing Coulee flows through T.33N., R.28E., sec 2, L4 for 0.37 miles. There is an unnamed tributary to Lambing Coulee that flows for 0.31 miles and drains into Lambing Coulee in T.33N., R.28E., sec 2, L3&L4. Another unnamed tributary to Lambing Coulee flows for 0.06 miles in T.33N., R.28E., sec 2, S2S2L4.	Kb & Qal & Kjr
	T.33N., R.28E., sec 2, S2NW	No wetlands present.	Lambing Coulee flows through T.33N., R.28E., sec 2, S2NW for 0.56 miles. There is an unnamed tributary to Lambing Coulee that flows for 0.21 miles and drains into Lambing Coulee in T.33N., R.28E., sec 2, SWNW. Another unnamed tributary to Lambing Coulee flows for 0.27 miles and drains into Lambing Coulee in T.33N., R.28E., sec 2, SENW.	Kb & Qal & Kjr
	T.33N., R.28E., sec 2, S2	No wetlands present.	Lambing Coulee flows through T.33N., R.28E., sec 2, S2 for 1.38 miles. An unnamed tributary to Lambing Coulee flows for 0.46 miles and drains into Lambing Coulee in T.33N., R.28E., sec 2, SE.	Kb & Qal & Kjr
	T.33N., R.28E., sec 3, L1&L2&L3&L4	There is 1 wetland (PEMA) present that covers 1.63% of the area.	There are 2 branches of unnamed tributaries to Joiner Coulee that flow in T.33N., R.28E., sec 3, L4 for a combined total distance of 0.42 miles. An unnamed tributary to Lambing Coulee flows for 0.25 miles in T.33N., R.28E., sec 3, L2&L1.	Kb & Kjr
	T.33N., R.28E., sec 3, S2N2	No wetlands present.	An unnamed tributary to Wilson Coulee flows for 0.54 miles in T.33N., R.28E., sec 3, S2NW. An unnamed tributary to Lambing Coulee flows for 0.39 miles in T.33N., R.28E., sec 3, S2NE.	Kb & Kjr
	T.33N., R.28E., sec 3, N2SW	No wetlands present.	No flowlines present.	Kb & Kjr & Qal
	T.33N., R.28E., sec 3, SESW	No wetlands present.	The headwaters of an unnamed tributary to Cottonwood Creek begins and flows for 0.19 miles in T.33N., R.28E., sec 3, SESW.	Kb & Kjr
	T.33N., R.28E., sec 3, SE	No wetlands present.	An unnamed tributary to Lambing Coulee flows for 0.02 miles in T.33N., R.28E., sec 3, NWNESE. Two branches of unnamed headwater tributaries to Cottonwood Creek begin and flow for a combined total distance of 0.54 miles in T.33N., R.28E., sec 3, S2SE.	Kb & Kjr

T.33N., R.28E., sec 4, L1&L2&L3&L4	There are 2 wetlands present (1=PEMA, 1=PEMCh) that cover 9.23% of the area (8.32%=PEMA, 0.91%=PEMCh).	Joiner Coulee flows for 0.42 miles in T.33N., R.28E., sec 4, L3. Three branches of unnamed tributaries to Joiner Coulee flow for a combined total distance of 0.88 miles in T.33N., R.28E., sec 4, L1&L2.	Kb & Kjr & Qal
T.33N., R.28E., sec 4, S2N2	There are 4 wetlands present (1=PEMA, 2=PEMC, 1=PABFh) that cover 0.71% of the area (0.24%=PEMA, 0.28%=PEMC, 0.19%=PABFh).	One unnamed tributary to Wilson Coulee flows for 0.29 miles in T.33N., R.28E., sec 4, S2S2NW. A second unnamed tributary to Wilson Coulee flows for 0.14 miles in T.33N., R.28E., sec 4, S2S2NE. There are two unnamed tributaries to Joiner Coulee that flow in T.33N., R.28E., sec 4, SWNE for a combined total distance of 0.2 miles. Joiner Coulee flows for 0.6 miles in T.33N., R.28E., sec 4, S2N2.	Kb & Kjr & Qal
T.33N., R.28E., sec 4, W2SW	There is 1 wetland (PEMC) present that covers 0.34% of the area.	A tributary to Wilson Coulee flows for 0.06 miles in T.33N., R.28E., sec 4, E2E2NWSE. Wilson Coulee flows for 0.35 miles in T.33N., R.28E., sec 4, SWSE. Joiner Coulee flows for 0.38 miles in T.33N., R.28E., sec 4, W2SE.	Kb & Kjr & Qal
T.33N., R.28E., sec 5, L1&L2&L3&L4	No wetlands present.	No flowlines present.	Kb
T.33N., R.28E., sec 5, S2N2	No wetlands present.	A branch of an unnamed tributary to Wilson Coulee flows for 0.16 miles in T.33N., R.28E., sec 5, SWNW. A second branch of an unnamed tributary to Wilson Coulee flows for 0.35 miles in T.33N., R.28E., sec 5, S2N2. An additional unnamed tributary to Wilson Coulee flows for 0.27 miles in T.33N., R.28E., sec 5, SENE.	Kb
T.33N., R.28E., sec 5, S2	No wetlands present.	A branch of an unnamed tributary to Wilson Coulee flows for 0.87 miles in T.33N., R.28E., sec 5, S2. A second branch of an unnamed tributary to Wilson Coulee flows for 0.37 miles in T.33N., R.28E., sec 5, S2. Wilson Coulee flows for 0.28 miles in T.33N., R.28E., sec 5, S2SESE. An additional unnamed tributary to Wilson Coulee flows for 0.01 miles in T.33N., R.28E., sec 5, SWSESE.	Kb & Kjr & Qal
MTM 97300-KI			
T.33N., R.28E., sec 8, S2	There are 2 wetlands present (1=PEMA, 1=PEMC) that cover 1.41% of the area (0.13%=PEMA, 1.28%=PEMC).	An unnamed tributary to Cottonwood Creek flows for 0.28 miles in T.33N., R.28E., sec 8, E2SESE. A branch of an unnamed tributary to Wilson Coulee flows for 0.06 miles in T.33N., R.28E., sec 8, SWSWSWSW. An unnamed tributary to Wilson Coulee flows for 0.11 miles in T.33N., R.28E., sec 8, N2NESW. An additional unnamed tributary to Wilson Coulee flows for 0.35 miles in T.33N., R.28E., sec 8, E2NWSE.	Kb & Qal
T.33N., R.28E., sec 9, NWNW	No wetlands present.	The headwaters of an unnamed tributary to Cottonwood Creek begins and flows for 0.24 miles in T.33N., R.28E., sec 9, NWNW.	Kb & Kjr
T.33N., R.28E., sec 9, S2NW	No wetlands present.	No flowlines present.	Kb & Kjr
T.33N., R.28E., sec 9, SW	There is 1 wetland (PEMC) present that covers 0.58% of the area.	There are 4 branches of unnamed tributaries to Cottonwood Creek that flow in T.33N., R.28E., sec 9, SW for a combined total distance of 1.42	Kb & Kjr

		miles.	
T.33N., R.28E., sec 9, W2SE	No wetlands present.	There are 4 branches of unnamed tributaries to Cottonwood Creek that flow in T.33N., R.28E., sec 9, W2SE for a combined total distance of 0.86 miles.	Kb & Kjr
T.33N., R.28E., sec 10, S2	No wetlands present.	Cottonwood Creek flows for 1.51 miles in T.33N., R.28E., sec 10, N2S2. Three branches of unnamed tributaries to Cottonwood Creek flow for a combined total distance of 1.37 miles in T.33N., R.28E., sec 10, SE. Two unnamed tributaries to Cottonwood Creek flow in T.33N., R.28E., sec 10, SW for a compiled distance of 0.85 miles. The headwaters of a branch of an unnamed tributary to Cottonwood Creek begins and flows for 0.13 miles in T.33N., R.28E., sec 10, W2SWSW. Lastly, three small inclusions of unnamed tributaries of Cottonwood Creek flow for a summed distance of 0.13 miles before draining into Cottonwood Creek in T.33N., R.28E., sec 10, N2N2S2.	Kb & Kjr & Qal
T.33N., R.28E., sec 12, NE	No wetlands present.	An unnamed tributary to Cottonwood Creek flows for 0.1 miles in T.33N., R.28E., sec 12, NWNWNE. An additional unnamed tributary to Cottonwood Creek flows for 0.53 miles in T.33N., R.28E., sec 12, N2NE. A branch of an unnamed tributary to Cottonwood Creek flows for 0.25 miles in T.33N., R.28E., sec 12, SENE. The headwaters of an unnamed tributary to Cottonwood Creek begins and flows for 0.32 miles in T.33N., R.28E., sec 12, SWNE.	Kjr & Tsg & Kb
T.33N., R.28E., sec 12, N2SE	No wetlands present.	A branch of an unnamed tributary to Cottonwood Creek flows for 0.22 miles and drains into a main stem of an unnamed tributary of Cottonwood Creek in T.33N., R.28E., sec 12, NESE. That main stem of an unnamed tributary of Cottonwood Creek flows for 0.46 miles in T.33N., R.28E., sec 12, N2SE. An additional unnamed tributary to Cottonwood Creek flows for 0.03 miles in T.33N., R.28E., sec 12, SESENESE.	Qal
T.33N., R.28E., sec 12, SWSE	No wetlands present.	An unnamed tributary to Cottonwood Creek flows for 0.31 miles and drains into Cottonwood Creek in T.33N., R.28E., sec 12, SWSE. Cottonwood Creek flows for 0.28 miles in T.33N., R.28E., sec 12, S2SWSE.	Qal & Kjr
T.33N., R.28E., sec 13, W2NE	No wetlands present.	There are 5 branches of unnamed tributaries to Cottonwood Creek that flow in T.33N., R.28E., sec 13, W2NE for a combined total distance of 1.06 miles. Cottonwood Creek flows for 0.05 miles in T.33N., R.28E., sec 13, NENWNE.	Qal & Kjr
T.33N., R.28E., sec 13, W2	No wetlands present.	Six (6) branches of unnamed headwater tributaries to Cottonwood Creek begin and flow for a combined total distance of 1.87 miles in T.33N., R.28E., sec 13, W2. Two (2) branches of unnamed tributaries to	Kb & Kjr & Qal

		Cottonwood Creek flow for a combined total distance of 0.84 miles in T.33N., R.28E., sec 13, W2. An additional unnamed tributary to Cottonwood Creek flows for 0.45 miles in T.33N., R.28E., sec 13, NW.	
T.33N., R.28E., sec 13, NWSE	No wetlands present.	Two (2) branches of an unnamed tributary to Cottonwood Creek flow for a combined total distance of 0.29 miles in T.33N., R.28E., sec 13, W2NWSE.	Kjr & Qal
T.33N., R.28E., sec 13, S2SE	No wetlands present.	Two (2) branches of an unnamed tributary to Cottonwood Creek flow for a combined total distance of 0.12 miles in T.33N., R.28E., sec 13, W2NWSWSE. An unnamed tributary to Cottonwood Creek flows for 0.09 miles in T.33N., R.28E., sec 13, N2SESE. Cottonwood Creek flows for 0.15 miles in T.33N., R.28E., sec 13, NESESE.	Kb & Kjr & Qal
T.33N., R.28E., sec 14, N2	No wetlands present.	Two (2) branches of unnamed headwater tributaries to Cottonwood Creek begin and flow for a combined total distance of 1.0 mile in T.33N., R.28E., sec 14, NW. Three (3) branches of unnamed tributaries to Cottonwood Creek flow for a combined total distance of 1.66 miles in T.33N., R.28E., sec 14, N2. An additional unnamed tributary to Cottonwood Creek flows for 0.05 miles in T.33N., R.28E., sec 14, W2W2NWNW.	Kb & Kjr
T.33N., R.28E., sec 14, N2S2	There is 1 wetland (PABFh) present that covers 0.21% of the area.	Three (3) branches of unnamed headwater tributaries to Cottonwood Creek begin and flow for a combined total distance of 0.3 miles in T.33N., R.28E., sec 14, N2S2. A branch of an unnamed tributary to Cottonwood Creek flows for 0.39 miles in T.33N., R.28E., sec 14, NWSE. An additional branch of an unnamed tributary to Cottonwood Creek flows for 0.35 miles in T.33N., R.28E., sec 14, NESE.	Kb & Kjr
T.33N., R.28E., sec 17, NW	No wetlands present.	An unnamed tributary to Wilson Coulee flows for 0.77 miles in T.33N., R.28E., sec 17, NW.	Kb
T.33N., R.28E., sec 17, E2SW	No wetlands present.	An unnamed tributary to Wilson Coulee flows for 0.1 miles in T.33N., R.28E., sec 17, NENESW. A branch of an unnamed tributary to Wilson Coulee flows for 0.34 miles in T.33N., R.28E., sec 17, SESW.	Kb & Qal
MTM 97300-KJ			
T.33N., R.28E., sec 15, ALL	There are 3 wetlands present (1=PEMA, 1=PEMC, 1=PABFh) that cover 0.15% of the area (0.05%=PEMA, 0.02%=PEMC, 0.07%=PABFh).	Four (4) branches of unnamed headwater tributaries to Cottonwood Creek begin and flow for a combined total distance of 2.02 miles in T.33N., R.28E., sec 15. The main stem of an unnamed tributary to Cottonwood Creek flows for 1.34 miles in T.33N., R.28E., sec 15. The headwaters of two (2) unnamed tributaries to Cottonwood Creek begin and flow for a combined total distance of 0.7 miles in T.33N., R.28E., sec 15, NW.	Kb & Kjr & Qal
T.33N., R.28E., sec 18, L1&L2&L3	There is 1 wetland (PEMC) present that covers 1.03% of the area.	An unnamed tributary to Wilson Coulee flows for 0.25 miles in T.33N., R.28E., sec 18, L1. Wilson Coulee flows for 0.3 miles in T.33N., R.28E., sec 18, L2.	Kb & Qal

T.33N., R.28E., sec 18, NE	No wetlands present.	Two (2) branches of an unnamed tributary to Wilson Coulee flow for a combined total distance of 0.87 miles in T.33N., R.28E., sec 18, NE.	Kb & Qal
T.33N., R.28E., sec 18, E2NW	No wetlands present.	An unnamed tributary to Wilson Coulee drains into Wilson Coulee after flowing for 0.06 miles in T.33N., R.28E., sec 18, NENW. Another unnamed tributary to Wilson Coulee drains into Wilson Coulee after flowing for 0.26 miles in T.33N., R.28E., sec 18, SENW. Wilson Coulee flows for 0.52 miles in T.33N., R.28E., sec 18, E2NW.	Kb & Qal
T.33N., R.28E., sec 18, NESW	There is 1 wetland (PEMC) present that covers 2.45% of the area.	An unnamed tributary to Wilson Coulee flows for 0.26 miles in T.33N., R.28E., sec 18, NESW.	Kb
T.33N., R.28E., sec 19, W2SE	There are 4 wetlands present (2=PEMA, 2=PEMC) that cover 12.2% of the area (0.88%=PEMA, 11.31%=PEMC).	The headwaters of an unnamed tributary to Wilson Coulee begin and flow for 0.17 miles in T.33N., R.28E., sec 19, SWSE.	Kb
T.33N., R.28E., sec 21, N2NW	There are 2 wetlands (PABFh) present that cover 3.81% of the area.	Four (4) branches of an unnamed tributary to Cottonwood Creek flow for a combined total distance of 0.81 miles in T.33N., R.28E., sec 21, N2NW. An unnamed tributary to Cottonwood Creek flows for 0.26 miles in T.33N., R.28E., sec 13, E2NENW.	Kb & Qal
T.33N., R.28E., sec 22, W2NE	There are 3 wetlands (PEMC) present that cover 15.0% of the area.	An Interior Drainage begins and flows for 0.37 miles in T.33N., R.28E., sec 22, W2NE.	Kb & Qal
T.33N., R.28E., sec 22, N2NW	There are 2 wetlands (PEMC) present that cover 4.73% of the area.	An unnamed tributary to Cottonwood Creek flows for 0.31 miles in T.33N., R.28E., sec 22, W2NWNW. An Interior Drainage flows for 0.08 miles in T.33N., R.28E., sec 22, E2SENE.	Kb & Qal
T.33N., R.28E., sec 23, E2SE	No wetlands present.	An unnamed tributary to Cottonwood Creek flows for 0.13 miles in T.33N., R.28E., sec 23, N2NESE. The headwaters of Pierson Coulee begin and flow for 0.21 miles in T.33N., R.28E., sec 23, SESE.	Kb
T.33N., R.28E., sec 24, ALL	No wetlands present.	Pierson Coulee flows for 1.26 miles in T.33N., R.28E., sec 24. Two (2) unnamed tributaries to Pierson Coulee flow for a compiled total distance of 0.98 miles in T.33N., R.28E., sec 24. A branch of an unnamed tributary to Cottonwood Creek flows for 0.99 miles in T.33N., R.28E., sec 24, N2. An unnamed tributary to Cottonwood Creek flows for 1.13 miles in T.33N., R.28E., sec 24, N2N2.	Kjr & Qal & Tsg & Kb
T.33N., R.28E., sec 25, SESW	There are 2 wetlands (PEMC) present that cover 5.97% of the area.	An unnamed tributary to Garland Creek flows for 0.12 miles in T.33N., R.28E., sec 25, S2SESW.	Kjr & Kb
T.33N., R.28E., sec 25, SESE	No wetlands present.	An unnamed tributary to Garland Creek flows for 0.2 miles in T.33N., R.28E., sec 25, SESE.	Kb & Kjr
T.33N., R.28E., sec 27, N2SE	There are 2 wetlands present (1=PEMA, 1=PEMC) that cover 1.62% of the area (1.11%=PEMA, 0.51%=PEMC).	The headwaters of an unnamed tributary to Garland Creek begin and flow for 0.1 miles in T.33N., R.28E., sec 27, NESE.	Kb
T.33N., R.28E., sec	There are 6 wetlands present (3=PEMA,	An unnamed tributary to an Interior Drainage flows for 0.15 miles in	Kb & Qal

	29, SW	1=PEMC, 2=PABFh) that cover 6.87% of the area (5.23%=PEMA, 0.34%=PEMC, 1.3%=PABFh).	T.33N., R.28E., sec 29, SESESW.	
	T.33N., R.28E., sec 34, E2NE	There is 1 wetland (PEMA) present that covers 0.19% of the area.	Two (2) branches of an unnamed tributary to Garland Creek flow for a combined total distance of 0.67 miles in T.33N., R.28E., sec 34, E2NE.	Kb & Qal
MTM 97300- KK	T.33N., R.28E., sec 17, W2SW	No wetlands present.	No flowlines present.	Kb
	T.33N., R.28E., sec 20, SW	There is 1 wetland (PEMC) present that covers 2.19% of the area.	An unnamed tributary to Wilson Coulee flows for 0.52 miles in T.33N., R.28E., sec 20, N2N2SW. The headwaters of an unnamed tributary to Wilson Coulee begin and flow for 0.39 miles in T.33N., R.28E., sec 20, S2S2SW.	Kb & Qal
	T.33N., R.28E., sec 29, N2NW	There are 6 wetlands present (4=PEMA, 2=PEMC) that cover 8.8% of the area (3.78%=PEMA, 5.02%=PEMC).	No flowlines present.	Kb
MTM 97300- KY	T.34N., R.28E., sec 1, L1&L2&L3&L4	There are 3 wetlands (PEMC) present that cover 2.56% of the area.	Little Cottonwood Creek flows for 0.35 miles in T.34N., R.28E., sec 1, L1&L2. Two (2) unnamed tributaries to Little Cottonwood Creek flow for a combined total distance of 0.42 miles in T.34N., R.28E., sec 1, L1&L2.	Kb & Tsg & Qal & Kjr
	T.34N., R.28E., sec 1, S2N2	There are 4 wetlands (PEMC) present that cover 2.9% of the area.	An unnamed tributary to Little Cottonwood Creek flows for 0.45 miles in T.34N., R.28E., sec 1, S2NW	Kb & Tsg
	T.34N., R.28E., sec 2, L1&L2&L3&L4	There are 3 wetlands present (1=PEMC, 1=PABFh, 1=contiguous L2ABFh & PEMCh) that cover a total of 13.09% of the area (0.31%=PEMC, 1.98%=PABFh, 0.63%=PEMCh, 10.18%=L2ABFh).	Lambing Coulee flows for 0.35 miles in T.34N., R.28E., sec 2, L3&L4. An unnamed tributary to Lambing Coulee flows for 0.35 miles in T.34N., R.28E., sec 2, L1&L2.	Kb & Qal
	T.34N., R.28E., sec 2, S2N2	There are 4 wetlands present (1=PEMA, 1=PEMC, 1=PABFh, 1=L2ABFh) that cover 5.33% of the area (1.63%=PEMA, 0.28%=PEMC, 1.05%=PABFh, 2.37%=L2ABFh).	Lambing Coulee flows for 0.2 miles in T.34N., R.28E., sec 2, W2SWNW. An unnamed tributary to Lambing Coulee flows for 0.34 miles in T.34N., R.28E., sec 2, SWNE.	Kb & Qal
	T.34N., R.28E., sec 2, S2	There are 2 wetlands present (1=PEMC, 1=contiguous PABFh & PEMCh) that cover a total of 1.35% of the area (0.25%=PEMC, 0.56%=PABFh, 0.55%=PEMCh).	Three unnamed tributaries to Lambing Coulee flow for a combined total distance of 1.23 miles in T.34N., R.28E., sec 2, S2.	Kb & Qal
	T.34N., R.28E., sec 3, L1&L2&L3&L4	No wetlands present.	Two (2) branches of an unnamed tributary to Lambing Coulee flow for a combined total distance of 0.53 miles in T.33N., R.28E., sec 3, L2.	Kb & Qal & Tsg
	T.34N., R.28E., sec 3,	There are 5 wetlands present (3=PEMA,	Lambing Coulee flows for 0.15 miles in T.34N., R.28E., sec 3, SESENE.	Kb & Qal &

	S2N2	1=PEMC, 1=PABFh) that cover 4.09% of the area (2.85%=PEMA, 0.13%=PEMC, 1.11%=PABFh).	The headwaters of an unnamed tributary to Lambing Coulee begins and flows for 0.3 miles in T.34N., R.28E., sec 3, S2S2N2. An unnamed tributary to Lambing Coulee flows for 0.34 miles in T.34N., R.28E., sec 3, S2NE.	Tsg
	T.34N., R.28E., sec 4, L1&L2&L3&L4	No wetlands present.	An unnamed tributary to Cottonwood Creek flows for 0.38 miles in T.34N., R.28E., sec 4, L3&L4. Another unnamed tributary to Cottonwood Creek flows for 0.45 miles in T.34N., R.28E., sec 4, L1&L2.	Kb & Qal & Tsg
	T.34N., R.28E., sec 4, S2N2	There is 1 wetland (PEMA) present that covers 0.34% of the area.	An unnamed tributary to Cottonwood Creek flows for 0.11 miles in T.34N., R.28E., sec 4, NWSWNW. Another unnamed tributary to Cottonwood Creek flows for 0.32 miles in T.34N., R.28E., sec 4, S2N2.	Kb & Qal & Tsg
	T.34N., R.28E., sec 4, S2	There are 4 wetlands present (2=PEMA, 2=PABFh) that cover 1.7% of the area (0.2%=PEMA, 1.5%=PABFh).	A headwater tributary to Lambing Shed Coulee begins and flows for 0.19 miles in T.34N., R.28E., sec 4, SESE. Three (3) branches of an unnamed tributary to Cottonwood Creek flow for a combined total distance of 1.85 miles in T.34N., R.28E., sec 4, S2.	Kb & Qal & Tsg
	T.34N., R.28E., sec 5, L1&L2	There is 1 wetland (PEMA) present that covers 0.16% of the area.	An unnamed tributary to Cottonwood Creek flows for 0.31 miles in T.34N., R.28E., sec 5, L1.	Kb & Qal
	T.34N., R.28E., sec 5, S2NE	There is 1 wetland (PABFh) present that covers 0.89% of the area.	Two unnamed tributaries to Cottonwood Creek flow for a combined total distance of 0.52 miles in T.34N., R.28E., sec 5, S2NE.	Kb & Qal
	T.34N., R.28E., sec 5, SE	There is 1 wetland (PABFh) present that covers 0.05% of the area.	An unnamed tributary to Cottonwood Creek flows for 0.64 miles in T.34N., R.28E., sec 5, SW. A branch of an unnamed tributary to Cottonwood Creek flows for 0.1 miles in T.34N., R.28E., sec 5, N2N2SW.	Kb & Qal
MTM 97300- KZ	T.34N., R.28E., sec 1, S2	There are 5 wetlands present (2=PEMA, 3=PEMC) that cover 1.38% of the area (0.94%=PEMA, 0.44%=PEMC).	Two unnamed tributaries to Lambing Coulee flow for a combined total distance of 0.44 miles in T.34N., R.28E., sec 1, E2SW. An unnamed tributary to Little Cottonwood Creek flows for 0.3 miles in T.34N., R.28E., sec 1, NESE.	Kb & Tsg
	T.34N., R.28E., sec 3, S2	There are 4 wetlands present (1=PEMA, 2=PEMC, 2=PABFh) that cover 1.0% of the area (0.17%=PEMA, 0.49%=PEMC, 0.34%=PABFh).	Lambing Coulee flows for 0.65 miles in T.34N., R.28E., sec 3, E2SE. Two unnamed tributaries to Lambing Coulee flow for a combined total distance of 0.28 miles and drain into Lambing Coulee in T.34N., R.28E., sec 3, NESE.	Kb & Tsg & Qal
	T.34N., R.28E., sec 11, N2	There are 3 wetlands present (1=PEMA, 1=PEMC, 2=PABFh) that cover 0.35% of the area (0.04%=PEMA, 0.23%=PEMC, 0.08%=PABFh).	Two unnamed tributaries to Lambing Coulee flow for a total combined distance of 0.58 miles and drain into a main unnamed tributary of Lambing Coulee in T.34N., R.28E., sec 11, NE. This main unnamed tributary to Lambing Coulee flows for 0.71 miles in T.34N., R.28E., sec 11, NE	Kb & Qal
	T.34N., R.28E., sec 12, ALL	There are 14 wetlands present (9=PEMA, 2=PEMC, 1=PABFh, 2=contiguous PEMA & PEMC) that cover a total of 3.23% of the area (0.86%=PEMA, 0.42%=PEMC,	An unnamed headwater tributary to Lambing Coulee begins and flows for 1.12 miles in T.34N., R.28E., sec 12.	Kb & Tsg

		1.95%=PABFh).		
	T.34N., R.28E., sec 13, W2	There are 2 wetlands present (1=PEMC, 1=PABFh) that cover 0.81% of the area (0.004%=PEMC, 0.81%=PABFh).	Three unnamed tributaries to Lambing Coulee flow for a combined total distance of 2.27 miles in T.34N., R.28E., sec 13, W2.	Kb & Tsg
	T.34N., R.28E., sec 14, N2	There are 2 wetlands present (1=PEMA, 1=PEMC) that cover 0.13% of the area (0.08%=PEMA, 0.05%=PEMC).	Two unnamed tributaries to Lambing Coulee flow for a total combined distance of 1.3 miles in T.34N., R.28E., sec 14, N2. An additional unnamed tributary to Lambing Coulee flows for 0.04 miles in T.34N., R.28E., sec 14, SESWNE.	Kb
MTM 97300-K1	T.34N., R.28E., sec 6, Lots 1-7	No wetlands present.	Four unnamed branch tributaries to Alkali Coulee flow for a total combined distance of 1.45 miles in T.34N., R.28E., sec 6, L2&L3&L4&L5&L6. Alkali Coulee flows in T.34N., R.28E., sec 6, L1 for 0.41 miles.	Kb & Qal
	T.34N., R.28E., sec 6, S2NE	There is 1 wetland (PABFh) present that covers 2.71% of the area.	Alkali Coulee flows for 0.36 miles in T.34N., R.28E., sec 6, S2NE. An unnamed tributary to Alkali Coulee flows for 0.26 miles in T.34N., R.28E., sec 6, SENE.	Kb & Qal
	T.34N., R.28E., sec 6, SENW	There is 1 wetland (PABFh) present that covers 1.01% of the area.	Two unnamed branch tributaries to Alkali Coulee flow for a total combined distance of 0.42 miles in T.34N., R.28E., sec 6, SENW.	Kb & Qal
	T.34N., R.28E., sec 6, E2SW	No wetlands present.	Alkali Coulee flows in T.34N., R.28E., sec 6, E2SW for 0.62 miles. An unnamed tributary to Alkali Coulee flows for 0.18 miles in T.34N., R.28E., sec 6, SESW.	Kb & Qal
	T.34N., R.28E., sec 6, SE	No wetlands present.	Alkali Coulee flows in T.34N., R.28E., sec 6, NWSE for 0.34 miles. Two branches of unnamed tributaries to Alkali Coulee flow for 1.33 miles in T.34N., R.28E., sec 6, SE.	Kb & Qal
	T.34N., R.28E., sec 7, NE	No wetlands present.	An unnamed tributary to Cottonwood Creek flows for 0.56 miles in T.34N., R.28E., sec 7, NE.	Kb & Qal
	T.34N., R.28E., sec 7, E2NW	No wetlands present.	An unnamed tributary to Cottonwood Creek runs for 0.32 miles in T.34N., R.28E., sec 7, SENW.	Kb
	T.34N., R.28E., sec 7, NESW	No wetlands present.	An unnamed tributary to Cottonwood Creek runs for 0.33 miles in T.34N., R.28E., sec 7, NESW.	Kb & Qal
	T.34N., R.28E., sec 7, N2SE	No wetlands present.	An unnamed tributary to Cottonwood Creek runs for 0.38 miles in T.34N., R.28E., sec 7, NWSE.	Kb & Qal
	T.34N., R.28E., sec 7, SESE	No wetlands present.	An unnamed tributary to Cottonwood Creek runs for 0.05 miles in T.34N., R.28E., sec 7, NWNWSESE.	Kb & Qal
	T.34N., R.28E., sec 8, W2	No wetlands present.	Three (3) unnamed tributaries to Cottonwood Creek flow for a combined distance of 2.11 miles in T.34N., R.28E., sec 8, W2.	Kb & Qal
	T.34N., R.28E., sec 9, E2	No wetlands present.	Four (4) unnamed tributaries to Lambing Coulee flow for a combined distance of 2.4 miles in T.34N., R.28E., sec 9, E2.	Kb & Qal

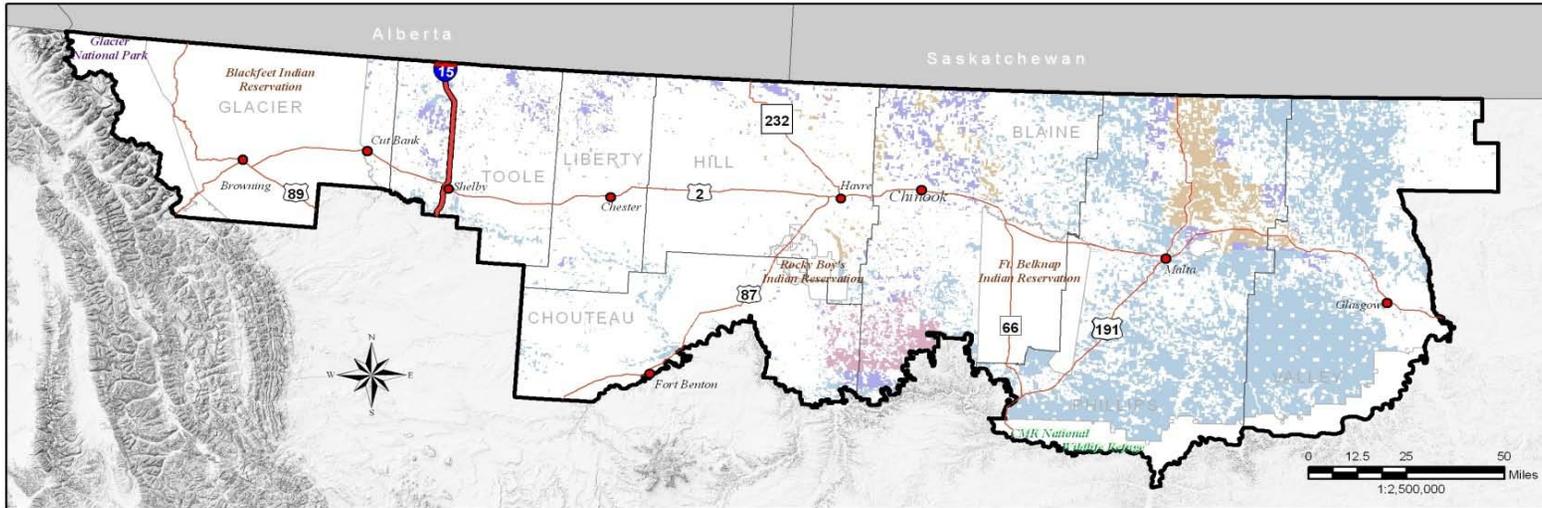
	T.34N., R.28E., sec 10, ALL	There are 3 wetlands present (1=PEMC, 2=PABFh) that cover 0.22% of the area (0.08%=PEMC, 0.14%=PABFh).	There are six (6) tributaries to Lambing Coulee that flow for a combined distance of 2.67 miles in T.34N., R.28E., sec 10.	Kb & Qal
MTM 97300- K2	T.34N., R.28E., sec 11, S2	There is 1 wetland (PEMA) present that covers 0.69% of the area.	An unnamed tributary to Lambing Coulee flows for 0.68 miles in T.34N., R.28E., sec 11, SW. An additional branch of an unnamed tributary to Lambing Coulee flows for 0.03 miles in T.34N., R.28E., sec 11, NWNWSW.	Kb & Qal
	T.34N., R.28E., sec 13, E2	There are 7 wetlands present (6=PEMA, 1=PABFh) that cover 0.51% of the area (0.42%=PEMA, 0.08%=PABFh).	An unnamed headwater tributary to Little Cottonwood Creek flows for 0.13 miles in T.34N., R.28E., sec 13, E2NENE. An unnamed headwater tributary to Lambing Coulee flows for 0.2 miles in T.34N., R.28E., sec 13, NE. An additional unnamed headwater tributary to Lambing Coulee flows for 0.47 miles in T.34N., R.28E., sec 13, W2E2SE.	Tsg
	T.34N., R.28E., sec 15, N2N2	No wetlands present.	Three unnamed tributaries to Lambing Coulee flow for a combined total distance of 0.99 miles in T.34N., R.28E., sec 15, N2N2	Kb & Qal
	T.34N., R.28E., sec 17, N2	There is 1 wetland (PABFh) present that covers 0.13% of the area.	Two unnamed tributaries to Cottonwood Creek flow for a combined total distance of 0.39 miles in T.34N., R.28E., sec 17, NWNW. Four unnamed headwater tributaries to Cottonwood Creek begin and flow in T.34N., R.28E., sec 17, N2 for a combined total distance of 1.54 miles.	Kb & Qal
	T.34N., R.28E., sec 17, SW	No wetlands present.	Six branches of unnamed tributaries to Cottonwood Creek flow for a combined total distance of 1.61 miles in T.34N., R.28E., sec 17, SW.	Kb & Qal
	T.34N., R.28E., sec 20, NW	There are 4 wetlands present (1=PEMA, 3=PEMC) that cover 2.8% of the area (0.12%=PEMA, 2.67%=PEMC).	Two branches of unnamed tributaries to Cottonwood Creek flow for a combined total distance of 1.28 miles in T.34N., R.28E., sec 20, NW. An unnamed tributary to Cottonwood Creek flows for 0.09 miles in T.34N., R.28E., sec 20, NWNWNW. Cottonwood Creek flows for 0.33 miles in T.34N., R.28E., sec 20, SWNW.	Kb
	T.34N., R.28E., sec 20, S2	There are 6 wetlands present (5=PEMA, 1=PEMC) that cover 3.52% of the area (2.02%=PEMA, 1.5%=PEMC).	Cottonwood Creek flows for 1.40 miles in T.34N., R.28E., sec 20, SW. Two unnamed tributaries to Cottonwood Creek flow for a combined total distance of 0.72 miles in T.34N., R.28E., sec 20, N2SW. An unnamed tributary to Cottonwood Creek flows for 0.2 miles in T.34N., R.28E., sec 20, S2SWSW.	Kb & Qal
	T.34N., R.28E., sec 21, ALL	There are 3 wetlands present (1=PEMC, 2=PABFh) that cover 0.35% of the area (0.02%=PEMC, 0.33%=PABFh).	A total of six unnamed tributaries to Lambing Coulee flow in T.34N., R.28E., sec 21 for a total combined distance of 2.55 miles. Lambing Coulee flows for 1.54 miles in T.34N., R.28E., sec 21.	Kb & Qal
MTM 97300- K3	T.34N., R.28E., sec 15, S2N2	There are 2 wetlands present (1=PEMA, 1=PEMC) that cover 5.39% of the area (0.19%=PEMA, 5.2%=PEMC).	A total of three unnamed tributaries to Lambing Coulee flow in T.34N., R.28E., sec 15, S2N2 for a total combined distance of 0.76 miles.	Kb & Qal
	T.34N., R.28E., sec	There are 3 wetlands present (1=PEMA,	A total of four unnamed tributaries to Lambing Coulee flow in T.34N.,	Kb & Qal

15, S2	1=PEMC, 1=PABFh) that cover 5.83% of the area (0.15%=PEMA, 0.16%=PEMC, 5.51%=PABFh).	R.28E., sec 15, S2 for a total combined distance of 1.05 miles.	
T.34N., R.28E., sec 22, ALL	There are 2 wetlands present (1=PEMA, 1=PEMC) that cover 0.5% of the area (0.03%=PEMA, 0.47%=PEMC).	A total of five branches of unnamed tributaries to Lambing Coulee flow in T.34N., R.28E., sec 22 for a total combined distance of 3.08 miles.	Kb & Qal
T.34N., R.28E., sec 23, W2	There are 3 wetlands present (2=PEMC, 1=contiguous PABFh & PEMA) that cover a total of 0.93% of the area (0.34%=PEMA, 0.34%=PEMC, 0.25%=PABFh).	A total of three branches of unnamed tributaries to Lambing Coulee flow in T.34N., R.28E., sec 23, W2 for a total combined distance of 1.08 miles.	Kb & Qal
T.34N., R.28E., sec 24, E2	There are 9 wetlands present (5=PEMA, 3=PEMC, 1=contiguous PEMA & PEMC & PABFh) that cover a total of 17.16% of the area (4.71%=PEMA, 12.38%=PEMC, 0.07%=PABFh).	Two unnamed tributaries to Lambing Coulee flow in T.34N., R.28E., sec 24, E2 for a total combined distance of 1.35 miles.	Tsg
T.34N., R.28E., sec 25, N2	There are 7 wetlands present (3=PEMA, 3=PEMC, 1=PABFh) that cover 2.43% of the area (0.28%=PEMA, 0.25%=PEMC, 1.9%=PABFh).	An unnamed tributary to Lambing Coulee flows in T.34N., R.28E., sec 25, E2NE for 0.57 miles. Another unnamed tributary to Lambing Coulee flows in T.34N., R.28E., sec 25, NW for 0.4 miles.	Tsg & Qal & Kb
T.34N., R.28E., sec 25, SW	There are 6 wetlands present (4=PEMA, 1=PEMC, 1=PABFh) that cover 1.9% of the area (1.61%=PEMA, 0.05%=PEMC, 1.9%=PABFh).	An unnamed tributary to Lambing Coulee flows in T.34N., R.28E., sec 25, NWNWSW for 0.11 miles. A unnamed headwater tributary to Lambing Coulee begins and flows in T.34N., R.28E., sec 25, E2SESW for 0.27 miles.	Tsg & Kb
T.34N., R.28E., sec 35, E2	There is 1 wetland (PABFh) present that covers 1.12% of the area.	Three branches of unnamed tributaries to Lambing Coulee flow in T.34N., R.28E., sec 35, E2 for a combined total distance of 1.76 miles. Two unnamed headwater tributaries to Lambing Coulee begin and flow in T.34N., R.28E., sec 35, E2 for 0.89 miles.	Kb and Qal
MTM 97300-K5			
T.34N., R.29E., sec 6, L1&L2&L3&L4&L5&L7	A 1.72 acre (PABFh) wetland resides in L2. A 2.81 acre (PABFh) wetland resides in L7.	Little Cottonwood Creek flows for 0.55 miles in T.34N., R.29E., sec 6, L4&L5. An unnamed tributary to Little Cottonwood Creek flows for 0.15 miles in T.34N., R.29E., sec 6, L1. An unnamed tributary to Little Cottonwood Creek flows for 0.42 miles in T.34N., R.29E., sec 6, L2&L3. An unnamed tributary to Little Cottonwood Creek flows for 0.32 miles in T.34N., R.29E., sec 6, L3. An unnamed tributary to Little Cottonwood Creek flows for 0.23 miles in T.34N., R.29E., sec 6, L4. An unnamed tributary to Little Cottonwood Creek flows for 0.07 miles in T.34N., R.29E., sec 6, L5. An unnamed tributary to Little Cottonwood Creek flows for 0.57 miles in T.34N., R.29E., sec 6, L7.	Tsg & Kb & Qal & Kjr

T.34N., R.29E., sec 6, S2NE	No wetlands present.	An unnamed tributary to Little Cottonwood Creek flows for 0.2 miles in T.34N., R.29E., sec 6, SENE. Another unnamed tributary to Little Cottonwood Creek flows for 0.53 miles in T.34N., R.29E., sec 6, S2NE.	Tsg & Kb & Kjr
T.34N., R.29E., sec 6, SENW	No wetlands present.	Little Cottonwood Creek flows for 0.13 miles in T.34N., R.29E., sec 6, SWSENW. Three unnamed tributaries to Little Cottonwood Creek flows in T.34N., R.29E., sec 6, SENW for a total combined distance of 0.64 miles.	Kb & Qal & Kjr
T.34N., R.29E., sec 6, SESW	No wetlands present.	Little Cottonwood Creek flows for 0.1 miles in T.34N., R.29E., sec 6, N2N2SESW. An unnamed tributary to Little Cottonwood Creek flows for 0.06 miles in T.34N., R.29E., sec 6, NWNWSESW.	Kb & Qal & Kjr
T.34N., R.29E., sec 6, SE	There are 3 wetlands present (2=PEMC, 1=PABFx) that cover 0.23% of the area (0.2%=PEMC, 0.04%=PABFh).	Little Cottonwood Creek flows for 0.58 miles in T.34N., R.29E., sec 6, S2SE. Two unnamed tributaries to Little Cottonwood Creek flow in T.34N., R.29E., sec 6, S2SE for a combined total distance of 0.43 miles.	Tsg & Kb & Qal & Kjr
T.34N., R.29E., sec 7, L1&L2&L3&L4	There are 2 wetlands present (1=PEMC, 1=PABFh) that cover 1.49% of the area (0.67%=PEMC, 0.82%=PABFh).	An unnamed headwater tributary to Little Cottonwood Creek begins and flows for 0.19 miles in T.34N., R.28E., sec 7, N2L2.	Tsg & Kb & Kjr
T.34N., R.29E., sec 7, E2W2	No wetlands present.	An unnamed tributary to Little Cottonwood Creek in T.34N., R.28E., sec 7, SENW flows for 0.32 miles. Little Cottonwood Creek flows for 0.23 miles in T.34N., R.29E., sec 7, E2E2E2SW.	Tsg & Kb & Qal
T.34N., R.29E., sec 17, NE	There are 6 wetlands present (5=PEMA, 1=PEMC) that cover 0.83% of the area (0.68%=PEMA, 0.16%=PEMC).	Two unnamed tributaries to Cottonwood Creek flow for a combined total distance of 0.258 0.26 miles in T.34N., R.29E., sec 17, NENE. An unnamed tributary to Cottonwood Creek flows for 0.2 miles in T.34N., R.29E., sec 17, SWNE.	Tsg
T.34N., R.29E., sec 19, L1&L2	There are 3 wetlands present (2=PEMC, 1=contiguous PEMA & PEMC) that cover a total of 23.35% of the area (0.54%=PEMA, 22.81%=PEMC).	No flowlines present.	Tsg
T.34N., R.29E., sec 19, E2NW	There are 5 wetlands present (3=PEMA, 1=PEMC, 1=contiguous PEMA & PEMC) that cover a total of 8.61% of the area (5.22%=PEMA, 3.38%=PEMC).	No flowlines present.	Tsg
T.34N., R.29E., sec 30, L1&L2	There are 6 wetlands present (1=PEMA, 2=PEMC) that cover 1.57% of the area (1.1%=PEMA, 0.47%=PEMC).	An unnamed headwater tributary to Lambing Coulee begins and flows for 0.19 miles in T.34N., R.29E., sec 30, L2.	Tsg
T.34N., R.29E., sec 30, E2NW	There are 3 wetlands (PEMA) present that cover 0.31% of the area.	An unnamed tributary to Lambing Coulee flows for 0.13 miles in T.34N., R.29E., sec 30, SESENW.	Tsg
T.34N., R.29E., sec 31, L3	No wetlands present.	No flowlines present.	Tsg

	T.34N., R.29E., sec 31, NE	There are 5 wetlands (PEMA) present that cover 3.16% of the area.	An unnamed tributary to Cottonwood Creek flows for 0.12 miles in T.34N., R.29E., sec 31, SENE. Another unnamed tributary to Cottonwood Creek flows for 0.06 miles in T.34N., R.29E., sec 31, SWSWNE.	Tsg
	T.34N., R.29E., sec 31, NESW	There are 3 wetlands present (2=PEMA, 1=PABFh) that cover 2.51% of the area (1.58%=PEMC, 0.93%=PABFh).	An unnamed tributary to Cottonwood Creek flows for 0.29 miles in T.34N., R.29E., sec 31, NESW.	Tsg
	T.34N., R.29E., sec 31, N2SE	No wetlands present.	An unnamed tributary to Cottonwood Creek flows for 0.11 miles in T.34N., R.29E., sec 31, NWNWSE. Another unnamed tributary to Cottonwood Creek flows for 0.13 miles in T.34N., R.29E., sec 31, SWNWSE.	Tsg
	T.34N., R.29E., sec 32, E2	There are 3 wetlands present (2=PEMA, 1=PEMC) that cover 0.32% of the area (0.22%=PEMA, 0.09%=PEMC).	Two unnamed headwater tributaries to Cottonwood Creek begin and flow for a total combined distance of 0.74 miles in T.34N., R.29E., sec 32, E2.	Tsg
MTM 97300-PF	T.32N., R.30E., sec 36, BED OF MILK RIV RIPAR to L1&L2	Milk River and contiguous riparian vegetation. An additional wetland (PEMAh) that is 0.13 acres exists in T.32N., R.30E., sec 36, N2L2.	1.99 miles of the Milk River.	Qal
MTM 97300-PE	T.33N., R.30E., sec 36, BED OF MILK RIV RIPAR to Lots 1-11	Milk River and contiguous riparian vegetation. Little Cottonwood Creek and contiguous riparian and wetland vegetation.	0.22 miles of the Milk River.	Qac & Qal
MTM 97300-PD	T.33N., R.31E., sec 36, BED OF MILK RIV RIPAR to Lots 1-6, L8&L9	Milk River and contiguous riparian and wetland vegetation	1.99 miles of the Milk River. Little Cottonwood Creek flows for 0.34 miles and drains into the Milk River in T.33N., R.31E., sec 36, L5&L9. An unnamed tributary to the Milk River flows for 0.12 miles in T.33N., R.31E., sec 36, L2.	Qac & Qal
MTM 97300-RL	T.33N., R.31E., sec 36, BED OF MILK RIV RIPAR to L7&L10&L11&L12	Milk River and contiguous riparian and wetland vegetation.	1.00 mile of the Milk River.	Qac & Qal

Appendix E- Descriptions of Reasonably Foreseeable Development. RFD potential for HiLine Planning Area.



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
HiLine District Office



Albers Equal Area, NAD83, Meters
Created by the Malta Field Office in July 2010

Map shows the Development Potential for Oil and Gas on BLM administered subsurface.

- | | |
|------------------------------|------------------------|
| Development Potential | RMP boundary |
| High | County Line |
| Moderate | Not Analyzed |
| Low | Interstate |
| Very Low | Highway or State Route |
| Authorized Leases | Towns |



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