EA NO-WY-070-EA09-147
FINDING OF NO SIGNIFICANT IMPACT & DECISION RECORD
FOR
Lowry Exploration Inc.
Simpson Ranch Federal 23-10

DECISION: BLM's decision is to approve a combination of alternatives C and D as summarized below and described in the attached EA and authorizes Lowry Exploration Inc.'s Simpson Ranch Federal 23-10 well:

Well Name & Number	QTR	Sec.	T	R	Lease #
Simpson Ranch Federal 23-10	NESW	10	51N	69W	WYW128539

This approval is subject to adherence with operating plans and mitigation measures contained in the Surface Use Plan of Operations and Drilling Plans in the APD. This approval is also subject to adherence with the attached Conditions of Approval.

SUMMARY OF SELECTED ALTERNATIVE
The selected alternative includes alternative C and appropriate components of Alternative D as described in the EA that will alleviate site specific impacts to sage-grouse and habitat. Timing restrictions on surface-disturbing activities are incorporated from Alternative C.

The following items summarize components of Alternative D included in the selected alternative:

1. Should the well become a producer, the operator will submit a sundry to pipe product to the fee well # 13-10.

2. The drilling access road will be used for the pipeline corridor and reclaimed immediately after pipeline installation.

3. The BLM will visit the location and determine if the drilling access road/pipeline corridor should be used for operation, or reclaimed and a new road for pumper traffic placed from the location to the existing road 100 yards to the east.

RATIONALE: The decision to authorize the selected alternative, as summarized above, is based on the following:
1. The Operator, in their POD, has committed to:
- Comply with all applicable Federal, State and Local laws and regulations.
- Obtain the necessary permits from other agencies for the drilling, completion and production of these wells including water rights appropriations, the installation of water management facilities, water discharge permits, and relevant air quality permits.

2. The Operator has certified that a Surface Use Agreement has been reached with the Landowners.

3. The selected alternative will not result in any undue or unnecessary environmental degradation.

4. It is in the public interest to approve these wells, as the leases are being drained of federal gas, resulting in a loss of revenue for the government. Furthermore, approval of this development will help meet the nation's future needs for energy reserves, and will help to stimulate local economies by maintaining stability for the workforce.

5. The selected alternative incorporates appropriate local sage-grouse research and the best available science from across the species' range in development of the attached conditions of approval. Mitigation measures from the range of alternatives were selected to best meet the purpose and need, and will be applied by the BLM to alleviate environmental impacts.

6. Approval of this alternative is in conformance with the PRB FEIS, and the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management, Buffalo Field Office, April 2001 (refer to Appendix E of that document relative to adaptive management).

7. The selected alternative incorporates components of the Wyoming Governor's Sage Grouse Implementation Team's "core population area" strategy and executive order and local research to provide appropriate protections for sage-grouse, while meeting the purpose and need for the Simpson Ranch Federal 23-10 well.

FINDING OF NO SIGNIFICANT IMPACT: Based on the analysis of the potential environmental impacts, I have determined that NO significant impacts are expected from the implementation of the selected alternative, and, therefore, an environmental impact statement is not required.

In conformance with Appendix E, *Record of Decision, Powder River Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment* BLM Buffalo Field Office has initiated actions within the PRB FEIS analysis area in response to additional information regarding impacts to sage-grouse. These measures include:

1. Early initiation of a Resource Management Plan (RMP) revision, based on the evaluation of monitoring data generated under the mitigation monitoring and reporting plan (MMRP) in the PRB FEIS Record of Decision

2. Establishment of sage-grouse "focus" areas, encompassing approximately 1 million acres of sage-grouse habitat. These areas are managed under strict guidelines designed to preserve sage-grouse habitat for development of alternatives during the RMP process (Appendix A).

3. Initiation of a population viability analysis in the Powder River Basin. This is a 24-month project involving the USGS, BLM Miles City Field Office, BLM Buffalo Field Office, and the University of Montana.

4. Development of alternatives that modify the proposed action to reflect the best available science in sage-grouse management.

5. Development of conditions of approval, specific to sage-grouse management, that incorporate some recommendations from recent research, the NE Local Sage-grouse Working Group, and the Petroleum Association of Wyoming.

The implementation of the selected alternative best meets the stated purpose and need for the proposed action. With the application of mitigating measures selected from alternatives C and D, sage-grouse population viability in the Powder River Basin will not be compromised due to the larger scope of planning actions and research initiated by the BLM, Buffalo Field Office.

ADMINISTRATIVE REVIEW AND APPEAL: Under BLM regulations, this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, P.O. Box 1828, Cheyenne, Wyoming 82003, no later than 20 business days after this Decision Record is received or considered to have been received.

Any party who is adversely affected by the State Director's decision may appeal that decision to the Interior Board of Land Appeals, as provided in 43 CFR 3165.4.

Field Manager: _____ Date: 9/1/09

BUREAU OF LAND MANAGEMENT
BUFFALO FIELD OFFICE
ENVIRONMENTAL ASSESSMENT
EA # WY-070-EA09-147
Lowry Exploration Inc.
Simpson Ranch Federal 23-10

PROJECT NAME: Lowry Exploration Inc. Simpson Ranch Federal 23-10

Well Name & Number	QTR	Sec.	T	R	Lease #
Simpson Ranch Federal 23-10	NESW	10	51N	69W	WYW128539

OPERATOR/APPLICANT: Baytex Energy USA Ltd.

AFFECTED SURFACE OWNERS:

Leroy and Kay Renee Jones

For contact information refer to the Master Surface Use Plan (MSUP) in the Plan of Development (POD).

COUNTY: Campbell

INTRODUCTION
This site-specific analysis tiers into and incorporates by reference the information and analysis contained in the Powder River Basin Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS), #WY-070-02-065 (approved April 30, 2003), pursuant to 40 CFR 1508.28 and 1502.21. This document is available for review at the Buffalo Field Office. This project EA addresses site-specific resources and impacts that were not covered within the PRB FEIS.

PURPOSE AND NEED
The purpose and need of this EA is to determine how and under what conditions to allow Lowry Exploration Inc. to exercise lease rights granted by the United States to develop the oil and gas resources on federal leaseholds as described in their proposed action.

Development of the Simpson Ranch Federal 23-10 well would return royalties to the federal Treasury as well as stimulate local economies.

Agency Responsibilities
The BLM recognizes the extraction of natural gas is essential to meeting the nation's future needs for energy. As a result, private exploration and development of federal gas reserves are integral to the agencies' oil and gas leasing programs under the authority of the Mineral Leasing Act of 1920, as amended, and the Federal Land Policy Management Act (FLPMA) of 1976. The oil and gas leasing program managed by BLM encourages the development of domestic oil and gas reserves and reduction of the U.S. dependence on foreign sources of energy.

This action responds to the goals and objectives outlined in the 1985 Buffalo RMP and the PRB FEIS. This action helps move the project area toward desired conditions for mineral development with appropriate mitigation consistent with the goals, objectives and decisions outlined in these two documents.

Conformance with Applicable Land Use Plan and Other Environmental Assessments:
The proposed action conforms to the terms and the conditions of the 1985 Buffalo RMP and the PRB FEIS, as required by 43 CFR 1610.5. The BFO RMP is currently under revision.

For the RMP revision, BFO established focus areas with rigorous interim protections in order to preserve "decision space" during the revision process. Outside the focus areas, BFO continues to apply appropriate, but far less rigorous, site-specific mitigating measures for high-quality sage-grouse habitat with well densities up to 80-acre spacing and may include site-specific mitigating measures suggested by the best available science. Actions within BFO focus areas will be limited to impacts consistent with 640 acre spacing, and must have a plan of development that demonstrates that the proposal can be managed in a manner that effectively conserves sage-grouse habitats (in focus areas) affected by the proposal.

The Simpson Ranch Federal 23-10 does not occur within a core or focus area. However, high quality sage-grouse habitat, as indicated during the on-site visit.

1. ALTERNATIVES INCLUDING THE PROPOSED ACTION

Four alternatives, A, B, C and D, were evaluated in determining how to best meet the stated purpose and need of the proposed action. A brief description of each alternative follows. For the complete detailed description of each alternative, including the alternatives considered but not analyzed in detail, see Appendix A.

Alternative A - No Action
A No Action Alternative was considered in the PRB FEIS, Volume 1, pages 2-54 through 2-62. This alternative would consist of no new federal wells. An oil and gas lease grants the lessee the "right and privilege to drill for, mine, extract, remove, and dispose of all oil and gas deposits" in the lease lands, "subject to the terms and conditions incorporated in the lease." Thus, under this alternative, the operator's proposal would be denied.

Proposed Action
Alternative B, the "proposed action" alternative, summarizes the Simpson Ranch Federal 23-10 well as originally submitted to the BLM by Lowry Exploration Inc., prior to any BLM review or modifications. See Appendix A for full description.

Alternative C – Modified Proposed Action
Alternative C represents a modification of Alternative B based on the operator and BLM working cooperatively to reduce environmental impacts. The description of Alternative C is the same as Alternative B with the addition of the project modifications identified by BLM and the operator following the initial project proposal (Alternative B). At the on-sites, all areas of proposed surface disturbance were inspected to insure that the project would meet BLM multiple use objectives to conserve natural resources while allowing for the extraction of Federal minerals. In some cases, access roads were re-routed, and well locations, pipelines, discharge points and other water management control structures were moved, modified, mitigated or dropped from further consideration to alleviate environmental impacts.

Alternatives to the different aspects of the proposed action are always considered and applied as pre-approval changes, site specific mitigation and/or Conditions of Approval (COAs), if they will alleviate environmental effects of the operator's proposal. The specific changes identified for the Simpson Ranch Federal 23-10 well are described in detail in the Appendix A.

Alternative C also incorporates the results of sage-grouse habitat mapping efforts in the project area and on-site verification of habitat suitability. This alternative represents BFO efforts to reduce project-specific

impacts to sage-grouse habitat, while maintaining proposed spacing and infrastructure requirements consistent with the purpose and need of the proposed action.

Alternative D-Sage-Grouse Emphasis
Alternative D represents a modification of Alternative C based on the application of mitigating measures designed to reduce impacts to sage-grouse and sage-grouse habitat. Alternative D is the same as Alternative C with the addition of the project-level modifications identified by BLM, guided by seven years of sage-grouse research in the project area. Alternative D represents BFO efforts to reduce project-specific impacts to sage-grouse habitat, while maintaining proposed spacing and infrastructure requirements consistent with the purpose and need of the proposed action.

In conjunction with project-level modifications, site-specific measures applied for specific wells and infrastructure would maintain open corridors for sage-grouse, provide contiguous habitat patches, and reduce disturbance in and adjacent to sage-grouse habitat.

This alternative incorporates mitigation designed around site-specific habitat characteristics to minimize habitat fragmentation and accelerate return to habitat effectiveness at reclamation.
For a description of the project-level details of Alternative D, see Appendix A.

2. DESCRIPTION OF AFFECTED ENVIRONMENT

The Plan of Development for the Simpson Ranch Federal 23-10 well containing the APD was received on 9/24/2008. Field inspections of the proposed well locations were conducted as follows:

1. 4/23/2009 by Meleah Corey, Bill Ostheimer, BJ Earle, and Melvin Blakesley– BLM; Robert Anderson – Lowry Exploration Inc.

Table 3.1 - Critical elements requiring mandatory evaluation are presented below.

MANDATORY ITEMS	POTENTIALLY IMPACTED	NO IMPACT	NOT PRESENT ON SITE	EVALUATOR
Threatened or Endangered Species		x		Bill Ostheimer
Floodplains			x	Meleah Corey
Wilderness Values			x	Meleah Corey
ACECs			x	Meleah Corey
Water Resources		x		Meleah Corey
Air Quality	x			Meleah Corey
Cultural or Historical Values		x		BJ Earle
Prime or Unique Farmlands			x	Meleah Corey
Wild & Scenic Rivers			x	Meleah Corey
Wetland/Riparian			x	Meleah Corey
Invasive, Non-native Species	x			Meleah Corey

MANDATORY ITEMS	POTENTIALLY IMPACTED	NO IMPACT	NOT PRESENT ON SITE	EVALUATOR
Environmental Justice			x	Meleah Corey
Native American Religious Concern		x		BJ Earle
Hazardous Wastes or Solids		x		Meleah Corey

Topographic Characteristics

The Simpson Ranch Federal 23-10 well is located in Campbell County approximately 30 miles NE of Gillette, WY

The topography in the project area consists of gently rolling grasslands with mixed sage brush, dissected by ephemeral swales and occasional steep erosive ephemeral drainages. The area ranges in elevation from 4,700 to 5,000 feet above sea level. The area falls within a 15-17" precipitation zone, with most of the precipitation falling during late winter and spring. The surface ownership in the general area is a mixture of private, State, and BLM land, with cattle grazing, coal mining, and Oil and Gas development being the primary surface uses.

Vegetation & Soils

Soils
Using the Natural Resource Conservation Service, (NRCS, USDA), Technical Guides for the Major Land Resource Area 58B Northern Rolling High Plains, in the 15-17" Northern Plains precipitation zone, the landforms and soils of this site are Loamy 15-17" PZ NP.

This site occurs on land nearly level up to 50% slopes. Landform: Hill slopes with assoc. alluvial fans & stream terraces.

The soils of this site are deep to moderately deep (greater than 20" to bedrock), well-drained & moderately permeable. Layers of the soil most influential to the plant community vary from 3 to 6 inches thick. These layers consist of the A horizon with very fine sandy loam, loam, or silt loam texture and may also include the upper few inches of the B horizon with sandy clay loam, silty clay loam or clay loam texture.

For more detailed soil information, see the NRCS Soil Survey WY705.

The map units identified for the soils within this project area are listed in the table below.

WELL	Map Unit	MAP UNIT NAME
Simpson Ranch Federal 23-10	300	Oshoto-Klinedraw Silt Loams, 0 to 6 percent slopes
	323	Ucross-Fairburn Loams, 3 to 15 percent slopes

Vegetation
The predominant ecological site (or sites) occurring within the proposed POD is (are) found to be Loamy and the plant community (communities) consisted of: Mixed Sagebrush/Grass.

Mixed Sagebrush/Grass Plant Community
Historically, this plant community evolved under grazing by bison and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock in the absence of fire or brush management. Big sagebrush is a significant component of this plant community. A mix of warm and cool-season grasses make up the majority of the understory with the balance made up of annual cool-season grasses, and miscellaneous forbs.

Dominant grasses include needleandthread, western wheatgrass, little bluestem and green needlegrass. Grasses of secondary importance include blue grama, prairie junegrass, and Sandberg bluegrass. Forbs commonly found in this plant community include plains wallflower, hairy goldaster, slimflower scurfpea, and scarlet globemallow. Sagebrush canopy ranges from 20% to 30%. Fringed sagewort is commonly found. Plains pricklypear can also occur.

When compared to the Historic Climax Plant Community, sagebrush and blue grama have increased. Production of cool-season grasses, particularly green needlegrass, has been reduced. The cool-season mid-grasses are protected by the sagebrush canopy, but this protection makes them unavailable for grazing. Cheatgrass (downy brome) has invaded the site. The overstory of sagebrush and understory of grass and forbs provide a diverse plant community that will support domestic livestock and wildlife such as mule deer and antelope.

This plant community is resistant to change. A significant reduction of big sagebrush can only be accomplished through fire or brush management. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component is intact, it tends to be resilient if the disturbance is not long-term.

Air Quality
Existing air quality throughout most of the Powder River Basin is in attainment with all ambient air quality standards. Although specific air quality monitoring is not conducted throughout most of the Powder River Basin, air quality conditions in rural areas are likely to be very good, as characterized by limited air pollution emission sources (few industrial facilities and residential emissions in the relatively small communities and isolated ranches) and good atmospheric dispersion conditions, resulting in relatively low air pollutant concentrations.

Existing air pollutant emission sources within the region include following:

- Exhaust emissions (primarily CO and nitrogen oxides [NOx]) from existing natural gas fired compressor engines used in production; and, gasoline and diesel vehicle tailpipe emissions of combustion pollutants;
- Dust (particulate matter) generated by vehicle travel on unpaved roads, windblown dust from neighboring areas and road sanding during the winter months;
- Transport of air pollutants from emission sources located outside the region;
- Dust (particulate matter) from coal mines;
- NOx, particulate matter, and other emissions from diesel trains and,
- SO2 and NOx from power plants.

For a complete description of the existing air quality conditions in the Powder River Basin, please refer to the PRB Final EIS Volume 1, Chapter 3, pages 3-291 through 3-299.

Cultural Resources
Class III cultural resource inventory was conducted for the Lowry Simpson Ranch 23-10 well and access project prior to on-the-ground project work (BFO project #70090007). Dick Enders, AEC, conducted a block and linear Class III cultural resource inventory following the Archeology and Historic Preservation, Secretary of the Interior's Standards and Guidelines (48CFR190) for the project. BJ Earle, BLM Archaeologist, visited the project location, reviewed the report for technical adequacy and compliance with Bureau of Land Management (BLM) standards, and determined it to be adequate. One historic site, 48 CA 1473, the Texas Trail, is reported in the section, but no physical evidence of this property has been located. Per Section VI (A) of the Wyoming Protocol, the SHPO was notified on 2/2/2009 that the area had been adequately inventoried, and the undertaking will have no effect to historic properties.

Invasive Species
No state-listed noxious weeds and invasive or exotic plant infestations were discovered by a search of inventory maps and databases or during subsequent field investigation by the proposed project proponent or BLM representatives. However, the Campbell County Weed and Pest Control District office verified the potential for infestations of the following noxious or invasive species in this area: Canada thistle, Scotch thistle, Russian knapweed, white top, and field bind weed. There is a potential for the spread of invasive weeds into the disturbed sites. These sites will be monitored and effective weed control measures will be taken by the operator and/or his agent.

Wildlife
Several resources were consulted to identify wildlife species that may occur in the proposed project area. Resources that were consulted include the Coal Bed Natural Gas wildlife reports, wildlife database compiled and managed by the BLM Buffalo Field Office (BFO) wildlife biologists, the PRB FEIS, the Wyoming Game and Fish Department (WGFD) big game and sage-grouse maps, and the Wyoming Natural Diversity Database (WYNDD).

A BLM biologist conducted field visits on 4/23/2009 During this time, the biologist evaluated impacts to wildlife resources, and provided project modification recommendations where wildlife issues arose.

Wildlife species common to the habitat types present are identified in the PRB FEIS (pg. 3-114). Species identified in the project area or noted as being of special importance are described below.

Big Game
Big game species expected to be within the project area include pronghorn antelope, mule deer and white-tailed deer. The WGFD lists the project area to be Winter/Yearlong range for pronghorn antelope. Winter/Yearlong use is when a population of animals makes general use of suitable habitat sites within a range on a year-round basis. During the winter months there is a significant influx of additional animals into the area from other seasonal ranges. Big game range maps are available in the PRB FEIS (3-119-143), the project file, and from the WGFD. The project area is part of the Northern Black Hills pronghorn herd.

Aquatics
The project area drains into Mitchell Creek, an ephemeral tributary to the Little Powder River. Fish that have been identified in the Little Powder drainage are listed in the PRB FEIS (3-156-159).

Amphibian and reptile species occur throughout the Basin, but there is little recorded baseline information available about them. Wyoming Game and Fish (WGFD), Montana Natural Heritage and Wyoming Natural Diversity Database (WYNDD) investigations have identified numerous species present within Powder River Basin including:

Table 3.2 Species of Herptiles Expected to Occur in the Powder River Basin of Wyoming (WYNDD 2008)

Common Name	Scientific Name	Found by WGF 2004-2006	Found by WYNDD 2008
Bullfrog*	*Rana catesbeiana*	Maybe	N
Spiny Softshell	*Apalone spinifera*	Y	N
Milksnake*	*Lampropeltis triangulum*	N	N
Northern Prairie Lizard*	*Sceloporus undulatus garmani*	N	N
Boreal Chorus Frog	*Pseudacris maculata*	Y	Y
Northern Leopard Frog	*Rana pipiens*	Y	Y
Great Plains Toad	*Bufo cognatus*	Y	Y
Woodhouse's Toad	*Bufo woodhousii*	Y	Y
Plains Spadefoot toad	*Spea bombifrons*	Y	Y
Tiger Salamander	*Ambystoma tigrinum*	Y	Y
Short-horned Lizard	*Phrynosoma hernandesi*	Y	Y
Sagebrush Lizard	*Sceloporus graciosus*	Y	Y
Eastern Yellowbelly Racer	*Coluber constrictor flaviventris*	Y	Y
Prairie Rattlesnake	*Crotalus viridis*	Y	Y
Western Hog-nosed Snake	*Heterodon nasicus*	Y	Y
Bullsnake	*Pituophis catenifer sayi*	Y	Y
Terrestrial Garter Snake	*Thamnophis elegans*	Y	Y
Plains Garter Snake	*Thamnophis radix*	Y	Y
Common Garter Snake	*Thamnophis sirtalis*	Y	Y
Snapping Turtle	*Chelydra serpentina*	Y	Y
Painted Turtle	*Chrysemys picta*	Y	Y

Migratory Birds

A wide variety of migratory birds may be found in the proposed project area at some point throughout the year. Migratory birds are those that migrate for the purpose of breeding and foraging at some point in the calendar year. Many species that are of high management concern use shrub-steppe and shortgrass prairie areas for their primary breeding habitats (Saab and Rich 1997). Migratory bird species of management concern that may occur in the project area are listed in the PRB FEIS (3-151). Those species identified by the BLM biologist in the project area include; Lark Bunting, Brewers Sparrow, Vesper Sparrow, Lark Sparrow.

Raptors

Raptors species expected to occur in suitable habitats within the PRB include northern harrier, golden eagle, red-tailed hawk, Swainson's hawk, ferruginous hawk, American kestrel, prairie falcon, short-eared owl, great horned owl, bald eagle, rough-legged hawk, merlin, Cooper's hawk, northern goshawk, and long-eared owl. Most raptor species nest in a variety of habitats including but not limited to; native and non-native grasslands, agricultural lands, live and dead trees, cliff faces, rock outcrops, and tree cavities.

No nests were identified on the BLM GIS database within 0.5 miles of the well site. The BLM biologist surveyed on foot using binoculars and found no nests within 0.5 miles of the well location.

Threatened and Endangered and Sensitive Species

Threatened and Endangered Species

Within the BLM Buffalo Field Office there are three species that are Threatened or Endangered under the Endangered Species Act.

Black-footed ferret

The USFWS listed the black-footed ferret as Endangered on March 11, 1967. Active reintroduction efforts have reestablished populations in Mexico, Arizona, Colorado, Montana, South Dakota, Utah, and Wyoming. In 2004, the WGFD identified six prairie dog complexes (Arvada, Sheridan, Pleasantdale, Four Corners, Linch, Kaycee, and, Thunder Basin National Grasslands) partially or wholly within the BLM Buffalo Field Office administrative area as potential black-footed ferret reintroduction sites (Grenier et al. 2004).

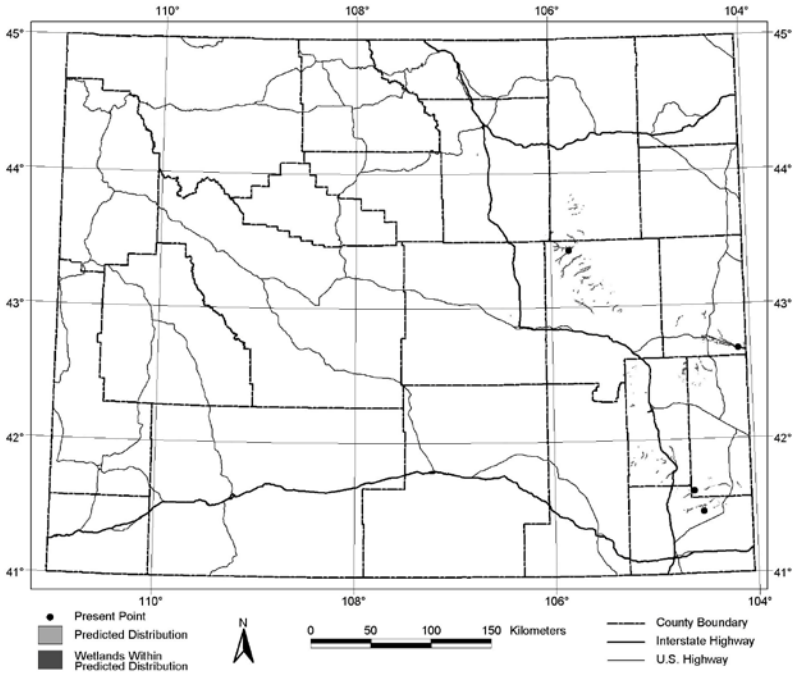
This nocturnal predator is closely associated with prairie dogs, depending almost entirely upon them for its food. The ferret also uses old prairie dog burrows for dens. Current science indicates that a black-footed ferret population requires at least 1000 acres of black-tailed prairie dog colonies for survival (USFWS 1989). Four prairie dog colonies were totaling approximately 400 acres identified by searching the BLM database that are within or adjacent to the project area. Onsite investigations by both BLM personnel and wildlife consultants did not identify any prairie dog towns in or near the project area. Potential black-footed ferret habitat is not present within the project area.

The WGFD believes the combined effects of poisoning and Sylvatic plague on black-tailed prairie dogs have greatly reduced the likelihood of a black-footed ferret population persisting east of the Big Horn Mountains (Grenier 2003). The U.S. Fish and Wildlife Service has also concluded that black-tailed prairie dog colonies within Wyoming are unlikely to be inhabited by black-footed ferrets (Kelly 2004).

Ute Ladies'-Tresses Orchid

Ute ladies'-tresses orchid (ULT) is listed as Threatened under the Endangered Species Act. It is extremely rare and occurs in moist, sub-irrigated or seasonally flooded soils at elevations between 1,780 and 6,800 feet above sea level. Habitat includes wet meadows, abandoned stream channels, valley bottoms, gravel bars, and near lakes or perennial streams that become inundated during large precipitation events. Wyoming Natural Diversity Database model predicts undocumented populations may be present particularly within southern Campbell and northern Converse Counties. In Wyoming, ULT blooms from early August to early September, with fruits produced in mid August to September (Fertig 2000).

Figure 1. Predicted Distribution of Ute ladies'-tresses in Wyoming



Prior to 2005, only four orchid populations had been documented within Wyoming. Five additional sites were located in 2005 and one in 2006 (Heidel pers. Comm.). The new locations were in the same drainages as the original populations, with two on the same tributary and within a few miles of an original location. Drainages with documented orchid populations include Wind Creek and Antelope Creek in northern Converse County, Bear Creek in northern Laramie and southern Goshen Counties, Horse Creek in Laramie County, and Niobrara River in Niobrara County.

Blowout Penstemon

On May 22, 2009 the Buffalo Field Office received a species list from the US Fish and Wildlife (USFWS) that included Blowout Penstemon. This plant occurs on sand dunes or blowouts. No suitable habitat was identified for the Simpson Ranch Federal Well #23-10 during the on-site.

Sensitive Species

BLM Wyoming has prepared a list of sensitive species to focus species management efforts towards maintaining habitats under a multiple use mandate. Two habitat types – prairie dog colonies and sagebrush ecosystems – are the most common within the Powder River Basin and contain habitat components required in the life cycle of several sensitive species. The species associated with these ecosystems are described below in general terms. Those species within the Powder River Basin that were once listed or candidates for listing under the Endangered Species Act of 1973 and remain BLM Wyoming sensitive species are also described in more detail in this section. The authority for this policy and guidance comes from the Endangered Species Act of 1973, as amended; Title II of the Sikes Act, as amended; the Federal Land Policy and Management Act (FLPMA) of 1976; and the Department Manual 235.1.1A.

Sagebrush obligates

Sagebrush ecosystems support a variety of species. Sagebrush obligates are animals that cannot survive without sagebrush and its associated perennial grasses and forbs; in other words, species requiring sagebrush for some part of their life cycle. Sagebrush obligates within the Powder River Basin, listed as

sensitive species by BLM Wyoming include greater sage-grouse, Brewer's sparrow, sage thrasher, and sage sparrow. Sage sparrows, Brewer's sparrows, and sage thrashers all require sagebrush for nesting, with nests typically located within or under the sagebrush canopy. Sage thrashers usually nest in tall dense clumps of sagebrush within areas having some bare ground for foraging. Sage sparrows prefer large continuous stands of sagebrush, and Brewer's sparrows are associated closely with sagebrush habitats having abundant scattered shrubs and short grass (Paige and Ritter 1999). Other sagebrush obligate species include sagebrush vole, pronghorn antelope, and sagebrush lizard.

Bald Eagle

On February 14, 1978, the bald eagle was federally listed as Endangered. On August 8, 2007, the bald eagle was removed from the Endangered Species list. The bald eagle remains under the protection of the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. In order to avoid violation of these laws and uphold the BLM's commitment to avoid any future listing of this species, all conservation measures and terms and conditions identified in the Powder River Basin Oil and Gas Project Biological Opinion (WY07F0075) (USFWS 2007) shall continue to be complied with.

Bald eagle nesting habitat is generally found in areas that support large mature trees. Eagles typically will build their nests in the crown of mature trees that are close to a reliable prey source. This species feeds primarily on fish, waterfowl, and carrion. In more arid environments, such as the Powder River Basin, prairie dogs, ground squirrels, and lagomorphs (hares and rabbits) can make up the primary prey base. The diets of wintering bald eagles are often more varied. In addition to prairie dogs, ground squirrels, and lagomorphs, carcasses of domestic sheep and big game may provide a significant food source in some areas. Historically, sheep carcasses from large domestic sheep ranches provided a reliable winter food source within the Powder River Basin (Patterson and Anderson 1985). Today, few large sheep operations remain in the Powder River Basin. Wintering bald eagles may congregate in roosting areas generally made up of several large trees clumped together in stands of large ponderosa pine, along wooded riparian corridors, or in isolated groups. Bald eagles often share these roost sites with golden eagles as well.

No suitable roosting or nesting substrate is within one mile of the proposed well.

Black-tailed prairie dog

No historic black-tailed prairie dog colonies were identified in the project area on the BLM database. No prairie dog towns were identified at the onsite.

Burrowing owl

The lak of prairie dog towns, or other suitable burrows in the area indicate no burrowing owl nests within 0.25 miles of the project area.

Greater sage-grouse

The greater sage-grouse is listed as a sensitive species by BLM (Wyoming). In recent years, several petitions have been submitted to the USFWS to list greater sage-grouse as Threatened or Endangered. On January 12th, 2005, the USFWS issued a decision that the listing of the greater sage-grouse was "not warranted" following a Status Review. The decision document supporting this outcome noted the need to continue or expand all conservation efforts to conserve sage-grouse. In 2007, the U.S. District Court remanded that decision, stating that the USFWS' decision-making process was flawed and ordered the USFWS to conduct a new Status Review as a result of a lawsuit and questions surrounding the 2005 review (Winmill Decision Case No. CV-06-277-E-BLW, December 2007).

In conformance with ROD in the BFO has initiated actions within the PRB FEIS analysis area in response to additional information regarding impacts to sage-grouse. These measures include:

1. Early initiation of a Resource Management Plan (RMP) revision, based on the evaluation of monitoring data generated under the mitigation monitoring and reporting plan (MMRP) in the PRB FEIS Record of Decision.
2. Establishment of sage-grouse "focus" areas, encompassing approximately 1 million acres of sage-grouse habitat. These areas are managed under strict guidelines designed to preserve sage-grouse habitat for development of alternatives during the RMP process (Appendix 1).
3. Initiation of a population viability analysis in the Powder River Basin. This is a 24-month project involving the USGS, BLM Miles City Field Office, BLM Buffalo Field Office, and the University of Montana.
4. Development of alternatives that modify the proposed action to reflect the best available science in sage-grouse management.
5. Development of conditions of approval, specific to sage-grouse management, that incorporate some recommendations from recent research, the NE Local Sage-grouse Working Group, and the Petroleum Association of Wyoming.

The BFO has taken several steps to consider evolving information on impacts to sage-grouse which could result from development activities on Federal lands. See Appendix A for analysis of alternatives. With effective application of mitigating measures selected from alternatives C and D, sage-grouse populations in the Powder River Basin will remain viable.

The 2003 PRB EIS has significance thresholds and population viability assumptions based on analysis that sufficient functioning habitat for sage grouse will remain to support population viability within the project area. In addition, the six areas identified as BFO sage-grouse focus areas assume that sufficient amounts of good quality sage-grouse habitat remain mostly unfragmented by energy or other man-made infrastructure; it is also assumed that the fragmented portions in the "energy areas" of sage-grouse habitat provide for the necessary breeding, feeding and sheltering components to sustain sage-grouse habitat connectivity between the six focus areas.

These basic concepts for management are based on the assumptions that sufficient "islands" of undisturbed (by human infrastructure) sage-grouse habitat would remain to sustain a large enough sage-grouse population for the long-term, and be surrounded by the planned major management activities (MMAs) in the PRB (for sage-grouse in the PRB, the MMA are livestock grazing and energy development). Research on sage-grouse in the PRB was initiated to determine what direct, indirect and cumulative impacts energy development would have on both sage-grouse habitat and its constituent resident population.

Greater sage-grouse are found in prairie, sagebrush shrublands, other shrublands, wet meadows, and agricultural areas; they depend upon substantial sagebrush stands for nesting and winter survival (BLM 2003).

The proposed well is located adjacent to an oil and gas well, between two gravel roads, and within 100 yards of a power line. The habitat on-site is high quality when analyzed on a vegetative index with good sage brush canopy cover, interstitial residual grasses, and multiple forb species. The presence of the existing oil well, the roads, and powerline detract from the habitat value, however based on the amount of sign seen at the proposed location the area is important to grouse. BLM records identified 1 sage-grouse leks within 4 miles of the project area. The 4-mile distance was recommended by the State wildlife agencies' ad hoc committee for consideration of oil and gas development effects to nesting habitat (WGFD 2008). Leks within four miles of the Simpson Ranch Federal Well #23-10 project are identified below (Table 3.5)

Table 3.5 Sage-grouse leks within four miles from the Project area project boundary.

LEKID	QQ	Q	Sec	Twn	Rng	Easting	Northing	year	peak male	WY Game and Fish Category of impact
41-Boxelder Draw	SW	SW	33	52	69	487902	4920390	1981	30	
								1982	7	
								1986	21	
								1989	51	
								1992	24	
								1998	20	
								2002	17	
								2004	13	
								2007	13	Moderate

Sharp-tailed grouse
The most recent (2003) BLM and WGFD data base does not indicate any known occurrences of sharp-tailed grouse leks within 0.64 miles of the Project area. The project area is suitable sharp-tail grouse habitat and the species is expected to occur on site. No sharp-tailed grouse were observed by the BLM biologist within the project area.

Mountain plover
Mountain plovers require barren lands or very short (2-4 inch) vegetation. Ideal habitat for mountain plover are large active prairie dog towns. A BLM mountain plover habitat suitability model indicates that the 23-10 location is suitable. However, based on the onsite visit, the project area is not considered suitable mountain plover habitat due to the dominance of sage brush and tall grass.

West Nile Virus
West Nile virus (WNv) is a mosquito-borne disease that can cause encephalitis or brain infection. Mosquitoes spread this virus after they feed on infected birds and then bite people, other birds, and animals. WNv is not spread by person-to-person contact, and there is no evidence that people can get the virus by handling infected animals.

Since its discovery in 1999 in New York, WNv has become firmly established and spread across the United States. Birds are the natural vector host and serve not only to amplify the virus, but to spread it. Though less than 1% of mosquitoes are infected with WNv, they still are very effective in transmitting the virus to humans, horses, and wildlife. *Culex tarsalis* appears to be the most common mosquito to vector, WNv.

The human health issues related to WNv are well documented and continue to escalate. Historic data collected by the CDC and published by the USGS at www.westnilemaps.usgs.gov are summarized below. Reported data from the Powder River Basin (PRB) includes Campbell, Sheridan and Johnson counties.

Table 3.6 Historical West Nile Virus Information

Year	Total WY Human Cases	Human Cases PRB	Veterinary Cases PRB	Bird Cases PRB
2001	0	0	0	0
2002	2	0	15	3
2003	392	85	46	25
2004	10	3	3	5
2005	12	4	6	3
2006	65	0	2	2
2007*	155	22	Unk	1
2008*	10	0	0	0

*Wyoming Department of Health Records.

Human cases of WNv in Wyoming occur primarily in the late summer or early fall. There is some evidence that the incidence of WNv tapers off over several years after a peak following initial outbreak (Litzel and Mooney, personal conversations). If this is the case, occurrences in Wyoming are likely to increase over the next few years, followed by a gradual decline in the number of reported cases.

Although most of the attention has been focused on human health issues, WNv has had an impact on vertebrate wildlife populations. At a recent conference at the Smithsonian Environmental Research Center, scientists disclosed WNv had been detected in 157 bird species, horses, 16 other mammals, and alligators (Marra et al 2003). In the eastern US, avian populations have incurred very high mortality, particularly crows, jays and related species. Raptor species also appear to be highly susceptible to WNv. During 2003, 36 raptors were documented to have died from WNv in Wyoming including golden eagle, red-tailed hawk, ferruginous hawk, American kestrel, Cooper's hawk, northern goshawk, great-horned owl, prairie falcon, and Swainson's hawk (Cornish et al. 2003). Actual mortality is likely to be greater. Population impacts of WNv on raptors are unknown at present. The Wyoming State Vet Lab determined 22 sage-grouse in one study project (90% of the study birds), succumbed to WNv in the PRB in 2003. While birds infected with WNv have many of the same symptoms as infected humans, they appear to be more sensitive to the virus (Rinkes 2003).

Mosquitoes can potentially breed in any standing water that lasts more than four days. In the Powder River Basin, there is generally increased surface water availability associated with produced water. This increase in potential mosquito breeding habitat provides opportunities for mosquito populations to increase. Preliminary research conducted in the Powder River Basin indicates WNv mosquito vectors were notably more abundant on a developed site than two similar undeveloped sites (Walker et al. 2003). Reducing the population of mosquitoes, especially species that are apparently involved with bird-to-bird transmission of WNv, such as *Culex tarsalis*, can help to reduce or eliminate the presence of virus in a given geographical area (APHIS 2002). The most important step any property owner can take to control such mosquito populations is to remove all potential man-made sources of standing water in which mosquitoes might breed (APHIS 2002).

The most common pesticide treatment is to place larvicidal briquettes in small standing water pools along drainages or every 100 feet along the shoreline of reservoirs and ponds. It is generally accepted that it is not necessary to place the briquettes in the main water body because wave action prevents this environment from being optimum mosquito breeding habitat. Follow-up treatment of adult mosquitoes

with malathion may be needed every 3 to 4 days to control adults following application of larvicide (Mooney, personal conversation). These treatment methods seem to be effective when focused on specific target areas, especially near communities, however they have not been applied over large areas nor have they been used to treat a wide range of potential mosquito breeding habitat such as that associated with development.

3. ENVIRONMENTAL CONSEQUENCES

Alternative C
Vegetation & Soils Direct and Indirect Effects
Soils
The effects to soils resulting from well pad, access roads and pipeline construction include:

- Modification of hill slope hydrology.
- Mixing of horizons which occur where construction on roads, pipelines or other activities take place. Mixing may result in removal or relocation of organic matter and nutrients to depths where it would be unavailable for vegetative use. Soils which are more susceptible to wind and water erosion may be moved to the surface. Soil structure may be destroyed, which may impact infiltration rates. Less desirable inorganic compounds such as carbonates, salts or weathered materials may be relocated and have a negative impact on re-vegetated areas. This drastically disturbed site may change the ecological integrity of the site and the recommended seed mix.
- Loss of soil vegetation cover, biologic crusts, organic matter and productivity. With expedient reclamation, productivity, and stability should be regained in the shortest time frame.
- Soil erosion would also affect soil health and productivity. Erosion rates are site specific and are dependent on soil, climate, topography, and cover.
- Soil Compaction is the collapse of soil pores resulting in decreased infiltration and increased erosion potential. Factors affecting compaction include soil texture, moisture, organic matter, clay content and type, pressure exerted, and the number of passes by vehicle traffic or machinery. Compaction may be remediated by plowing or ripping.
- An important component of soils in Wyoming's semiarid rangelands, especially in the Wyoming big sagebrush cover type, are biological soil crusts, or cryptogamic soils that occupy ground area not covered with vascular plants. Biological soil crusts are predominantly composed of cyanobacteria, green and brown algae, mosses, and lichens. They are important in maintaining soil stability, controlling erosion, fixing nitrogen, providing nutrients to vascular plants, increasing precipitation infiltration rates, and providing suitable seed beds (BLM 2003). They are adapted to growing in severe climates; however, they take many years to develop (20 to 100) and can be easily disturbed or destroyed by surface disturbances associated with construction activities.

Vegetation
Impacts to vegetation and soils from surface disturbance will be reduced, by following the operator's plans and BLM applied mitigation. Construction of the well pads, engineered road section, spot upgrades to existing primitive roads as well as road improvements would result in the loss of both native and non-native vegetation, and increased erosion potential within the project area. Expedient reclamation of disturbed land with stockpiled topsoil, proper seedbed preparation techniques, and appropriate seed mixes, along with utilization of erosion control measures (e.g., waterbars, water wings, culverts, rip-rap, gabions etc.) would ensure that land productivity/stability is regained and maximized.

The entire impacted area will be ultimately reclaimed as described in the surface use plan and attached conditions of approval following plugging and abandonment of the well, access road and associated disturbed lands. If production is established on these locations, all disturbed areas not needed for production purposes will be expediently recontoured and reclaimed

Cultural Resources

No cultural resources are in the area of potential effect (APE). On 2/2/2009, BJ Earle, BLM Archaeologist, electronically notified the Wyoming State Historic Preservation Office (SHPO) following section VI(A)(1) of the Wyoming State Protocol, of a finding of no effect for the proposed project.

If any cultural values [sites, artifacts, human remains (Appendix L PRB FEIS)] are observed during operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. Further discovery procedures are explained in the ***Standard COA*** (General) (A) (1).

Invasive Species

Based on the investigations performed during the project planning process, the operator has committed to the control of noxious weeds and species of concern. Weeds will be controlled on disturbed areas within the exterior limits of the access road and well pad. The control methods shall be in accordance with guidelines established by the EPA, BLM, State, and local authorities.

These impacts, singly or in combination, would increase the potential for valuable soil loss due to increased water and wind erosion, invasive/noxious/poisonous plant spread, invasion and establishment, and increased sedimentation and salt loads to the watershed system. Soil disturbances other than permanent facilities could be short term, and may have minor impacts with expedient, successful interim reclamation and site stabilization. Construction activities should be designed following Best Management Practices (BMPs), seed mixes were determined based on soil map unit types and dominant ecological sites found within the project area.

Water Resources

Watershed values, including natural drainages, would not be adversely impacted by the proposal with properly applied mitigation. Other water resources will not be adversely impacted by the proposal. Possible contamination effects of fresh water aquifers will be reduced through the use of tested casing, by setting casing at appropriate depths and by following safe repair procedures in the event of casing failure. Other downhole well operations are expected to cause minimal impacts using standard engineering practices. No adverse impacts are expected to water resources, therefore water resources will not be considered further in this EA.

Wildlife

Effects Analysis

During the environmental analysis process, the BLM identified project modifications resulting in an environmentally preferred alternative (Alternative C). At the on-sites, all areas of proposed surface disturbance were inspected to ensure that potential impacts to natural resources would be reduced.

Big Game Direct and Indirect Effects

Under the environmentally preferred alternative, Winter-Yearlong range for pronghorn antelope will be impacted with the construction of the well. Short-term disturbances (pipeline for example) should provide some habitat value as these areas are reclaimed and native vegetation becomes established.

In addition to the direct habitat loss, big game would likely be displaced from the project area during drilling and construction. A study in central Wyoming reported that mineral drilling activities displaced mule deer by more than 0.5 miles (Hiatt and Baker 1981). The WGFD indicates a well density of eight wells per section creates a high level of impact for big game and that avoidance zones around mineral facilities overlap creating contiguous avoidance areas (WGFD 2004). A multi-year study on the Pinedale Anticline suggests not only do mule deer avoid mineral activities, but after three years of drilling activity the deer have not become accustomed to the disturbance (Madson 2005).

Big game animals are expected to return to the project area following construction; however, populations will likely be lower than prior to project implementation as the human activities associated with operation and maintenance continue to displace big game. Mule deer are more sensitive to operation and maintenance activities than pronghorn, and, as the Pinedale Anticline study suggests, mule deer do not readily habituate. A study in North Dakota stated "Although the population (mule deer) had over seven years to habituate to oil and gas activities, avoidance of roads and facilities was determined to be long term and chronic" (Lustig 2003). Deer have even been documented to avoid dirt roads that were used only by 4-wheel drive vehicles, trail bikes, and hikers (Jalkotzy et al. 1997).

Winter big game diets are sub-maintenance, meaning animals lose weight and body condition as the winter progresses. Survival below the maintenance level requires behavior that emphasizes energy conservation. Canfield et al. (1999) pointed out that forced activity caused by human disturbance exacts an energetic disadvantage, while inactivity provides an energetic advantage for animals. Geist (1978) further defined effects of human disturbance in terms of increased metabolism, which could result in illness, decreased reproduction, and even death.

Reclamation and other activities that occur within big game habitats during the spring will likely displace does and fawns due to the human presence in the area. This may cause reduced survival rate of does and fawns that expend increased energies to avoid such activities.

Big Game Cumulative effects
The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-211.

Aquatics Direct and Indirect Effects
If the well is a producer and there is a need for water management, the operator will sundry a water management plan to the BLM. At this time there are no anticipated effects to aquatics.

Aquatics Cumulative effects
The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-247. No additional mitigation measures are required.

Migratory Birds Direct and Indirect Effects
Disturbance of the habitat types within the project area is likely to impact migratory birds. Native habitats are being lost directly with the construction of wells, roads, and pipelines. Prompt re-vegetation of short-term disturbance areas should reduce habitat loss impacts. Human activities likely displace migratory birds farther than simply the physical habitat disturbance. Drilling and construction noise can be troublesome for songbirds by interfering with the males' ability to attract mates and defend territory, and the ability to recognize calls from conspecifics (BLM 2003).

Habitat fragmentation results in more than just a quantitative loss in the total area of habitat available; the remaining habitat area is also qualitatively altered (Temple and Wilcox 1986). Ingelfinger (2004) identified that the density of breeding Brewer's sparrows declined by 36% and breeding sage sparrows declined by 57% within 100 m of dirt roads within a natural gas field. Effects occurred along roads with light traffic volume (<12 vehicles per day). The increasing density of roads constructed in developing natural gas fields exacerbated the problem creating substantial areas of impact where indirect habitat losses (displacement) were much greater than the direct physical habitat losses.

Reclamation activities that occur in the spring may be detrimental to migratory bird survival. Those species that are edge-sensitive will be displaced further away from vegetative edges due to increased human activity, causing otherwise suitable habitat to be abandoned. If the interior habitat is at carrying capacity, then birds displaced from the edges will have no place to relocate. One consequence~~s~~ of habitat fragmentation is a geometric increase in the proportion of the remaining habitat that is near edges (Temple 1986). In severely fragmented habitats, all of the remaining habitat may be so close to edges that no interior habitat remains (Temple and Cary 1988). Over time, this will lead to a loss of interior habitat species in favor of edge habitat species. Other migratory bird species that utilize the disturbed areas for nesting may be disrupted by the human activity and nests may be destroyed by equipment.

Overhead power lines may affect migratory birds in several ways. Power poles provide raptors with perch sites and may increase predation on migratory birds. Power lines placed in flight corridors may result in collision mortalities. Some species may avoid suitable habitat near power lines in an effort to avoid predation.

Migratory bird species within the Powder River Basin nest in the spring and early summer and are vulnerable to the same affects as sage-grouse and raptor species. Though no timing restrictions are typically applied specifically to protect migratory bird breeding or nesting, where sage-grouse or raptor nesting timing limitations are applied, in this case sage-grouse, nesting migratory birds are also protected. Where these timing limitations are not applied and migratory bird species are nesting, migratory birds remain vulnerable. Additional direct and indirect effects to migratory birds are discussed in the PRB FEIS (4-231-235).

Migratory Birds Cumulative effects

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, Page 4-235. No additional mitigation measures are required.

Raptors Direct and Indirect Effects

There are no anticipated effects to nesting raptors. No nest were identified within 0.5 miles of the proposed well location.

Raptor Cumulative Effects

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-221. No additional mitigation measures are required.

Threatened and Endangered and Sensitive Species

Potential project effects on Threatened and Endangered Species were analyzed and a summary is provided in Table 4.2. Threatened and Endangered Species potentially affected by the proposed project area are further discussed following the table.

Threatened and Endangered Species

Table 4.2 Summary of Threatened and Endangered Species Habitat and Project Effects.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Endangered				
Black-footed ferret (*Mustela nigripes*)	Black-tailed prairie dog colonies or complexes > 1,000 acres.	NP	NE	Suitable habitat of insufficient size.
Blowout penstemon (*Penstemon haydenii*)	Unstable, sandy blow-outs and active sand dunes	NP	NE	Depositional sands/dunes not present.
Threatened				
Ute ladies'-tresses orchid (*Spiranthes diluvialis*)	Riparian areas with permanent water	NP	NE	Suitable habitat is not present.

Presence
K Known, documented observation within project area.
S Habitat suitable and species suspected, to occur within the project area.
NS Habitat suitable but species is not suspected to occur within the project area.
NP Habitat not present and species unlikely to occur within the project area.
Project Effects
LAA Likely to adversely affect
NE No Effect.
NLAA May Affect, not likely to adversely affect individuals or habitat.

Black-Footed Ferret Direct and Indirect Effects
Because no black-tailed prairie dog colonies were found within the project area, and it lies outside any identified reintroduction area, implementation of the proposed development will have no effect on the black-footed ferret.

Blowout Penstemon Direct and Indirect Effects
Based on the BLM biologist's assessment of the project area, there is no Blowout Penstemon habitat that could be disturbed by the proposed action. Therefore the project will have no effect on Blowout Penstemon.

Ute Ladies'-Tresses Orchid Direct and Indirect Effects
Based on the BLM biologist's assessment of the project area, there is no orchid habitat that could be disturbed by the proposed action. Implementation of the proposed project will have no effect on the Ute ladies'- tresses orchid.

Sensitive Species Direct and Indirect Effects
BLM will take necessary actions to meet the policies set forth in sensitive species policy (BLM Manual 6840). BLM Manual 6840.22 A states: "The BLM should obtain and use the best available information deemed necessary to evaluate the status of special status species in areas affected by land use plans or other proposed actions and to develop sound conservation practices. Implementation-level planning should consider all site-specific methods and procedures which are needed to bring the species and their habitats to the condition under which the provisions of the Endangered Species Act are not necessary,

current listings under special status species categories are no longer necessary, and future listings under special status species categories would not be necessary."

Sagebrush obligates

Shrubland and grassland birds are declining faster than any other group of species in North America (Knick et al. 2003). In Wyoming, existing oil and gas wells are located primarily in landscapes dominated by sagebrush, causing direct loss of this habitat. Associated road networks, pipelines, and powerline transmission corridors also influence vegetation dynamics by fragmenting habitats or by creating soil conditions facilitating the spread of invasive species (Braun 1998, Gelbard and Belnap 2003). Density of sagebrush-obligate birds within 100 m of roads constructed for natural gas development in Wyoming was 50% lower than at greater distances (Ingelfinger 2001). Increased numbers of corvids and raptors associated with powerlines (Steenhof et al. 1993, Knight and Kawashima 1993, Vander Haegen et al. 2002) increases the potential predation impact on sage-grouse and other sagebrush-breeding birds (Knick et al. 2003).

Fragmentation of shrubsteppe habitat is a major disruption that has consequences for sagebrush-obligate species (Braun et al. 1976; Rotenberry & Wiens 1980a). In fragmented habitats, suitable habitat area remains only as remnants surrounded by unusable environments (Urban and Shugart 1984; Fahrig & Paloheimo 1988). Populations of sagebrush-obligate species decline because areas of suitable habitat decrease (Temple & Cary 1988), because of lower reproduction, and/or because of higher mortality in remaining habitats (Robinson 1992; Porneluzi et al. 1993). Fragmentation of shrubsteppe has the further potential to affect the conservation of shrub-obligate species because of the permanence of disturbance (Knick and Rotenberry 1995). Several decades are required to reestablish ecologically functioning mature sagebrush communities. Due to this, sagebrush obligate species may not return even after habitat reestablishment.

Table 4.3 Summary of Sensitive Species Habitat and Project Effects.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Amphibians				
Northern leopard frog (*Lithobates pipiens*)	Beaver ponds, permanent water in plains and foothills	NP	NI	No surface water impacts.
Spotted frog (*Ranus pretiosa*)	Mountain ponds, sloughs, small streams	NP	NI	Prairie not mountain habitat.
Birds				
Baird's sparrow (*Ammodramus bairdii*)	Grasslands, weedy fields	S	MIIH	Sagebrush cover will be affected.
Bald eagle (*Haliaeetus leucocephalus*)	Mature forest cover often within one mile of large water body.	S	NI	Project includes occupied habitat & overhead power. Documented roost may be compromised by the proposed project.
Brewer's sparrow (*Spizella breweri*)	Basin-prairie shrub	K	MIIH	Sagebrush cover will be affected.
Burrowing owl (*Athene cunicularia*)	Grasslands, basin-prairie shrub	NP	NI	No prairie dog towns impacted.
Ferruginous hawk (*Buteo regalis*)	Basin-prairie shrub, grasslands, rock outcrops	S	MIIH	Foraging habitat will be removed.
Greater sage-grouse (*Centrocercus urophasianus*)	Basin-prairie shrub, mountain-foothill shrub	K	WIPV	Sagebrush cover with documented use will be affected.
Loggerhead shrike (*Lanius ludovicianus*)	Basin-prairie shrub, mountain-foothill shrub	S	MIIH	Sagebrush cover will be affected.
Long-billed curlew (*Numenius americanus*)	Grasslands, plains, foothills, wet meadows	NP	NI	Habitat not present.
Mountain plover (*Charadrius montanus*)	Short-grass prairie with slopes < 5%	NP	NI	Habitat not present.
Northern goshawk (*Accipiter gentilis*)	Conifer and deciduous forests	NP	NI	No forest habitat present.
Peregrine falcon (*Falco peregrinus*)	cliffs	NP	NI	No nesting habitat present.
Sage sparrow	Basin-prairie shrub, mountain-foothill shrub	NP	NI	Species has not been

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
(*Amphispiza billneata*)				documented in the Buffalo Field office area.
Sage thrasher (*Oreoscoptes montanus*)	Basin-prairie shrub, mountain-foothill shrub	S	MIIH	Sagebrush cover will be affected.
Trumpeter swan (*Cygnus buccinator*)	Lakes, ponds, rivers	NP	NI	Reservoirs may provide migratory habitat.
White-faced ibis (*Plegadis chihi*)	Marshes, wet meadows	NP	NI	Permanently wet meadows not present.
Yellow-billed cuckoo (*Coccyzus americanus*)	Open woodlands, streamside willow and alder groves	NP	NI	Streamside habitats not present
Fish				
Yellowstone cutthroat trout (*Oncoryhynchus clarki bouvieri*)	Mountain streams and rivers in Tongue River drainage	NP	NI	Outside species range.
Mammals				
Black-tailed prairie dog (*Cynomys ludovicianus*)	Prairie habitats with deep, firm soils and slopes less than 10 degrees.	NP	NI	No Prairie dog towns found.
Fringed myotis (*Myotis thysanodes*)	Conifer forests, woodland chaparral, caves and mines	NP	NI	Habitat not present.
Long-eared myotis (*Myotis evotis*)	Conifer and deciduous forest, caves and mines	NP	NI	Habitat not present.
Spotted bat (*Euderma maculatum*)	Cliffs over perennial water.	NP	NI	Cliffs & perennial water not present.
Swift fox (*Vulpes velox*)	Grasslands	S	MIIH	Project may alter foraging habitat.
Townsend's big-eared bat (*Corynorhinus townsendii*)	Caves and mines.	NP	NI	Habitat not present.
Plants				
Porter's sagebrush (*Artemisia porteri*)	Sparsely vegetated badlands of ashy or tufaceous mudstone and clay slopes 5300-6500 ft.	NP	NI	Habitat not present.
William's wafer parsnip (*Cymopterus williamsii*)	Open ridgetops and upper slopes with exposed limestone outcrops or rockslides, 6000-8300 ft.	NP	NI	Habitat not present.

Presence
K Known, documented observation within project area.
S Habitat suitable and species suspected, to occur within the project area.
NS Habitat suitable but species is not suspected to occur within the project area.
NP Habitat not present and species unlikely to occur within the project area.

Project Effects
NI No Impact.
MIIH May Impact Individuals or Habitat, but will not likely contribute to a trend towards Federal listing or a loss of viability to the population or species.
WIPV Will Impact Individuals or Habitat with a consequence that the action may contribute to a trend towards Federal listing or cause a loss of viability to the population or species.
BI Beneficial Impact

Bald eagle Direct and Indirect Effects
Based on the BLM biologist habitat assessment, it is unlikely bald eagles nest or roost within one mile of the project area.

Black-tailed prairie dog Direct and Indirect Effects
No black-tailed prairie dogs, or prairie dog obligate species (e.g. burrowing owl) will be impacted by the proposed action.

Grouse
Greater sage-grouse Direct and Indirect Effects
One active lek, Boxelder Draw, is within four miles (1.5 miles north) of the proposed well. A timing limitation prohibiting surface disturbance from March 1-June 15 will be applied to minimize noise and habitat removal during the nesting season. Based on the amount and type of grouse sign seen at the onsite, drilling and operation of the well will remove nesting, brood rearing, and roosting habitat. Approximately 2.5 acres of sage-grouse habitat will be physically removed by the proposed project. The BLM biologist walked all open areas within ¼ mile of the proposed well and did find sage-grouse sign consistent with lekking activity (dropping piles, feathers) approximately 600 feet to the south of the well location. The Wyoming Game and Fish flew the area on May 11, 2009 and did not see any lekking birds within ¼ mile of the well. On the same day, a BLM biologist visited the location at daybreak and did not observe any grouse in the area. These survey efforts did not fulfill the Wyoming Game and Fish and BLM recommended protocol of three surveys at least one week apart and there is a small probability that a lek exists within ¼ mile of the proposed action. BLM has established a 0.25 mile controlled surface use (CSU) policy for sage grouse leks.

The proposed well is located adjacent to an oil and gas well, between two gravel roads, and within 100 yards of a power line. The habitat on-site is high quality when analyzed on a vegetative index with good sage brush canopy cover, interstitial residual grasses, and multiple forb species. The presence of the existing oil well, the roads, and powerline detract from the habitat value, however based on the amount of sign seen at the proposed location the area is important to grouse.

If the proposed well does not produce, then the recovery time for the location could be a few years to decades. Analysis of aerial photography shows an abandoned 23-10 location on the east side of the gravel road that was abandoned in 1978 and as of 2006 was not re-vegetated with sage brush. The existing 13-10 well was completed in 2003 and the reserve pit was well vegetated with sage when visited in 2009. These disparate revegetation states may be a result of additional surface water irrigating the 13-10 reserve pit from the location and road ditches, or a chemical treatment of some kind on the old 23-10 location.

At the April 23, 2009 onsite, and in the BLM June 11, 2009 deficiency letter, BLM recommended the well location be moved to the existing 13-10 well location (approximately 1,000 feet). The operator's representative responded to this request with a refusal based on the 13-10 location being off the federal lease. This argument had merit to preclude use of the 13-10 well location because the operator does not want it on the fee location. The operator did propose to move the production facilities, if the well produces, to the 13-10 fee well location. This proposal would reduce the size of the proposed well pad, but would keep the proposed well location within sage-grouse habitat with documented use. Other alternative locations that are on lease and would minimize impacts to sage-grouse habitat, such as on the access road to the 13-10, or the old 23-10 location, were not proposed by the operator representative who

requested in their June 26, 2009 response to deficiencies that the BLM process the APD as proposed. A BLM petroleum engineer analyzed the potential for directionally drilling the proposed well and determined the proposed well could be drilled using directional technology. Therefore, feasible alternatives that would minimize impacts to sage-grouse habitat exist and could be implemented if the operator was willing to move the well.

Based on the best available science, which is summarized in the next section, the proposed action will most likely contribute to the decline or extirpation of the local sage-grouse population.

Greater sage-grouse Cumulative Effects

The Powder River Basin Oil and Gas Project FEIS (BLM 2003) concluded that "Activities associated with the proposed project would affect sage-grouse in several ways. These effects may include: (1) increased direct mortality (including legal hunting, poaching, and collision with power lines and vehicles); (2) the introduction of new perches for raptors and thus the potential change in rate of predation; (3) direct loss or degradation of habitats; (4) indirect disturbance resulting from human activity (including harassment, displacement, and noise); (5) habitat fragmentation (particularly through construction of roads); and (6) changes in population (pg. 4-257)." The FEIS goes on to state that "implementation of several mitigation measures would reduce the extent of each impact addressed by those measures. Despite these measures, the synergistic effect of several impacts would likely result in a downward trend for the sage-grouse population, and may contribute to the array of cumulative effects that may lead to its federal listing. Local populations may be extirpated in areas of concentrated development, but viability across the Project Area (Powder River Basin) or the entire range of the species is not likely to be compromised (pg. 4-270)."

The Powder River Basin Oil and Gas Project Record of Decision (BLM 2003) included a Mitigation Monitoring and Reporting Plan (MMRP). The uncertainties as to where and at what level development was to proceed, as well as the uncertainties associated with the assumptions that were used to predict impacts, suggests that the one-time determination of impacts that is included in the EIS may not occur as projected. The MMRP helps to continually assess the effects of the project and the adequacy of the mitigation. Such a plan/process provides a mechanism to continuously modify management practices in order to allow development, while continuing to protect the environment (E-1)." In other words, development pace and patterns may not occur as predicted, and so the BLM may use the adaptive management process provided for in the BFO RMP.

Impacts from energy development are likely to be significant and additive to the long-term impacts afflicting the sage-grouse population (WGFD 2004). Greater sage-grouse habitat is being directly lost with the addition of well sites, roads, pipelines, powerlines, reservoirs, and other infrastructure in the Powder River Basin (WGFD 2005, WGFD 2004). Sage-grouse avoidance of infrastructure results in even greater indirect habitat loss. In southwestern Wyoming, yearling female greater sage-grouse avoid nesting in areas within 0.6 miles of producing well pads (Holloran et al. 2007), and in southern Alberta, brood-rearing females avoid areas within 0.6 miles of producing wells (Aldridge and Boyce 2007). Doherty et al. (2008) demonstrated that sage-grouse in the Powder River Basin avoided otherwise suitable wintering habitats once they have been developed for Coal Bed Natural Gas production, even after timing and lek buffer stipulations had been applied. The WGFD feels a well density of eight wells per section creates a extreme level of impact for sage-grouse and that sage-grouse avoidance zones around mineral facilities overlap, creating contiguous avoidance areas (WGFD 2004). As interpreted by coordinated effort with state fish and wildlife agencies from Montana, Colorado, Utah, South Dakota, North Dakota and

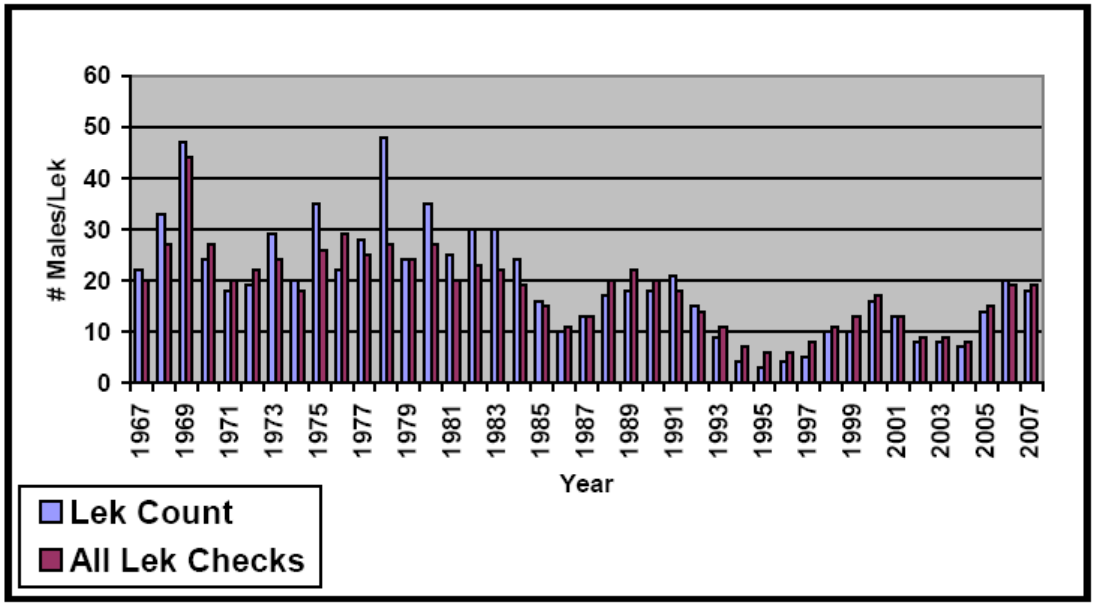
Wyoming, (State wildlife agencies' ad hoc committee for sage-grouse and oil and gas development 2008), research indicates that oil or gas development exceeding approximately 1 well pad per square mile, with the associated infrastructure, results in calculable impacts on breeding populations, as measured by the number of male sage-grouse attending leks (Holloran 2005, Walker et al. 2007).

Noise can affect sage-grouse by preventing vocalizations that influence reproduction and other behaviors (WGFD 2003). In a study of greater sage-grouse population response to natural gas field development in western Wyoming, Holloran (2005) concluded that increased noise intensity, associated with active drilling rigs within 5 km (3.1 miles) of leks, negatively influenced male lek attendance. In 2002, Braun et al. documented approximately 200 CBNG facilities within one mile of sage-grouse leks. Sage-grouse numbers were found to be consistently lower for these leks than for leks without this disturbance. Direct habitat losses from the facilities themselves, roads and traffic, and the associated noise were found to be the likely reason for this finding.

Vegetation communities within the Powder River Basin are naturally fragmented, as they represent a transition between the intermountain basin sagebrush communities to the west and the prairie communities to the east. The Powder River Basin is also near the eastern edge of greater sage-grouse range. A sagebrush cover assessment within Wyoming basins estimated sagebrush coverage within the Powder River Basin to be 35% with an average patch size less than 300 acres (Rowland et al. 2005). The Powder River Basin patch size has decreased by more than 63% in the past forty years, from 820 acre patches and an overall coverage of 41% in 1964 (Rowland et al. 2005). The existing development within the cumulative impacts assessment area has further fragmented the sage-grouse habitat. Disturbance created by this project will contribute to additional fragmentation.

The sage-grouse population within northeast Wyoming is exhibiting a steady long term downward trend (Figure 1) (WGFD 2005). The figure illustrates a ten-year cycle of periodic highs and lows. Each subsequent population peak is lower than the previous peak. Long-term harvest trends are similar to that of lek attendance (WGFD 2005).

Figure 1. Male sage-grouse lek attendance within northeastern Wyoming, 1967-2007.



The BFO Resource Management Plan (BLM 2001) and the Powder River Basin Oil and Gas Project Record of Decision (BLM 2003) include a two-mile timing limitation within sage-grouse nesting habitat. The two-mile measure originated with the Western Association of Fish and Wildlife Agencies (WAFWA) (BLM 2004). BLM Wyoming adopted the two-mile recommendation in 1990 (BLM 1990). The two-mile recommendation was based on early research which indicated between 59 and 87 percent of sage-grouse nests were located within two miles of a lek (BLM 2004). These studies were conducted within prime, contiguous sage-grouse habitat such as Idaho's Snake River plain.

Additional studies, across more of the sage-grouse's range, indicate that many populations nest much farther than two miles from the breeding lek (BLM 2004). Holloran and Anderson (2005), in their Upper Green River Basin study area, reported only 45% of their sage-grouse hens nested within 3 km (1.86 mi) of the capture lek. Moynahan and Lindberg (2004) found only 36% of their grouse nesting within 3 km of the capture lek. Moynahan's study area was north-central Montana in an area of mixed-grass prairie and sagebrush steppe, with Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) being the dominant shrub species (Moynahan et al. 2007). Habitat conditions and sage-grouse biology within the Buffalo Field Office are more similar to Moynahan's north-central Montana study area than the Upper Green River area.

Based on these studies, the BLM has determined that a two-mile timing limitation applied to Coal Bed Natural gas development, given the long-term population decline and that less than 50% of sage-grouse are expected to nest within the 2-mile area, is insufficient to reverse the population decline. Moynahan and Lindberg (2004) like WAFWA (Connelly et al. 2000), recommend increasing the protective distance around sage-grouse leks. The BLM and University of Montana are currently researching nest location and other sage-grouse questions and relationships between grouse and coalbed natural gas development. Thus far, this research suggests that impacts to leks from energy development are discernable out to a minimum of four miles, and that some leks within this radius have been extirpated as a direct result of energy development (State wildlife agencies' ad hoc committee for sage-grouse and oil and gas development 2008). Even with a timing limitation on construction activities, sage-grouse may avoid nesting within developed fields because of the activities associated with operation and production. In a typical landscape in the Powder River Basin, energy development at within two miles of leks is projected to reduce the average probability of lek persistence from 87% to 5% percent (Walker et al. 2007).

Rather than limiting mitigation to only timing restrictions, research suggests more effective mitigation strategies include, at a minimum, burying power lines (Connelly et al. 2000 b); minimizing road and well pad construction, vehicle traffic, and industrial noise (Lyon and Anderson 2003, Holloran 2005); and managing produced water to prevent the spread of mosquitoes with the potential to vector West Nile Virus in sage grouse habitat (Walker et al 2007).

The multi-state recommendations presented to the WGFD for identification of core sage grouse areas acknowledges there may be times when development in important sage grouse breeding, summer, and winter habitats cannot be avoided. In those instances they recommend, "…infrastructure should be minimized and the area should be managed in a manner that effectively conserves sagebrush habitats (State wildlife agencies' ad hoc committee for sage-grouse and oil and gas development 2008).

In January 2008, BFO staff identified that sage-grouse protections in the 2003 PRB EIS may not be adequate to preserve sage-grouse population viability in the Powder River Basin. BFO consolidated research and data to identify high-quality sage-grouse habitat in the basin and developed a map of sage-grouse "focus areas". These areas encompass approximately 1 million acres of habitat, and are managed under criteria established in "Guidance for general management actions during BFO Resource Management Plan Revision" (Appendix 1). This general guidance includes the following requirement;

"The proponent will be asked to demonstrate that the proposal can be managed in a manner that effectively conserves sage-grouse habitats affected by the proposal."

Based on the best available science presented above, the proposed action may contribute to the abandonment of the Boxelder lek. However, given the ongoing planning actions specific to sage-grouse, changes to the proposed action identified, and timing limitations applied, the proposed action should not affect population viability across the project area or the species' range. Continuing to permit oil wells in occupied sage-grouse habitat, when feasible alternatives that would conserve the occupied habitat are available increases the probability that populations will continue to decline.

Mountain plover Direct and Indirect Effects

Suitable mountain plover habitat is present, but limited within the project area. The presence of mountain plovers has not been documented within the Simpson Ranch Federal well #23-10 site, however given their cryptic nature they may be present. Additional surveys will be conducted annually.

Mineral development has mixed effects on mountain plovers. Disturbed ground, such as buried pipeline corridors and roads, may be attractive to plovers, while human activities within one-quarter mile may be disruptive. To reduce impacts to nesting mountain plovers, the BLM BFO requires a 0.25 mile timing limitation for potential nesting habitat prior to nest survey completion and a 0.25 mile timing limitation for all occupied nesting habitat for the entire nesting season.

Use of roads and pipeline corridors by mountain plovers may increase their vulnerability to vehicle collision. Limiting travel speed to 25mph provides drivers an opportunity to notice and avoid mountain plovers and allows mountain plovers sufficient time to escape from approaching vehicles. Even if a nesting plover flushes in time, the nest likely would still be destroyed. Overhead power lines provide perch sites for raptors that could result in increased mountain plover predation. Infrastructure such as well houses, roads, pipeline corridors, and nearby metering facilities may provide shelter and den sites for ground predators such as skunks and foxes.

Mountain plovers have been forced to seek habitat with similar qualities that may be poor quality habitat when loss or alteration of their natural breeding habitat (predominately prairie dog colonies) occurs, such as heavily grazed land, burned fields, fallow agriculture lands, roads, oil and gas well pads and pipelines. These areas could become reproductive sinks. Adult mountain plovers may breed there, lay eggs and hatch chicks; however, the young may not reach fledging age due to the poor quality of the habitat. Recent analysis of the USWFS Breeding Bird Survey (BBS) data suggests that mountain plover populations have declined at an annual rate of 3.7 % over the last 30 years which represents a cumulative decline of 63% during the last 25 years (Knopf and Rupert 1995). An analysis of direct and indirect impacts to mountain plover due to oil and gas development is included in the PRB FEIS (4-254-255).

Sensitive Species Cumulative effects

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-271.

West Nile Virus Direct and Indirect Effects

This project is likely to result in standing surface water which may increase *Culex tarsalis* breeding habitat. BLM has consulted with applicable state agencies, County Weed and Pest and the State Health Department, per above mitigation in the PRB ROD page 18, regarding the disease and the need to treat. BLM has also consulted with the researchers that are studying the dynamics of WNv species and its effects in Wyoming.

There is no evidence that treatment, either through the use of larvicides or malithion, on a site specific or basin-wide scale will have any effect on the overall spread of WNv. The State agencies have not instituted state-wide treatment for mosquitoes due to WNv, nor are they requiring any mitigation specific to permitting for CBM operations.

Cumulatively, there are many sources of standing water, beyond CBM discharge, throughout the PRB that would add to the potential for mosquito habitat. Sources include; natural flows, livestock watering facilities, coal mining operations, and outdoor water use and features in and around communities. BLM will keep monitoring this issue by continuing to consult with the State agencies and the researchers working in the area in order to stay abreast of the most current developments and any need to apply mitigation.

Alternative D
Only specific differences from alternative C will be discussed. Alternatives D was not explored during the onsite, however following the onsite inspection, the BLM Interdisciplinary Team (IDT) reviewed the surface use and wildlife data with the changes agreed to in the field. The BLM-IDT identified that further mitigation to reduce the loss of sage-grouse habitat within the project area was warranted. BLM determined that the greatest impact to the habitat from the proposed action is the fragmentation of sage-grouse habitat on a landscape scale, specifically the proposed road segments to various well locations, vertical intrusion from over head power, an increase risk of West Nile virus, and an increase of predators due to travel corridors, increase in habitat edge, and introduction of new nesting substrate proposed in Alternative C. The following proposal will be recommended to the operator as mitigation to reduce the impacts of habitat loss, habitat fragmentation, and West Nile virus within the Simpson Ranch 23-10 well.

Vegetation & Soils Direct and Indirect Effects
Trenching construction will remove vegetation while burying proposed and existing overhead power until reclamation restores native habitat. Consolidated linear infrastructure will maintain native soil and vegetation (see below). Table 4.4 summarizes the proposed surface disturbance associated with Alternative D.

Cumulative effects for Vegetation and Soils
No additional mitigation measures are required.

Wildlife

5. CONSULTATION/COORDINATION

Contact	Title	Organization	Present at Onsite
Robert Anderson	Permitting Agent	Lowry Exploration Inc.	yes

OTHER PERMITS REQUIRED

A number of other permits are required from Wyoming State and other Federal agencies. These permits are identified in Table A-1 in the PRB FEIS Record of Decision.

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