United States Department of the Interior
Bureau of Land Management

Environmental Assessment

WY-070-EA10-320

August 2010

Competitive Oil and Gas Lease Sales
February 2011

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Affected Resources EA Checklist

Bureau of Land Management, Buffalo Field Office

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Competitive Oil and Gas Lease Sales for February 2011 for the Buffalo Field Office

Determination	Resource	Rationale for Determination
PI	Air Quality	Impacts of surface disturbing activities on air quality were analyzed in the 2003 Powder River RMP/FEIS (pgs 4-354-404). New information about air quality is available.
NP	Areas of Critical Environmental Concern (ACEC)	No effects, there are no ACECs identified within the subject parcels.
NP	BLM Natural Areas	No effects, there are no BLM Natural Areas identified within the subject parcels.
NI	Cultural Resources	Impacts of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs 4-152-179)
PI	Greenhouse Gas Emissions	New information on greenhouse gas emissions available. Greenhouse gas emissions associated with leasing are analyzed.
NI	Environmental Justice	No effects associated with leasing beyond what is currently addressed in the Powder River RMP/FEIS.
NP	Farmlands (Prime or Unique)	No effects associated with leasing, as there are no Farmlands (Prime or Unique) identified within the subject parcels.
NI	Fish and Wildlife Excluding Federally Listed Species	No effects beyond what is currently addressed RMP. Effects of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs 4-216-273).
NI	Floodplains	No effects associated with leasing beyond what is currently addressed in the RMP. Impacts of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs 4-152-179).
NI	Geology/ Mineral Resources/	No effects beyond what is currently

Determination	Resource	Rationale for Determination
	Energy Production	addressed in the RMP. Impacts of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs 4-125-134)
NI	Hydrologic Conditions	No effects associated with leasing beyond what is currently addressed in the RMP. Impacts of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs 4-50 and 4-176).
NI	Invasive Species/ Noxious Weeds	No effects associated with leasing beyond what is currently addressed in the RMP. Impacts of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs 4-158-160).
NI	Lands/ Access	No effects associated with leasing beyond what is currently addressed in the RMP. Impacts of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs 4-298-302)
NI	Livestock Grazing	No effects associated beyond what is currently addressed in the RMP. Impacts of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs 4-293).
NI	Migratory Birds	No effects associated with leasing beyond what is currently addressed in the RMP. Affects to migratory birds were analyzed in the Powder River RMP/FEIS (pgs 4-231-235).
NI	Native American Religious Concerns	No effects associated with leasing beyond what is currently addressed in the RMP. Impacts of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs 4-152-179).
NI	Paleontology	No effects associated with leasing beyond what is currently addressed in the RMP. Impacts of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs 4-152-179)

Determination	Resource	Rationale for Determination
NI	Rangeland Health Standards	No effects associated with leasing beyond what is currently addressed in the RMP. Impacts of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs 4-293).
NI	Recreation	No effects associated with leasing beyond what is currently addressed in the RMP. Impacts of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs4-151-355).
NI	Socio-Economics	No effects associated with leasing beyond what is currently addressed in the RMP. The affects to socio-economic resources were analyzed in the Powder River RMP/FEIS (pgs 4-336-369). Socioeconomic data was updated, and analysis based on more recent information is provided.
NI	Soils	No effects associated with leasing beyond what is currently addressed in the RMP. Impacts of surface disturbing activities were analyzed in the Powder River RMP/FEIS with appropriate mitigation measures attached to lease parcels.
NI	Threatened, Endangered or Candidate Plant Species	No effects associated with leasing beyond what is currently addressed in the RMP. Effects of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs 4-216-273). New information and policy changes are discussed further in the EA.
NI	Wastes (hazardous or solid)	No effects associated with leasing beyond what is currently addressed in the Powder River RMP/FEIS.
NI	Water Resources/ Quality (drinking/ surface/ ground)	No effects associated with leasing beyond what is currently addressed in the Powder River RMP/FEIS.
NI	Wetlands/ Riparian Zones	No effects associated with leasing beyond

Determination	Resource	Rationale for Determination
		what is currently addressed in the Powder River RMP/FEIS.
NI	Vegetation Excluding Federally Listed Species	No effects associated with leasing beyond what is currently addressed in the RMP. Effects of surface disturbing activities were analyzed in the Powder River RMP/FEIS (pgs 4-216-273).
NI	Visual Resources	No effects associated with leasing beyond what is currently addressed in the RMP. Impacts of surface disturbing activities were analyzed in the Powder River RMP/FEIS with appropriate mitigation measures attached to lease parcels. In addition the VRM BMPs would be implemented on a site specific basis under a site specific NEPA process.
NP	Wild Horses and Burros	No effects associated with leasing.
NP	Areas with Wilderness Characteristics	All parcels were screened to determine if wilderness characteristics were present. Screening forms are located in the Buffalo Field Office.

DETERMINATION –
NP – not present in the area impacted by the proposed or alternative actions
NI – present, but adequately analyzed in RMP/FEIS for leasing actions
PI – present, not analyzed in RMP/FEIS or new information requires further analysis in the EA

BUREAU OF LAND MANAGEMENT
BUFFALO FIELD OFFICE
ENVIRONMENTAL ASSESSMENT FOR
COMPETITIVE OIL AND GAS LEASE SALE
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1.0 INTRODUCTION

It is the policy of the Bureau of Land Management (BLM) as derived from various laws, including the Mineral Leasing Act (MLA) of 1920, as amended [30 U.S.C. 181 *et seq*.] and the Federal Land Policy and Management Act of 1976 [43 U.S.C. 1701 *et seq.*], to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs.

As required by the Federal Oil and Gas Leasing Reform Act of 1987 (FOOGLRA) (Public Law 100-203, Sec. 5102, dated 12/22/87), an amendment to the MLA and the Code of Federal Regulations (CFR) (43 CFR 3120.1-2), the BLM Wyoming State Office conducts a quarterly competitive lease sale to sell available oil and gas lease parcels. After a public nomination process, a Notice of Competitive Lease Sale (NCLS), which lists lease parcels to be offered at the auction, is published by the BLM State Office at least 45 days before the auction is held. Lease terms and conditions as well as site-specific resource protection stipulations applicable to each parcel are specified in the Sale Notice. The decision as to which public lands and minerals are open for leasing and what leasing stipulations may be necessary, based on information available at the time, is made during the land use planning process. Surface management of non-BLM administered land overlaying federal minerals is determined by BLM in consultation with the appropriate surface management agency or the private surface owner.

In the process of preparing a lease sale the Wyoming BLM State Office sends a preliminary parcel list with the respective nominated parcels to each field office. Field Office staff reviews the legal descriptions of the parcels to determine if they are in areas open to leasing; if appropriate stipulations have been included; if new information has become available which might change any analysis conducted during the planning process; if appropriate consultations have been conducted; and if there are special resource conditions of which potential bidders should be made aware. Each Field Office confirms this review process and their recommendations by preparing analysis as required under the National Environmental Policy Act (NEPA) of 1969, which supports BLM's decision. Once the preliminary parcel review and the NEPA analysis is completed and returned to the State Office, the NCLS is generated for available parcels with standard terms and conditions as well as site-specific resource protection

stipulations attached per parcel and made available to the public. On rare occasions, additional information obtained after the publication of the NCLS, may result in the withdrawal of certain parcels prior to the day of the lease sale.

This Environmental Assessment (EA) documents the Buffalo Field Office review of the 8 parcels that were nominated through an Expression of Interest (EOI) for the Competitive Oil and Gas Lease Sales scheduled for February 2011. All parcels addressed in this EA are under the administration of the Buffalo Field Office. 8 parcels of approximately 1851.06 acres, were nominated for the February 2011 lease sale. The parcels that are not sold at auction during the competitive lease sale will be available for purchase through the non-competitive bidding process for a period of 2 years from the date of the initial respective sale. The EA serves to verify conformance with the approved land use plan, address new information, and provide the rationale for the recommendations of the Buffalo Field Manager regarding the deferral or the offer of leases for these parcels.

1.1 Purpose and Need

The purpose of this document is to analyze the impacts of offering the parcels at both competitive oil and gas lease sales to allow private individuals or companies to explore for and develop oil and gas resources on public lands. The decision to offer parcels for competitive sales is supported by this EA and takes into account new policies and environmental issues which have arisen since the approval of the governing RMP(s) for Buffalo Field Office.

The sale and issuance of oil and gas leases is needed to meet the growing energy needs of the United States public. Wyoming is a major source of natural gas for heating and electrical energy production in the lower 48 states, especially for markets in the Eastern United States. Continued sale and issuance of lease parcels is necessary to maintain options for production as oil and gas companies seek new areas for production or attempt to develop previously inaccessible or uneconomical reserves.

1.2 Conformance with Applicable Land Use Plan and Other Environmental Assessments

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this environmental assessment (EA) tiers to and incorporates by reference the information and analysis contained in the Powder River Basin Resource Management Plan (RMP) and Final Environmental Impact Statement (2003), The PRB RMP/EIS was approved by a Record of Decision (ROD) signed April 30, 2003. According to the Powder River RMP ROD, “the Project Area is about 8 million acres BLM administers the federal minerals under 4,326,704 acres (68 percent of the resource area). About 3,182,634 acres in the resource area (40 percent) are split estate (private surface and federal minerals). The RMP describes specific stipulations that would be attached to new leases offered over federal minerals.

The PRB RMP/EIS dictates resource protection and site-specific stipulations that are attached to parcels offered for leasing throughout the Buffalo Field Office planning area. For a complete listing of all 8 parcels with the applicable terms and conditions as well as site-specific resource protection stipulations, see Appendix A.

1.3 Leasing

Analysis as required by NEPA was conducted by Field Office resource specialists who relied on personal knowledge of the areas involved and/or reviewed existing databases and file information to determine if appropriate stipulations have been attached to each parcel prior to being made available for lease. It is unknown when, where or if future well sites or roads might be proposed. Detailed site specific analysis of individual wells or roads would occur when a lease holder submits an Application for Permit to Drill (APD). This EA was prepared by the Buffalo Field Office to disclose impacts, assist the Field Manager determine recommendations of the subject parcels and provide additional information on the site-specific resource protection stipulations for each parcel.

1.4 Federal, State or Local Permits, Licenses or Other Consultation Requirements

Purchasers of oil and gas leases are required to obey all applicable federal, state, and local laws and regulations including obtaining all necessary permits required should lease development occur. The BLM would not offer parcels for sale that would conflict with any local, county, or state plans.

2.0 PROPOSED ACTIONS AND ALTERNATIVES

Oil and gas nominations for the competitive lease sales scheduled to occur in August and February 2011 within the Buffalo Field Office boundary yielded 8 parcels, containing approximately 2809.73 acres. Of these, 4 parcels for a total of 1451.06 acres are recommended by the Field Manager to be offered at each respective sale and 4 parcels of 1358.67 acres are recommended for deferral due to Sage-Grouse.

2.1 Alternative A No Action:

The BLM NEPA Handbook (H-1790-1) states that for Environmental Assessments (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 an expression of interest to lease (parcel nomination) would be denied or rejected, or if a parcel has been sold, a lease would not be issued for that parcel and monies paid would be returned to the respective bidder.

Under the No Action alternative, the BLM would not offer any of the 8 parcels at the respective competitive lease sale that have been nominated. Surface management would remain the same and ongoing oil and gas development would continue on surrounding federal, private, and state leases.

It is not expected that demand for energy oil and gas will be reduced, and a decision to not issue these leases would not prevent future leasing in these areas consistent with land use planning decisions, and subject to appropriate stipulations, identified in the Resource Management Plan. Therefore, it is anticipated that these parcels may be nominated and leased at a future date. While future leases may contain more restrictive lease terms, it is reasonable to consider that a substantial portion of the development possible under current planning decisions will be possible under future leases.

2.2 Alternative B Proposed Action:

The Proposed Action is a recommendation from the Buffalo Field Manager to the State Director which includes the availability for leasing for 4 whole parcels and deferral of 4 parcels pending a further action or information. This recommendation is based on an interdisciplinary review which included updated site specific resource data and new information not identified in the land use planning process. As required by 43 CFR 3131.3 standard terms and conditions as well as site-specific resource protection stipulations are attached to each parcel as identified by the Buffalo Field Office interdisciplinary review panel of specialists.

Four parcels, approximately 1358.67 acres would be recommended for deferral pending completion of the Buffalo RMP, as issuing leases for this parcel now may constrain potential management objectives currently under consideration in the RMP amendment process. Once management direction has been specified and the Buffalo RMP finalized, additional stipulations may be attached with the High Bidder's mutual agreement.

The entire list of the 8 subject parcels addressed in this EA, with the standard terms and conditions and site-specific resource protection stipulations attached can be found in Appendix A. In addition, to the stipulations applied, each parcel has the parcel number, acreage, and legal description (location) listed in Appendix B.

Once sold, the lease purchaser has the right to use so much of the leased lands as is reasonably necessary to explore and drill for all of the oil and gas within the lease boundaries, subject to the stipulations attached to the lease (Title 43 Code of Federal Regulations 3101.1-4).

Oil and gas leases are issued for a 10-year period and 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 revert back to the federal government and may be leased again.

Before a lease owner or operator conducts any surface disturbing activities on the lease, BLM must first approve an Application for Permit to Drill (APD) and a surface use plan specified in Title 43 Code of Federal Regulations 3162.

Surface use restrictions, including timing limitation stipulations (TLS), No Surface Occupancy (NSO) stipulations, and controlled surface use (CSU) stipulations, as well as unavailable for leasing designations, cannot be retroactively applied to valid, existing oil and gas leases or to valid, existing use authorizations (e.g., Application for Permit to Drill [APD]). Post-lease actions/authorizations (e.g., APDs, road/pipeline ROWs), however, could be encumbered by TLS and CSU restrictions on a case-by-case basis, as required through project-specific NEPA analysis or other environmental review.

2.3 Alternative C Full Lease Sale:

Under Alternative C, all 8 parcels would be issued with the standard terms and conditions as well as site-specific resource protection stipulations recommended at the time of offering as detailed in Appendix A (minus the recommendation for deferrals).

3.0 Description of Affected Environment

This section describes the environment that would be affected by implementation of the alternatives described in Section 2. Aspects of the affected environment described in this section focus on relevant major resources and issues. Certain critical environmental components require analysis under BLM policy. Only those aspects of the affected environment that are potentially impacted are described in detail.

The proposed lease parcels are located in Campbell, Johnson and Sheridan Counties, Wyoming. This environmental assessment (EA) tiers to and incorporates by reference the information and analysis contained in the Powder River Basin Environmental Impact Statement approved in 2003.

3.1 Air Resources

In addition to the air quality information in the PRB RMP/EIS cited above, new information about GHGs and their effects on national and global climate conditions has emerged since the RMP was prepared. On-going scientific research has identified the potential impacts of GHG emissions such as carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), water vapor; and several trace gases on global climate. Through complex interactions on a global scale, GHG emissions cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), industrialization and burning of fossil carbon sources have caused GHG concentrations to increase measurably, and may contribute to overall climatic changes.

This EA incorporates an analysis of the contributions of the proposed action to GHG emissions and a general discussion of potential impacts to climate. 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.

Air Quality

The U.S. Environmental Protection Agency (EPA) established air quality standards (NAAQS) for criteria pollutants. Criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), particulate matter (PM10 and PM2.5), sulfur dioxide (SO2), and lead (Pb). Air pollutant concentrations greater than the NAAQS represent a risk to human health.

EPA has delegated regulation of air quality to the State of Wyoming and is administered by the Wyoming Department of Environmental Quality. Wyoming Ambient Air Quality Standards

(WAAQS) and NAAQS identify maximum limits for concentrations of criteria air pollutants at all locations to which the public has access. The WAAQS and NAAQS are legally enforceable standards. Concentrations above the WAAQS and NAAQS represent a risk to human health that, by law, require public safeguards be implemented. State standards must be at least as protective of human health as federal standards, and may be more restrictive than federal standards, as allowed by the Clean Air Act.

Visibility can be expressed in terms of deciviews (dv), a measure for describing perceived changes in visibility. One dv is defined as a change in visibility that is just perceptible to an average person which is approximately a 10 percent change in light extinction. To estimate potential visibility impairment, monitored aerosol concentrations are used to reconstruct visibility conditions for each day monitored. These daily values are then ranked from clearest to haziest and divided into three categories to indicate the mean visibility for all days (average), the 20 percent of days with the clearest visibility (20 percent clearest), and the 20 percent of days with the worst visibility (20 percent haziest). Visibility can also be defined by standard visual range (SVR) measured in miles, and is the farthest distance at which an observer can see a black object viewed against the sky above the horizon; the larger the SVR, the cleaner the air.

Since 1980 the Interagency Monitoring of Protected Visual Environments (IMPROVE) network has measured visibility in national parks and wilderness areas. These are managed as high visual quality Class I and II areas by the federal visual resource management (VRM) program. There are six IMPROVE stations in Wyoming, including two located within the Buffalo resource area at the Thunder Basin National Grasslands and Cloud Peak National Wilderness areas.

Atmospheric Deposition

Atmospheric deposition refers to processes in which air pollutants are removed from the atmosphere and deposited into terrestrial and aquatic ecosystems. Air pollutants can be deposited by either wet (precipitation via rain or snow) or dry (gravitational) settling of particles and adherence of gaseous pollutants to soil, water, and vegetation. Much of the concern about deposition is due to secondary formation of acids and other compounds from emitted nitrogen and sulfur species such as nitrogen oxides (NO_x) and sulfur dioxide (SO_2), which may contribute to acidification of lakes, streams, and soils and affect other ecosystem characteristics, including nutrient cycling and biological diversity.

Substances deposited include:

- Acids, such as sulfuric (H_2SO_4) and nitric (HNO_3), sometimes referred to as acid rain
- Air toxics, such as pesticides, herbicides, and volatile organic compounds (VOCs)
- Heavy metals, such as mercury
- Nutrients, such as nitrates (NO_3-) and ammonium (NH_4+)

The accurate measurement of atmospheric deposition is complicated by contributions to deposition by several components: rain, snow, cloud water, particle settling, and gaseous pollutants. Deposition varies with precipitation and other meteorological variables (e.g., temperature, humidity, winds, atmospheric stability, etc.), which in turn, vary with elevation and time.

The United States Department of Agriculture (USDA) Forest Service (USFS) has established guidelines or Levels of Concern (LOCs) for total deposition of nitrogen and sulfur compounds in Class I Wilderness Areas (USFS 2007). Total nitrogen deposition of 1.5 kilograms per hectare per year or less is considered to be unlikely to harm terrestrial or aquatic ecosystems. For total sulfur deposition, the LOC is five kilograms per hectare per year. A sulfur LOC of 1.5 kilograms per hectare per year is being considered. Note that these are the same LOCs used by the National Park Service.

Monitoring of Air Quality, Visibility, and Deposition in the Buffalo Resource area

Air pollutant concentrations, visibility, and atmospheric deposition within and nearby the Buffalo resource area are continuously monitored by various state and federal agencies. Table 3-1 lists the available air quality monitoring sites within the Buffalo resource area (Sheridan, Johnson, and Campbell counties), including sites in adjacent counties (Weston and Converse counties). The Wyoming Department of Environmental Quality (DEQ) operates monitors as part of the State and Local Monitoring Site (SLAMS) network and the Special Purpose Monitoring (SPM) network. SLAMS sites include the Highland Park and Police Station monitors in Sheridan County which measure PM_{10} and $PM_{2.5}$, and the Gillette site in Campbell County, which measures PM_{10}. SPM sites include the Arvada site in Sheridan County and the Thunder Basin, South Campbell County, Belle Ayr Mine, Wright, Black Thunder Mine, and Buckskin Mine sites in Campbell County.

There are two monitors in the IMPROVE network located at Cloud Peak in Johnson County and Thunder Basin in Campbell County. Monitors are operated by BLM in Johnson County as part

Table 3 Air Quality Monitoring Sites Within and Near the Buffalo Resource Area

County	Site Name	Type of Monitor	Parameter	Operating Schedule	Location	
					Longitude	Latitude
Air Quality Monitoring Sites Within the Resource area						
Campbell	Thunder Basin	SPM	O3, NOx & Met	Hourly	-105.3000	44.6720
	South Campbell County	SPM	O3, NOx, PM10 & Met	1/3 (PM10) & hourly (NOx & O3)	-105.5000	44.1470
	Belle Ayr Mine	SPM	NOx & PM2.5	1/3 (PM2.5) & hourly (NOx)	-105.3000	44.0990
	Wright	SPM	PM10	1/6	-105.5000	43.7580
	Gillette	SLAMS	PM10	1/6	-105.5000	44.2880
	Black Thunder Mine	SPM	PM2.5	1/3	-105.2000	43.6770
	Buckskin Mine	SPM	PM2.5	1/3	-105.6000	44.4720
	South Coal	WARMS	PM2.5 & Meteorology		-105.8378	44.9411
	Thunder Basin	IMPROVE	PM2.5, Nitrate, Ammonium, Nitric Acid, Sulfate, Sulfur Dioxide & Meteorology	1/3	-105.2874	44.6634
Johnson	Buffalo	WARMS	PM2.5, Nitrate, Ammonium, Nitric Acid, Sulfate, Sulfur Dioxide & Meteorology	1/3 (PM2.5) & 1/7 (others)	-106.0189	44.1442
	Juniper	WARMS	PM2.5 & Meteorology	1/3 (PM2.5)	-106.2289	44.2103
	Cloud Peak	IMPROVE	PM2.5, Nitrate, Ammonium, Nitric Acid, Sulfate, Sulfur Dioxide & Meteorology	1/3	-106.9565	44.3335
Sheridan	Sheridan - Highland Park	SLAMS	PM10 & PM2.5	1/3 (PM10); 1/3 & 1/6 (PM2.5)	-107.0000	44.8060
	Sheridan - Police Station	SLAMS	PM10 & PM2.5	1/1 (PM10) & 1/3 & 1/6 (PM2.5)	-107.0000	44.8330
	Arvada	SPM	PM10		-106.1000	44.6540
	Sheridan	WARMS	PM2.5, Nitrate, Ammonium, Nitric Acid, Sulfate & Sulfur Dioxide	1/3 (PM2.5) & 1/7 (others)	-106.8472	44.9336
Air Quality Monitoring Sites Near the Resource area						
Converse	Antelope Mine	SPM	NOx & PM2.5	1/3 (PM2.5) & hourly (NOx)	-105.4000	43.4270
Weston	Newcastle	WARMS	PM2.5, Nitrate, Ammonium, Nitric Acid, Sulfate, Sulfur Dioxide & Meteorology	1/3 (PM2.5) & 1/7 (others)	-104.1919	43.8731
	Newcastle	NADP	Wet deposition of ammonium, sulfate, metals	Weekly		

Source: WARMS 2009; EPA 2009b; IMPROVE 2009; Wyoming DEQ 2009a; Wyoming DEQ 2009b; NADP 2009

Since none of the CASTNet sites are located near the Buffalo resource area, data from these sites may not be representative of concentrations in the Buffalo resource area.

Climate

The climate in the resource area is temperate, a semi-arid region with long cold winters and short summers. The major factors controlling climate in the resource area are elevation, strong westerly winds, moisture flow, and mountainous barriers to the west. Elevations within the resource area are variable and relatively flat ranging from 4,544 feet near Gillette to 4,645 feet near Buffalo. The Big Horn Mountains along the western edge of the resource area rise to over 13,000 feet. In Gillette, temperatures range from approximately 31 to 59 degrees Fahrenheit (°F). Wind speed and direction are highly variable because of the impact of local topography in the resource area. Wind speeds are generally strong and gusts above 40 miles per hour are not unusual. Table 3.1 lists temperature, precipitation, and wind speed data for the resource area.

Climate change refers to any significant change in measures of climate (e.g., temperature or precipitation) lasting for an extended period of time (decades or longer). Climate change may result from natural processes, such as changes in the sun's intensity; natural processes within the climate system (such as changes in ocean circulation); human activities that change the atmosphere's composition (such as burning fossil fuels) and the land surface (such as urbanization) (IPCC 2007).

Greenhouse Gas Emissions

Greenhouse gases that are included in the US Greenhouse Gas Inventory are: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). CO2 and methane (CH4) are typically emitted from combustion activities or are directly emitted into the atmosphere. On-going scientific research has identified the potential impacts of greenhouse gas emissions (including CO2; CH4; nitrous oxide (N2O), water vapor; and several trace gasses) on global climate. Through complex interactions on at regional and global scales, these greenhouse gas emissions cause a net warming effect of the atmosphere (which making makes surface temperatures suitable for life on Earth), primarily by decreasing the amount of heat energy radiated by the Earth back into space. Although greenhouse gas levels have varied for millennia (along with corresponding variations in climatic conditions), recent industrialization and burning of fossil carbon sources have caused CO2 concentrations to increase dramatically, and are likely to contribute to overall climatic changes, typically referred to as global warming. Increasing CO2 concentrations also lead to preferential fertilization and growth of specific plant species.

Global mean surface temperatures have increased nearly 1.0°C (1.8°F) from 1890 to 2006 (Goddard Institute for Space Studies, 2007). However, observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Data indicates that northern latitudes (above 24° N) have exhibited temperature increases of nearly 1.2°C (2.1°F) since 1900, with nearly a 1.0°C (1.8°F) increase since 1970 alone. It also shows temperature and precipitation trends for the conterminous United States. For both parameters we see varying rates of change, but overall increases in both temperature and precipitation. Without additional meteorological monitoring systems, it is difficult to determine

the spatial and temporal variability and change of climatic conditions, but increasing concentrations of greenhouse gases are likely to accelerate the rate of climate change.

In 2001, the Intergovernmental Panel on Climate Change indicated that by the year 2100, global average surface temperatures would increase 1.4 to 5.8°C (2.5 to 10.4°F) above 1990 levels. The National Academy of Sciences (2006) has confirmed these findings, but also indicated that there are uncertainties regarding how climate change may affect different regions. Computer model predictions forecasts indicate that increases in temperature will not be evenly or equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures is more likely than increases in daily maximum temperatures.

Currently, the WDEQ-AQD does not have regulations regarding greenhouse gas emissions, although these emissions are regulated indirectly by various other regulations.

Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The primary greenhouse gases that enter the atmosphere as a result of anthropogenic activities include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_20), and flourinated gases such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. These synthetic gases are powerful GHGs that are emitted from a variety of industrial processes.

Ongoing scientific research has identified the potential impacts of anthropogenic greenhouse gas (GHG) emissions and changes in biological sequestration due to land management activities on global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused CO2 concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change (IPCC) recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."

Several activities contribute to the phenomena 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. For example, recent emissions of carbon dioxide can influence climate for 100 years. In contrast, black carbon is a relatively short-lived pollutant, as it remains in the atmosphere for only about a week. It is estimated that black carbon is the second greatest contributor to global warming behind CO_2 (Ramanathan and Carmichael, 2008).

Table 3.1. Climate Information for the Buffalo Resource area

Climate Component	Description
Temperature	Mean maximum summer temperature[1]: 93.6 °F and 94.4 °F Mean minimum winter temperature[1]: -5.9 °F and -7.8 °F Mean annual temperature[1]: 45.6 °F and 45.2 °F
Precipitation	Mean annual precipitation: 13 to 17 inches Mean annual snowfall: 33 and 67 inches
Winds	Mean annual wind speed: 9.3 mph Prevailing wind direction: north/northwest

Source: EPA 2008b
[1] Buffalo and Gillette respectively
°F – degrees Fahrenheit
mph – miles per hour

The lack of scientific tools designed to predict climate change at regional or local scales limits the ability to quantify potential future impacts. However, potential impacts to air quality due to climate change are likely to be varied. Several activities occur within the planning area that may generate greenhouse gas emissions: oil, gas, and coal development, large fires, livestock grazing, and recreation using combustion engines which can potentially generate CO2 and methane.

Some activities within the Planning Area generate greenhouse gas (GHG) emissions. Oil and gas development activities can generate carbon dioxide (CO2) and methane (CH4). CO2 emissions result from the use of combustion engines, while methane can be released during processing. Wildland fires also are a source of other GHG emissions, while livestock grazing is a source of methane. Other activities in the Resource Area with the potential to contribute to climate change include soil erosion from disturbed areas and fugitive dust from roads, which have the potential to darken snow-covered surfaces and cause faster snow melt. A description of the potential greenhouse gas emissions associated with the proposed leasing activities is included in Section 4.

Visibility

There are several National Parks, National Forests, recreation areas, and wilderness areas surrounding the Buffalo Planning Area. Table 3.4 lists areas designated as Class I or Class II air-sheds. National Parks, Monuments and some state designated Wilderness Areas are designated as Class I. The Clean Air Act "declares as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas . . . from manmade air pollution." 42 U.S.C. § 7491(a)(1).25. Under the BLM Manual Section 8560.36,

BLM lands, including wilderness areas not designated as Class I, are managed as Class II, which provides that moderate deterioration of air quality associated with industrial and population growth may occur.

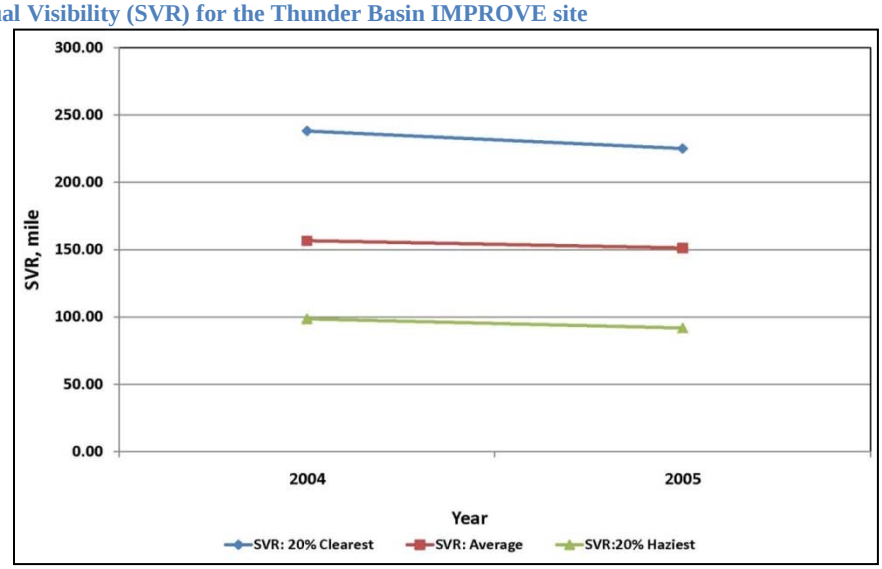
Table 3.4 National Parks, Wilderness Areas, and National Monuments in the Vicinity of the Buffalo Planning Area

Area Name	Closest Distance to the Buffalo Planning Area (miles)	Direction from the Buffalo Planning Area	Clean Air Act Status of the Area
Wind Cave National Park	75	East	Class I
Yellowstone National Park	>100	Northwest	Class I
Grand Teton National Park	>100	Northwest	Class I
Badlands National Park	>100	East	Class I
Jewell Cave National Monument	50	East	Class II
Cloud Peak Wilderness Area	65	North	Class II
North Absaroka Wilderness Area	>100	Northwest	Class I
Washakie Wilderness Area	>100	Northwest	Class I
Fitzpatrick Wilderness Area	100	West	Class I
Bridger Wilderness Area	90	West	Class I
Teton Wilderness Area	>100	Northwest	Class I

Source: NPS 2006

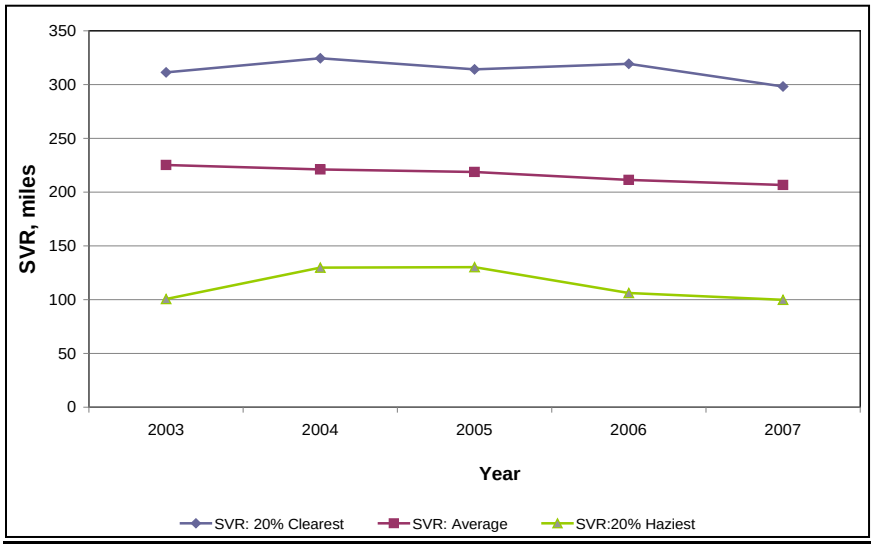
As noted above, data collected at the Thunder Basin National Grasslands and Cloud Peak Wilderness IMPROVE monitoring sites have been used indirectly to measure visibility in the planning area. Figure 3-2 presents visibility data for the Thunder Basin IMPROVE site for the period 2004-2005, and Figure 3-3 presents visibility data for the Cloud Peak IMPROVE site for the period 2003-2007. The data for the two sites are consistent and show very good to excellent visibility ranges within the planning area, even for the 20 percent haziest days. Although there are not enough data to discern trends at the Thunder Basin site, the five-year record at the Cloud Peak site does show a very slight degradation of visibility over this time period.

Figure 3-1. Annual Visibility (SVR) for the Thunder Basin IMPROVE site



Source: IMPROVE 2009
IMPROVE – Interagency Monitoring of Protected Visual Environments
SVR – standard visual range

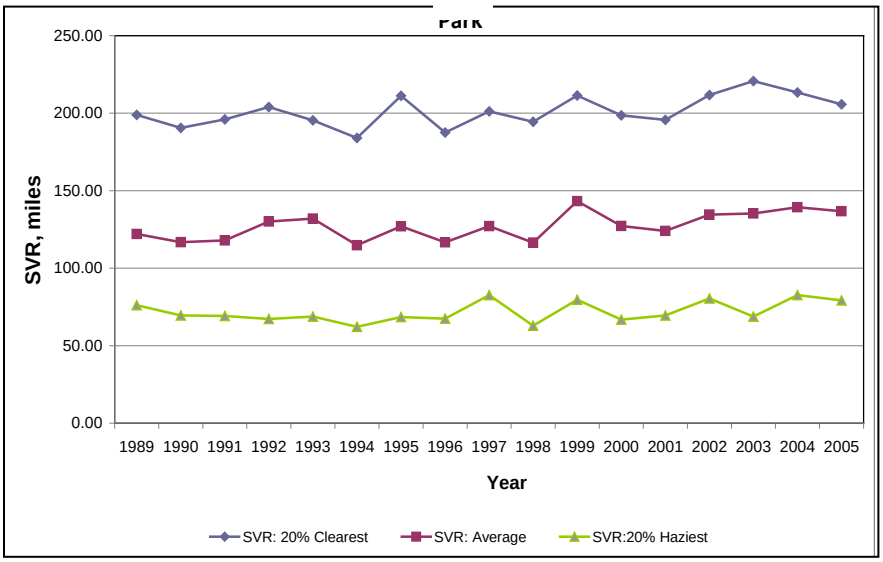
Figure 3-2. Annual Visibility (SVR) for the Cloud Peak IMPROVE site



Source: IMPROVE 2009
IMPROVE – Interagency Monitoring of Protected Visual Environments
SVR – standard visual range

In addition to visibility measurements within the Buffalo planning area, Figure 3-3 presents visibility estimates SVR for the Badlands National Park site, located east of the planning area, for the period 1989 to 2005. This figure shows the annual average visual range estimates and the estimates for the 20 percent clearest days and 20 percent haziest days. The visibility estimates for the Badlands site are lower than those for the Thunder Basin and Cloud Peak sites, but no real trend in visibility is discernable during this period at the Badlands monitor.

Figure 3-3. Annual Visibility (SVR) for the Badlands National Park IMPROVE site

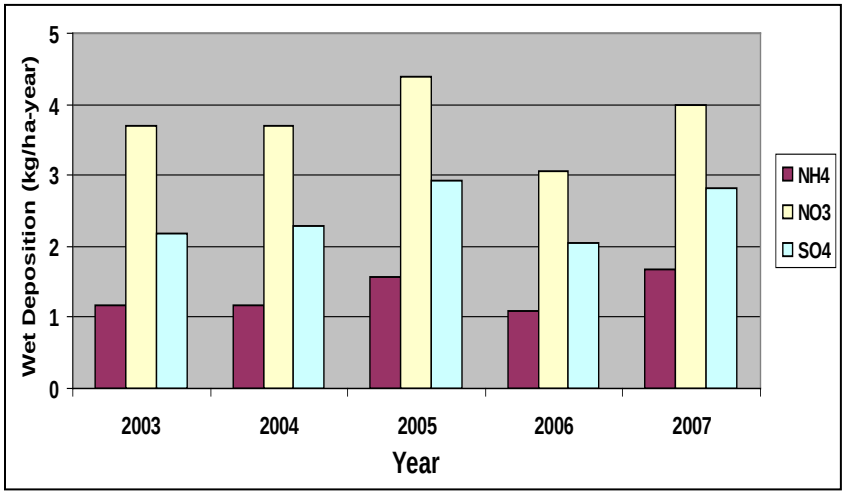


Source: IMPROVE 2009
IMPROVE – Interagency Monitoring of Protected Visual Environment; SVR – standard visual range

Atmospheric Deposition

There are no NADP or CASTNet/Water and Atmospheric Resource Monitoring stations in the planning area, but wet deposition measurements are available for the Newcastle NADP monitor, located just east of the area. Figure 3-15 presents mean annual wet deposition for NH_4, NO_3, and SO_4 for the period 2003 to 2007. There are no discernable trends in these measurements over this period. Wet nitrogen deposition (of NH_4 and NO_3) is exceeding the current LOCs at the Newcastle monitor for this period and wet sulfur deposition does not exceed the LOC at this site during this period.

Figure 3-4. Mean Annual Wet Deposition (kilogram per hectare per year) – Newcastle, Wyoming NADP Site



Source: NADP 2009
NADP – National Acid Deposition Program; NH_4 – ammonium; NO_3 – nitrate; SO_4 – sulfate

3.2 Wildlife

Special Status Species

Section 7 of the ESA requires that BLM land managers ensure that any action authorized, funded, or carried out by the BLM is not likely to jeopardize the continued existence of any threatened or endangered species and that it avoids any appreciable reduction in the likelihood of recovery of affected species. Consultation is required on any action proposed by the BLM or another federal agency that affects a listed species or that jeopardizes or modifies critical habitat.

The BLM's Special Status Species Policy outlined in BLM Manual 6840 is to conserve listed species and the ecosystems on which they depend and to ensure that actions authorized or carried out by BLM are consistent with the conservation needs of special status species and do not contribute to the need to list any of these species. The BLM's policy is intended to ensure the survival of those plants that are rare or uncommon, either because they are restricted to specific uncommon habitat or because they may be in jeopardy due to human or other actions.

By BLM policy, species proposed for federal listing are to be managed with the same level of protection provided for threatened and endangered species. The policy for federal candidate species and BLM sensitive species is to ensure that no action that requires federal approval should contribute to the need to list a species as threatened or endangered.

Other management direction is based on RMP management objectives, activity level plans, and other aquatic habitat and fisheries management direction, including 50 CFR 17, the Land Use Planning Handbook, Appendix C, Part E, Fish and Wildlife.

The current RMP has evaluated the need to protect habitat necessary for the success of species identified through these regulations and policies. New information regarding the status of the Greater Sage-grouse has elevated its status from a BLM sensitive species to a federal candidate species. Policy was issued by the Wyoming BLM in December, 2009 under Information Memoranda 2010-012 and 2010-013; additional policy was issued by the Washington Office BLM under Information Memoranda 2010-071.

The Greater sage-grouse is a candidate species for listing under provisions of the ESA as determined by the USFWS and documented in a March 5, 2010 Federal Register notice declaring that listing of the Greater sage-grouse was warranted but precluded. Greater sage-grouse are distributed in sagebrush habitat throughout the PRB, where habitat fragmentation and degradation has not reduced habitat to unsuitable. Greater sage-grouse leks are generally at mid elevations within sagebrush habitat. Nesting and brood-rearing habitat is sometimes associated

with the lek and sometimes found at a distance from the lek in sagebrush habitat. Within the Buffalo Field Office there are approximately 944,463 acres of designated Greater Sage-grouse Core Area that occur on public, private, state, and other federal lands. These remaining suitable sagebrush habitat areas could be productive for Greater sage-grouse; however, fragmentation and degradation might limit the distribution and abundance of Greater sage-grouse. The WGFD has identified core areas, which represent these relatively productive areas, and has suggested special management for these areas.

There are many sources of habitat fragmentation, all of which may affect the Greater sage-grouse. Industrial development, livestock grazing, mining, gravel pit operations, oil and gas activity, land exchanges and disposal, vegetation manipulation, fuel reduction projects and other activities may cause an artificial component to a natural habitat condition. Structures such as powerlines, towers and industrial disruptive activities may cause avoidance and abandonment of habitat. Livestock grazing, fuels treatments, and weed spread infestations are factors which may cause habitat degradation depending upon severity, intensity, and design. West Nile virus, which recently has had lethal effects on Greater sage-grouse in parts of Wyoming, could become an important factor in Greater sage-grouse survival. There has been little research to document the presence of the virus and its effect on Greater sage-grouse in the PRB.

Greater sage-grouse have been declining across the west, which has prompted several petitions to list them as threatened under the ESA, including a recent petition that led to the March 5, 2010 finding by the USFWS of warranted for listing but precluded. Population levels throughout the resource area declined during the mid 1990s. Since 2004, the levels have maintained or slightly increased. It is thought this resurgence was a result of well-timed precipitation events. These precipitation events promoted forage growth, which aided the survival of young. Population growth has varied throughout the resource area based on specific local conditions, with some areas showing little change; other areas have had a recent increase in lek count numbers. With recent improvement in spring and summer conditions in many parts of the PRB, there are some Greater Sage-grouse leks that have become active again after many years of non-use. Winter conditions generally are not a limiting factor in the PRB because snow depths are not as severe as in other parts of Wyoming.

3.3 Lands with Wilderness Characteristics

As part of the current RMP revision-planning effort, the Buffalo Field Office has recommended a deferral of all parcels with potential for wilderness characteristics.

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

are considered if they are contiguous with designated Wilderness or WSAs, or in rare circumstances, are of a manageable size in accordance with FLPMA.

The BLM Land Use Planning Handbook (H-1601-1) states that the BLM must consider the management of lands with wilderness characteristics during the land use planning process. The criteria used to identify these lands are essentially the same criteria used for determining wilderness characteristics for WSAs. However, the authority set forth in Section 603(a) of FLPMA to complete the three-part wilderness review process (inventory, study, and report to Congress) expired on October 21, 1993; therefore, FLPMA does not apply to new WSA proposals and consideration of new WSA proposals on BLM-administered public lands is no longer valid. The BLM is still required to inventory lands to determine whether they possess wilderness characteristics.

At present, the BLM manages these lands in accordance with the current RMPs; no specific management has been developed for these areas.

3.4 Socioeconomic Resources

Table 3.4.1 shows changes in population for each county between 1970 and 2008. Campbell was the fastest-growing county, increasing its population by two hundred eighteen percent since 1970. The other two counties both increased by sixty percent from 1970 to 2005.

Table 3.4.1: Population Change by County, 1970-2008

Area	Population in 1970	Population in 2008	Change 1970-2008	Average Annual Change 1970-2008
Campbell County	13,049	41,473	218%	3.1%
Johnson County	5,611	8,464	51%	1.1%
Sheridan County	17,865	28,662	60%	1.3%
Wyoming	333,795	532,668	60%	1.2%
United States	203,798,722	304,059,724	49%	1.1%

Sources: BEA 2009; U.S. Census Bureau 2009d, 2009e, 2009f

Table 3.4.2 below provides a summary of the sources of personal income by place of work and county in the resource area. The table highlights county-level differences in the importance of various economic sectors, as well as the contribution of nonwage income, specifically dividends, interest, and rent, to personal income. In Campbell County, mining contributes two-fifths of total earnings, which is more than three times the contribution of any other sector. The next largest sectors are construction (12%) and government (11%). Campbell County also has a relatively low contribution from nonwage income, especially compared to Johnson and Sheridan counties. Johnson and Sheridan counties have a relatively large share of income from mining; it is the second largest sector in both counties, with government employment contributing the largest share in each county. Construction is the third largest sector in both Johnson and Sheridan counties.

In all three counties, farm income contributes a very small share of earnings; in 2007, net farm income was negative in all three counties, owing to expenses that exceeded gross income. Agricultural services, such as custom tillage, made some additional contributions, but the amount is relatively small in all three resource area counties (3% of earnings in Johnson County and 1% in Sheridan County; the exact figure is not available for Campbell County, but it is less than 0.2% because that is the total contribution from all sectors for which data are not disclosed).

Table 3.4.2: Average and Median Income; Average Earnings Per Job

Item-Sector	Campbell County (Wyoming)	Johnson County (Wyoming)	Sheridan County (Wyoming)	Natrona County (Wyoming)	Big Horn County (Montana)	Yellowstone County (Montana)	Wyoming	United States
Population	40,433	8,139	28,037	71,784	12,765	139,766	523,252	301,290,332
Total personal income ($ millions)	$1,906	$329	$1,421	$3,772	$285	$5,328	$24,618	$11,634,322
Dividends, interest, and rent as a proportion of total personal income	15%	36%	39%	25%	12%	19%	29%	18%
Earnings by place of work ($ millions)[1]	$1,911	$179	$751	$2,722	$228	$4,195	$16,568	$8,848,240
Percent of total earnings by place of work (by sector)								

Item-Sector	Campbell County (Wyoming)	Johnson County (Wyoming)	Sheridan County (Wyoming)	Natrona County (Wyoming)	Big Horn County (Montana)	Yellowstone County (Montana)	Wyoming	United States
Farming	-0.3%	-4%	-0.4%	0.1%	4%	0.3%	-0.01%	1%
Fishing, logging, and related activities, including agricultural services[2]	n/a	3%	1%	n/a	1%	0.2%	0.3%	0.3%
Mining	40%	19%	11%	26%	22%	4%	19%	1%
Utilities	1%	1%	1%	n/a	n/a	1%	1%	1%
Construction	12%	13%	10%	7%	4%	9%	10%	6%
Manufacturing	3%	1%	2%	5%	0.4%	8%	4%	12%
Wholesale trade	6%	1%	3%	8%	1%	8%	4%	5%
Retail trade	4%	6%	8%	7%	3%	8%	6%	6%
Transportation and warehousing	6%	4%	7%	n/a	n/a	5%	5%	3%
Information	0.5%	1%	1%	1%	0.3%	2%	1%	4%
Finance and insurance	1%	5%	4%	3%	2%	5%	3%	8%
Real estate and rental and leasing	1%	2%	2%	3%	0.4%	2%	3%	2%
Professional and technical services	3%	4%	7%	5%	2%	n/a	5%	10%
Management of companies and enterprises	2%	n/a	0.2%	0.5%	0%	n/a	1%	2%
Administrative and waste services	2%	n/a	2%	2%	0.3%	4%	2%	4%
Educational services	n/a	n/a	0.4%	0.1%	n/a	0.5%	0.3%	1%
Health care and social assistance	3%	n/a	9%	11%	n/a	15%	7%	9%

Item-Sector	Campbell County (Wyoming)	Johnson County (Wyoming)	Sheridan County (Wyoming)	Natrona County (Wyoming)	Big Horn County (Montana)	Yellowstone County (Montana)	Wyoming	United States
Arts, entertainment, and recreation	0.1%	3%	1%	1%	1%	1%	1%	1%
Accommodation and food services	2%	5%	4%	2%	2%	3%	4%	3%

4.0 ENVIRONMENTAL EFFECTS

4.1 Air Resources

Air Quality

Alternative A: No Action

Under the no action alternative, the monies received from those previously sold parcels where leases were not issued, would be refunded and no development would occur. Due to demand for oil and gas, it is expected that these parcels may be re-nominated in the future, consistent with appropriate land use planning decisions, and would be offered for sale with additional stipulations. There is no way to accurately predict what level of restrictions future leasing may require, but it can be assumed that a substantial portion of the development that would have been authorized under the leases currently sold would still be permitted under future leases. Nominations of parcels for lease under future land use plans and decisions would be screened for consistency with the land use plan in effect at the time, and the appropriate environmental analysis would be conducted to determine associated air quality impacts. Impacts to air quality from leases issued from any future sales would be analyzed in the appropriate environmental documents for those sales. Analysis of air quality impacts is also required at the time an application for a permit to drill is submitted.

A decision to not issue leases for any of the 8 parcels would support continued current uses of these parcels. These uses are primarily associated with grazing, with some dispersed recreation such as hunting and hiking. These uses typically entail vehicle travel for access, and would be expected to continue at current rates.

Alternative B: Proposed Action

Issuing leases for the subject tracts would have no direct impacts to air quality. Any potential effects to air quality would occur if and when the leases were developed. Existing sources of Hazardous Air Pollutants (HAPs) and greenhouse gases within the resource area include fossil

fuel combustion that emits HAPs; oil, gas, and coal development operations that emit VOCs; NO_X; and hydrogen sulfide (H_2S). Over the last 10 years, the leasing of Federal oil and gas mineral estate in the Buffalo Field Office has resulted in an average total of 964 wells drilled on federal leases annually. In addition, large fires are a source of HAPs emissions. The growth in resource development and accompanying increase in emissions from these types of sources will depend on a number of external factors that make it difficult to estimate actual trends in these pollutants in the resource area.

Potential impacts of development could include increased air borne soil particles associated with the construction of new well pads, pipelines, or roads, exhaust emissions from drilling equipment, compressors, vehicles, and dehydration and separation facilities, as well as potential releases of GHG and volatile organic compounds during drilling or production activities. The amount of increased emissions cannot be quantified at this time since it is unknown 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 will also vary according to the characteristics of the geologic formations from which production occurs. Emissions of all regulated pollutants (including GHGs) and their impacts will be quantified and evaluated at the time that a specific development project is proposed.

In June 2009, the BLM Wyoming State Office Reservoir Management Group produced a draft Reasonably Foreseeable Development Scenario for Oil and Gas (RFD) document for the Buffalo Field Office Resource area RMP revision. This document demonstrates that approximately 629 conventional wells and 13,803 Coalbed Natural Gas wells would be drilled between 2009 and 2028 on Federal minerals. (The petroleum resources specific to these leases in the Proposed Action are not known whether they are gas or oil or a combination thereof; however the RFD does indicate that they have very low or no potential for CBNG development). The absolute density of drilling depends upon the technology available (vertical, directional, or horizontal) and the geology of the hydrocarbon-bearing zone. As a result, it is unknown the specific numbers of wells that could potentially be drilled under a full field development scenario as a result of issuing the leases. However, the RFD takes these assumptions into account, and on a Field Office wide basis, is still valid. Current APD permitting trends within the field office confirm that these assumptions are still accurate as from October 1999 through September 30, 2009 the Buffalo Field Office has approved 12,827 APDs.

Subsequent development of any leases issued, would contribute a small incremental increase in overall hydrocarbon emissions, including GHGs. When compared to total national or global emissions, the amount released as a result of potential production from the proposed lease tracts would not have a measurable effect.

Coalbed natural gas development accounts for a large proportion of the APDs approved by the Buffalo Field Office since the late 1990s.

Alternative C: Full Lease Sale

Under this alternative, leases would be issued with the aforementioned stipulations. However, due to the larger acreage under this Alternative potentially subject to surface disturbing activities, drilling and production, the potential for impacts are similar to, but have a higher probability of occurring in larger amounts, as under Alternative B.

Mitigation

None

Greenhouse Gas Emissions

Alternative A: No Action

A decision to not issue the leases would preclude oil and gas development that could contribute greenhouse gas emissions from these leases. However, as discussed previously under the no action alternative, this would not preclude future nomination, leasing, and development consistent with land use planning decisions at that time. Based on demand for oil and gas, it is expected that these parcels would be nominated in the future, consistent with appropriate land use planning decisions, and would be offered for sale with appropriate stipulations. There is no way to accurately predict what level of restrictions future leasing may require, but it can be assumed that a substantial portion of the development that would have been authorized under the leases currently sold would still be permitted under future leases. This would result in a postponement of development, and the possibility of the development occurring with increased restriction on greenhouse gas emissions. The levels and types of restrictions would be determined at the time of lease, and submittal of development activities for approval, but are expected to allow for at least moderate development of areas open to leasing. Therefore, the no-action alternative would likely delay, and not prevent, greenhouse gas emissions. The no-action alternative may also result in reduced levels of emissions associated with future expanded restrictions.

See Section 4.3 for a discussion of the impacts of these potential greenhouse gas emissions on global climate change.

Alternative B: Proposed Action

The sale of leases in itself would not result in any direct greenhouse gas emissions. However, in regard to future development, the assessment of GHG emissions and climate change is in its formative phase. While it is not possible to accurately quantify potential GHG emissions in the affected areas as a result of making the proposed tracts available for leasing, some general assumptions however can be made: issuing the proposed tracts may contribute to drilling new wells.

The Center for Climate Strategies (CCS) prepared the Wyoming Greenhouse Gas Inventory and Reference Case Projection 1990-2020 (Inventory) for the Wyoming Department of Environmental Quality (WYDEQ) through an effort of the Western Regional Air Partnership (WRAP). This inventory report presents a preliminary draft greenhouse gas (GHG) emissions inventory and forecast from 1990 to 2020 for Wyoming. This report provides an initial comprehensive understanding of Wyoming's current and possible future GHG emissions. The information presented provides the State with a starting point for revising the initial estimates as improvements to data sources and assumptions are identified.

The inventory report discloses that activities in Wyoming accounted for approximately 56 million metric tons (MMt) of *gross* carbon dioxide equivalent (CO2e) emissions in 2005, an amount equal to 0.8% of total US gross GHG emissions. These emission estimates focus on activities in Wyoming and are *consumption-based;* they exclude emissions associated with electricity that is exported from the State. Wyoming's gross GHG emissions increased 25% from 1990 to 2005, while national emissions rose by only 16% from 1990 to 2004. Annual sequestration (removal) of GHG emissions due to forestry and other land-uses in Wyoming are estimated at 36 MMtCO2e in 2005. Wyoming's per capita emission rate is more than four times greater than the national average of 25 MtCO2e/yr. This large difference between national and State per capita emissions occurs in most of the sectors – Wyoming's emission per capita significantly exceed national emissions per capita for the following sectors: electricity, industrial, fossil fuel production, transportation, industrial process and agriculture. The reasons for the higher per capita intensity in Wyoming are varied but include the State's strong fossil fuel production industry and other industries with high fossil fuel consumption intensity, large agriculture industry, large distances, and low population base. Between 1990 and 2005, per capita emissions in Wyoming have increased, mostly due to increased activity in the fossil fuel industry, while national per capita emissions have changed relatively little.

Wyoming's gross GHG emissions are expected to continue to grow to 69 MMtCO2e by 2020, 56% above 1990 levels. As shown in Figure ES-3 of the Inventory, demand for electricity is projected to be the largest contributor to future emissions growth, followed by emissions associated with transportation. Although GHG emissions from fossil fuel production had the greatest increase by sector in the period 1990 to 2005, the growth from this sector is projected to decline due to assumption of decreased carbon dioxide emissions from venting at processing plants.

As of 2008, the Inventory indicates that there over 33,000 active oil and gas wells in the State.

There are approximately 13,093 active Federal oil and gas wells in the Buffalo Field Office (84% of these are coalbed methane wells, 14% are oil wells and 2% are gas wells). Active wells in this

Field Office account for approximately 39.68 percent of all active Federal wells in Wyoming. Therefore, GHG emissions from all wells within the field office are estimated to emit approximately 7.78 metric tons annually (mt) (19.6 mt X 0.3968 = 7.78 mt) assuming steady production and emission venting.

Based on this emission factor, each potential well that may be drilled on these parcels, if issued, could emit approximately 0.00059 mt of CO_2e. It is unknown what the drilling density may be for these parcels, if they were to be developed; therefore, it is impossible to predict what level of emissions could occur from development at this stage under the proposed action. Below is the best science available used to predict reasonably foreseeable development, in order to ascertain potential emissions of CO_2e. Of the 8 parcels that have been nominated for the February 2011 competitive oil and gas lease sales, there are no parcels located within an area defined as having High Potential for Occurrence of Oil and Gas in the 2009 Draft Reasonably Foreseeable Development (RFD) Scenario Document produced by the WY State Office Reservoir management Group for the Buffalo Field Office Area RMP revision process. Additionally, 3 parcels are located in the Moderate Potential area, no parcels are located in the Low Potential area, 5 parcels are located within the Very Low Potential area and no parcels are located in the Negligible Potential area. The potential number of wells to be drilled per township in these areas is shown below in Figure 3a taken from the 2009 draft RFD Scenario document. Per the draft RFD, 1 parcel has no CBNG potential, 6 of the parcels have very low CBNG potential and 1 parcel has low CBNG potential.

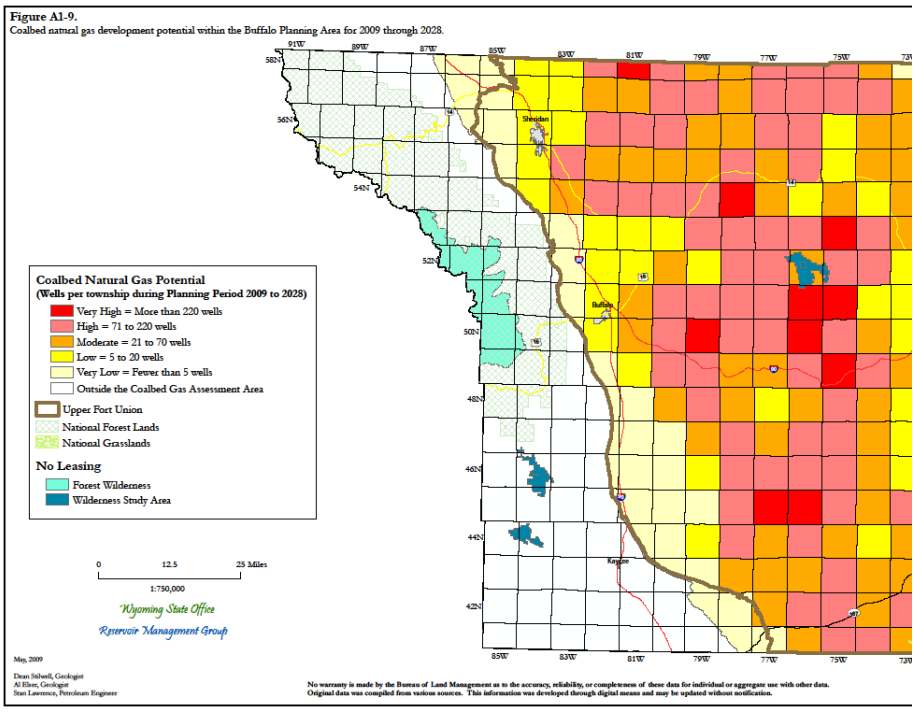


Figure 3a: Conventional Oil and Gas Potential in the Buffalo Field Office Resource area between2009 and 2028 (June 2009, Draft BFO RFD)

See Section 4.3 for a discussion of the impacts of these potential greenhouse gas emissions on global climate change.

Alternative C: Full Lease Sale

Under this alternative, leases would be issued with the appropriate stipulations as listed in Appendix A. However, due to the larger acreage under this Alternative potentially subject to surface disturbing activities, drilling and production, the potential for greenhouse gas emissions are similar to, but have a higher probability of occurring in larger amounts, as under Alternative B.

See Section 4.3 for a discussion of the impacts of these potential greenhouse gas emissions on global climate change.

Mitigation

The BLM holds regulatory jurisdiction over portions of natural gas and petroleum systems, identified in the EPA Inventory of US Greenhouse Gas Emissions and Sinks document. Exercise of this regulatory jurisdiction has led to development of "Best Management Practices (BMPs)" designed to reduce emissions from field production and operations. Analysis and approval of future development on the lease parcels would include applicable BMPs as conditions of approval (COAs) in order to reduce or mitigate GHG emissions. Additional measures developed at the project development stage would be incorporated as COAs in the approved APD or with a programmatic EIS, which are binding on the operator.

Such mitigation measures may include, but are not limited to:

- Flare hydrocarbon and gases at high temperatures in order to reduce emissions of incomplete combustion through the use of multi-chamber combustors;
- "Green" (flareless) completions,
- Water dirt roads during periods of high use in order to reduce fugitive dust emissions;
- Require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored;
- Installation of liquids gathering facilities or central production facilities to reduce the total number of sources and minimize truck traffic,
- Use of natural gas fired or electric drill rig engines,
- The use of selective catalytic reducers on diesel-fired drilling engines; and,
- Re-vegetate areas of the pad not required for production facilities to reduce the amount of dust from the pads.

The EPA Inventory data show that adoption by industry of the Best Management Practices proposed by the EPA's Natural Gas Energy Star program has reduced emissions from oil and gas

exploration and development (Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2006). The Buffalo Field Office will work with industry to facilitate the use of the relevant BMPs for operations proposed on federal mineral leases where such mitigation is consistent with agency policy.

Visibility

Alternative A No Action

Under the No-Action alternative, oil and gas development of the 8 parcels would not occur. Therefore, no additional impacts would result from BLM actions. Continued data collection would occur at the Thunder Basin National Grasslands and Cloud Peak Wilderness IMPROVE monitoring sites.

Alternative B Proposed Action

Issuing leases for the subject tracts would have no direct impacts to visibility. Any potential effects to visibility would occur if and when the leases were developed. Data collection for visibility would continue.

Alternative C Full Lease Sale

Due to the larger acreage under this Alternative potentially subject to surface disturbing activities, drilling and production, the potential for greenhouse gas emissions are similar to, but have a higher probability of occurring in larger amounts.

Hazardous Air Pollutants

Existing sources of HAPs, criteria pollutants, and greenhouse gases within the planning area include fossil fuel combustion that emits HAPs; oil, gas, and coal development operations that emit VOCs; NO_X; and hydrogen sulfide (H_2S). In addition, large fires are a source of HAPs emissions. The growth in resource development and accompanying increase in emissions from these types of sources will depend on a number of external factors that make it difficult to estimate actual trends in these pollutants in the planning area.

Summary of Air Quality Trends

Available air quality data for a number of criteria pollutants that were examined at various monitors located within and near the Buffalo planning area do not show any major upward or downward trends over the period of record. There is a slight upward trend in observed PM_{10} concentrations observed at the Sheridan site during the last several years. Concentrations of $PM_{2.5}$ and the fourth highest eight-hour average ozone concentration are consistent year to year without any discernable trends. Although trends were not explicitly calculated for SO_2, SO_4, NO_3, and NH_4, the data do not indicate any major trends for the six-year period examined at the Buffalo and Sheridan sites. The visibility data collected at the Cloud Peak and Thunder Basin site show very good to excellent visibility, even for the 20 percent haziest days, with a very slight degradation observed at the Cloud Peak monitor during the five-year period of record. The

data collected at the Badlands National Park IMPROVE site show generally lower estimates of visibility range compared to Cloud Peak and Thunder Basin, with no distinct trend in visibility range during the 1989 to 2005 period. Wet deposition data of NH_4, NO_3, and SO_4 for the Newcastle NADP site, located east of the planning area, also show no distinct trend in deposition over the 2003 to 2007 period examined in this analysis.

Mitigation

BMPs such as those used to reduce fugitive dust emissions will mitigate impacts.

4.2 Wildlife

Special Status Species

Alternative A No Action

Under the No-Action alternative, oil and gas development of the 8 parcels would not occur. Therefore, no impacts would result from BLM actions. Additionally, activities in Sage Grouse Core Areas would be limited to those associated with current land uses, primarily recreation and agriculture. Sage Grouse Core Areas are the core and connectivity areas identified by the state of Wyoming, adjusted to include additional habitat identified in consultation with the local WY Game and Fish office. Acres (as listed in Appendix C) of Sage Grouse Key Areas would not be developed, consistent with the WY Governor's strategy to conserve the species in support of the USFWS finding of Warranted but Precluded. As discussed previously, many of these parcels may be eligible for nomination, lease, and development in the future, and could be leased subject to appropriate levels of restriction identified in the RMP at the time.

Alternative B: Proposed Action

Under this alternative, 4 parcels would receive a recommendation for deferral pending revision of certain wildlife lease stipulations and revision of the PRB RMP/EIS. This deferral would ~~also~~ preserve decision space (to comply with 40 CFR 1506.1) in the upcoming RMP revision for any alternatives involving Sage-grouse Focus or key habitat areas, in case an alternative is developed that would make Focus Areas unavailable to leasing. The BLM's Land Use Planning Handbook (H-1601-1) states (at Page 47): "During the amendment or revision process, the BLM should review all proposed implementation actions through the NEPA process to determine whether approval of a proposed action would harm resource values so as to limit the choice of reasonable alternative actions... Even though the current land use plan may allow an action, the BLM manager has the discretion to defer or modify proposed implementation-level actions..." Approximately 1358.67 acres within Sage-grouse Focus Areas would be deferred until the Draft EIS is released, at which time this parcel will be re-evaluated to determine if it can be offered, and in consideration of the range of alternatives and designated preferred alternative in the Draft EIS.

The remaining 4 parcels would receive a recommendation for available for leasing with the standard terms and conditions as well as site-specific resource protection stipulations attached.

All other impacts are the same as those described in the Buffalo RMP as they relate to Sage Grouse.

A portion, or all, of some parcels are located in potential sage-grouse habitat. The BLM will, at the time development activities are proposed, conduct a site-specific analysis of the proposal and the current key sage-grouse habitat boundaries (such as the State of Wyoming Governor's Core Areas). Consistent with decisions that have recognized the ability of the BLM to impose reasonable protection measures at the time lease development activities are proposed based on site-specific environmental analysis, (*Yates Petroleum Corporation*, 176 IBLA 144, 2008) the BLM may require additional avoidance and/or impact minimization measures in order to manage sage-grouse habitat in support of Wyoming's Sage Grouse Conservation Strategy and Wyoming Game and Fish Department Sage Grouse objectives. These measures may include, but are not limited to, disturbance density limitations or surface use and timing restrictions in proximity to certain habitats (e.g., severe winter relief habitat, sage-grouse leks, etc.). Restrictions and prohibitions for surface use activities may be applied for distances and time periods more restrictive than current RMP stipulation guidance if supported by site-specific NEPA analysis of a development proposal. Such restrictions could be applied as Conditions of Approval for exploration and development activities associated with this lease. These measures may be necessary to meet BLM policy goals for the management of sage grouse habitat and populations as Special Status Species as directed in BLM Manual 6840. Given the designation of Greater Sage Grouse as a Candidate species by US Fish and Wildlife Service (April 2010) BLM will consider more restrictive measures for Oil & Gas activities as needed to prevent the need for listing Greater Sage Grouse as a threatened species.

Alternative C: Full Sale

Under this alternative, all 8 whole parcels would be available for leasing in the respective competitive lease sales scheduled in February 2011 with the stipulations detailed in Appendix A. Under this alternative approximately 1358.67 acres of Greater Sage-grouse Core Areas may be subject to future surface disturbing activities. The potential for impacts are similar to, but have a higher probability of occurring and at a greater intensity, as under Alternative B. Without conformance with the WY Sage-grouse Core Area Conservation Strategy, it is likely that the Sage-grouse would be listed as a T&E species; such a listing would violate the BLM Sensitive Species policy as authorized under BLM Manual 6840.

Mitigation

Modification of the stipulations for 4 parcels is recommended to ensure continued population and habitat objectives for the Greater Sage-grouse. Additional mitigation and/or Conditions of Approval could be identified at the development stage to further minimize impacts associated with oil and gas development.

4.3 Cumulative Impacts

There are approximately 13,093 Federal wells existing in the Buffalo Field Office, which are predominately 84% coalbed methane production wells. Analysis of cumulative impacts for reasonably foreseeable development (RFD) of oil and gas wells on public lands in the Buffalo Field Office is presented in the 1995 Buffalo Resource Management Plan (RMP) and in the 2003 Powder River Basin Oil and Gas Project RMP Amendment. Potential development of all available federal minerals in the field office, including those in the proposed lease parcels, was included as part of the analysis.

As described in the analysis of environmental consequences, the proposed action and/or the alternative may contribute to the effects of climate change to some extent through GHG emissions. However, it is not currently possible to associate any of these particular actions with the creation of any specific climate-related environmental effects. The lack of scientific tools designed to predict climate change at regional or local scales limits the ability to quantify potential future impacts.

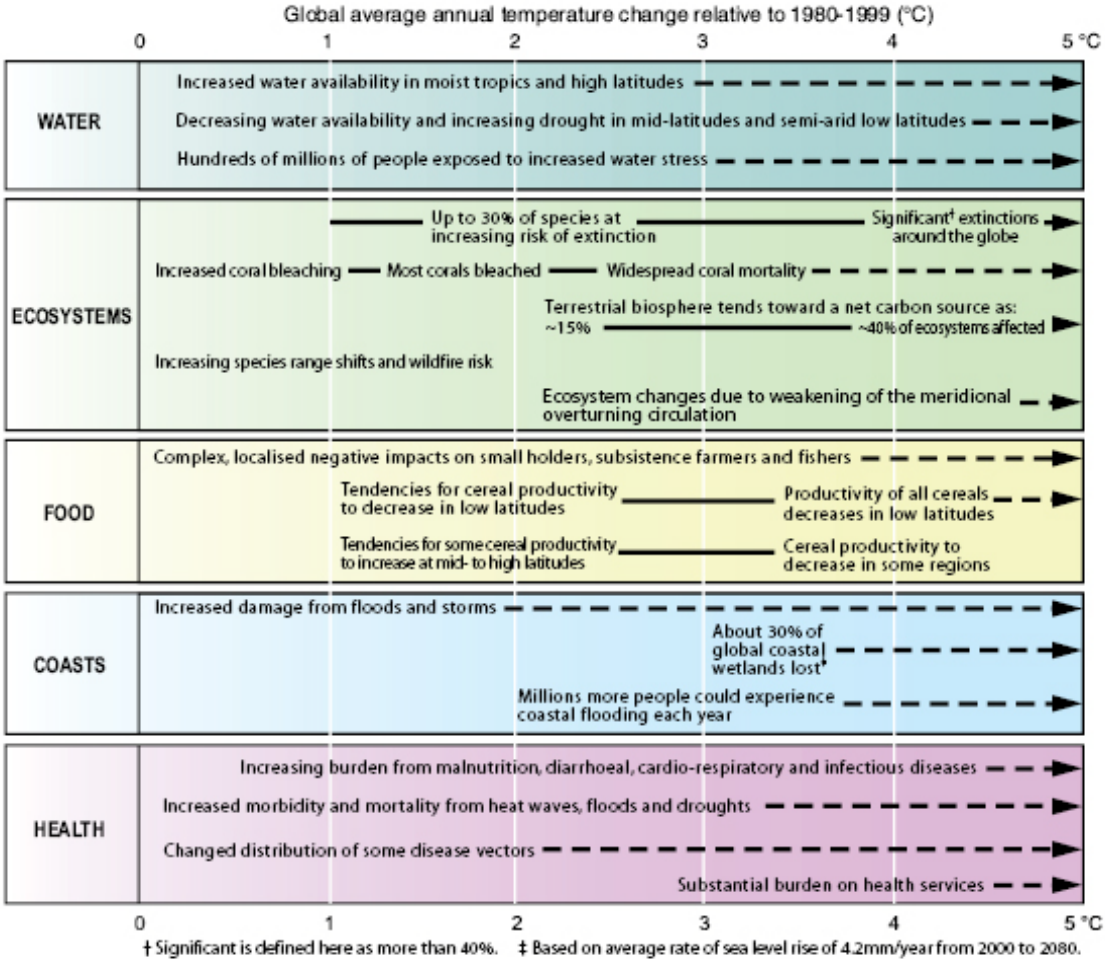
The assessment of greenhouse gas (GHG) emissions and climate change is still in its formative phase; therefore, it is not yet possible to know with confidence the net impact on climate. However, the Intergovernmental Panel on Climate Change (IPCC 2007) recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic [man-made] greenhouse gas concentrations." As the temperatures of the land and sea change, environmental factors such as weather patterns, sea levels, precipitation rates, the timing of the seasons, desert distribution, forest cover, and ocean salinity will also change. These changes influence the world's climate systems and will have different impacts to different areas. Some agricultural regions may become more arid while others become wetter; some mountainous areas will experience greater summer precipitation, yet experience disappearing snowpack.

Global mean surface temperatures have increased nearly 1.8°F from 1890 to 2006. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24°N) have exhibited temperature increases of nearly 2.1° F since 1900, with nearly a 1.8°F increase since 1970 alone. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

Based on research compiled for the International Panel on Climate Change Fourth Assessment Report, 2007, potential effects of climate change on resources in the affected environment are likely to be varied. Figure 3.1, taken from the Fourth Assessment Report indicates varying

responses of the natural world to increasing temperatures as a result of increasing global temperatures.

Figure 4.1: Examples of impacts associated with global average temperature change (Impacts will vary by extent of adaptation, rate of temperature change and socio-economic pathway)



Within North America, the report specifically forecasts that: Warming in western mountains is projected to cause decreased snowpack, more winter flooding and reduced summer flows, exacerbating competition for over-allocated water resources; in the early decades of the century, moderate climate change is projected to increase aggregate yields of rain-fed agriculture by 5 to 20%, but with important variability among regions; major challenges are projected for crops that are near the warm end of their suitable range or which depend on highly utilized water resources; cities that currently experience heat waves are expected to be further challenged by an increased number, intensity and duration of heat waves during the course of the century, with potential for adverse health impacts and coastal communities and habitats will be increasingly stressed by climate change impacts interacting with development and pollution. Specific modeling and/or

assessments of the potential effects for the Buffalo Field Office and for the State of WY currently do not exist.

The average number of oil and gas wells drilled annually in the Field Office and probable GHG emission levels, when compared to the total GHG emission estimates from the total number of Federal oil and gas wells in the State, represent an incremental contribution to the total regional and global GHG emission levels. This incremental contribution to global GHG gases cannot be translated into incremental effects on climate change globally or in the area of these site-specific actions. As oil and gas and natural gas production technology continues to improve in the future, one assumption is that it may be feasible to further reduce GHG emissions.

Regarding the linkage between climate change related warming and associated impacts, an assessment of the IPCC states that difficulties remain in attributing observed temperature changes at smaller than continental scales. Therefore, it is currently beyond the scope of existing science to predict climate change on regional or local scales resulting from specific sources of GHG emissions.

Significant uncertainties remain with respect to the estimates of the current level of emissions and projections of future production of fossil fuels as the oil and gas industry is difficult to forecast with the mix of drivers: economics, resource supply, demand, and regulatory procedures. The assumptions used for the projections, based on recent trends or State production trends in the near-term, and AEO2006 growth rates through 2020, do not include any significant changes in energy prices, relative to today's prices. Large price swings, resource limitations, or changes in regulations could significantly change future production and the associated GHG emissions. Other uncertainties include the volume of GHGs vented from gas processing facilities in the future, any commercial oil shale or coal-to-liquids production, and potential emissions-reducing improvements in oil and gas production, processing, and pipeline technologies.

There are currently no proposals for renewable energy projects in the Buffalo Field Office.

DESCRIPTION OF MITIGATING MEASURES AND RESIDUAL IMPACTS

The sale of the parcels identified under the proposed action as available for leasing will be mitigated by attaching appropriate conditions of approval to any subsequent requests for lease development either on a case by case basis or upon receipt of a multi-well project proposal. The Buffalo Field Office, Surface Use and Occupancy Requirements, Conditions of Approval, and the Buffalo Field Office's Special Leasing Stipulations, which are in place at the Wyoming State Office, will provide adequate mitigation for sale of all lease parcels under the Proposed Action.

Direct, indirect, cumulative and residual impacts of leasing and lease development are generally described in the 2003 PRB EIS. An environmental analysis will be prepared on a case-by-case basis upon receipt of future subsequent actions.

5.0 Consultation/Coordination

Buffalo Field Office BLM Staff
Jennifer Spegon, Natural Resource Specialist
Mike Worden, Supervisory Petroleum Engineer

Wyoming State Office BLM Staff
Christopher Carlton, Planning and Environmental Coordinator
Merry Gamper, Physical Scientist

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Authorities

Code of Federal Regulations (CFR) 3100

40 CFR All Parts and Sections inclusive Protection of Environment. Revised as of July 1, 2001.

43 CFR, All Parts and Sections inclusive - Public Lands: Interior. Revised as of October 1, 2000.

U.S. Department of the Interior, Bureau of Land Management and Office of the Solicitor (editors). 2001. The Federal Land Policy and Management Act, as amended. Public Law 94-579.

7.0 APPENDIX A

Lease Parcels

WY-1102-017 IS RECOMMENDED FOR DEFFERAL FOR SAGE-GROUSE HABITAT CONSERVATION

WY-1102-017 161.260 Acres
T.0470N, R.0690W, 06th PM, WY
Sec. 013 LOTS 1,2,4,8;
Campbell County
Buffalo FO
Formerly Lease No.
Stipulations:
Lease Notice No. 1
Lease Notice No. 2
Lease Notice No. 3
Special Lease Stipulation
TLS (1) Mar 15 to Jul 15; (2) as mapped on the Buffalo Field Office GIS database; (3) protecting nesting Greater sage-grouse.
CSU (1) 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 critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) entire lease; (3) protecting Species listed under the Endangered Species Act as amended, 16 U.S.C. 1531 et seq.

WY-1102-018 1161.060 Acres
T.0470N, R.0690W, 06th PM, WY
Sec. 019 LOTS 7-10,13-16;
029 LOTS 4,5,12-14;

030 LOTS 5-20;
Campbell County
Buffalo FO
Formerly Lease No.
Stipulations:
Lease Notice No. 1
Lease Notice No. 2
Lease Notice No. 3
Special Lease Stipulation

TLS (1) Mar 15 to Jul 15; (2) as mapped on the Buffalo Field Office GIS database; (3) protecting nesting Greater sage-grouse.

TLS (1) Feb 1 to Jul 31; (2) as mapped on the Buffalo RMP map; (3) protecting nesting Raptors.

CSU (1) 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 critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) entire lease; (3) protecting Species listed under the Endangered Species Act as amended, 16 U.S.C. 1531 et seq.

CSU (1) Surface occupancy or use within Slopes > 25% will be restricted or prohibited unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; (2) as mapped on the Buffalo RMP map; (3) protecting Soils.

WY-1102-019 89.310 Acres
T.0530N, R.0690W, 06th PM, WY
Sec. 022 LOTS 15,16;
Campbell County
Buffalo FO
Formerly Lease No.
Stipulations:
Lease Notice No. 1
Lease Notice No. 2
Lease Notice No. 3
Special Lease Stipulation

CSU (1) Surface occupancy or use within Slopes > 25% will be restricted or prohibited unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; (2) as mapped on the Buffalo RMP map; (3) protecting Soils.

WY-1102-020 41.320 Acres
T.0530N, R.0690W, 06th PM, WY
Sec. 026 LOTS 4;
Campbell County
Buffalo FO
Formerly Lease No.
Stipulations:
Lease Notice No. 1
Lease Notice No. 2
Lease Notice No. 3
Special Lease Stipulation
No additional stips

WY-1102-021 IS RECOMMENDED FOR DEFFERAL FOR SAGE-GROUSE HABITAT CONSERVATION

WY-1102-021 638.800 Acres
T.0530N, R.0700W, 06th PM, WY
Sec. 002 LOTS 7,10,13-15;
010 LOTS 12-14,17-24;
Campbell County
Buffalo FO
Formerly Lease No.
Stipulations:
Lease Notice No. 1
Lease Notice No. 2
Lease Notice No. 3
Special Lease Stipulation
TLS (1) Mar 15 to Jul 15; (2) as mapped on the Buffalo Field Office GIS database; (3) protecting nesting Greater sage-grouse.
CSU (1) 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 critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) as mapped on the Buffalo RMP map; (3) protecting Haliaeetus leucocephalus (Bald eagle).

WY-1102-022 IS RECOMMENDED FOR DEFFERAL FOR SAGE-GROUSE HABITAT CONSERVATION

WY-1102-022 158.610 Acres
T.0540N, R.0700W, 06th PM, WY
Sec. 033 LOTS 1,2,5,6;
Campbell County
Buffalo FO
Formerly Lease No.
Stipulations:
Lease Notice No. 1
Lease Notice No. 2
Lease Notice No. 3
Special Lease Stipulation
CSU (1) 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 critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) as mapped on the Buffalo RMP map; (3) protecting Haliaeetus leucocephalus (Bald eagle).

WY-1102-023 159.370 Acres
T.0520N, R.0720W, 06th PM, WY
Sec. 024 LOTS 1,2,8;
025 LOTS 1;
Campbell County
Buffalo FO
Formerly Lease No.
Stipulations:
Lease Notice No. 1
Lease Notice No. 2
Lease Notice No. 3
Special Lease Stipulation
CSU (1) 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 critical

habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) as mapped on the Buffalo RMP map; (3) protecting Haliaeetus leucocephalus (Bald eagle).

CSU (1) Surface occupancy or use within Slopes >25% will be restricted or prohibited unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; (2) entire lease; (3) protecting Soils .

WY-1102-028 IS RECOMMENDED FOR DEFFERAL FOR SAGE-GROUSE HABITAT CONSERVATION

WY-1102-028 400.000 Acres
T.0430N, R.0820W, 06th PM, WY
Sec. 003 S2SW;
010 W2NE,NW,NESW,NWSE;
Johnson County
Buffalo FO
Formerly Lease No.
Stipulations:
Lease Notice No. 1
Lease Notice No. 2
Lease Notice No. 3
Special Lease Stipulation

TLS (1) Mar 15 to Jul 15; (2) as mapped on the Buffalo Field Office GIS database; (3) protecting nesting Greater sage-grouse.

CSU (1) 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 critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) as mapped on the Buffalo RMP map; (3) protecting Mustela nigripes (Black-footed ferret).

CSU (1) 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 critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) as mapped on the Buffalo RMP map; (3) protecting Haliaeetus leucocephalus (Bald eagle).

CSU (1) Surface occupancy or use within Steep Slopes > 25% will be restricted or prohibited unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; (2) as mapped on the Buffalo RMP map; (3) protecting Soils.

Total 8 Leases	2809.73
4 Parcels Deferral	-1358.67
4 parcels Lease sale	1451.06

8.0 APPENDIX B

RECOMMENDATIONS OF PARCELS DEFERRED OR DELETED IN-PART THROUGH SCREENING AND REVIEW PROCESS
AS DESCRIBED IN PROPOSED ACTION

Field Office	Prelim Parcel number	Lease Sale Date	RMP revision	Screened Sage-grouse parcels	Wilderness characteristics	Comments
BFO	WY-1102-017, WY-1102-021, WY-1102-022, WY-1102-028	Feb 2011	X	X		Pending Buffalo RMP revision