EA NO-WY-070-09-137
FINDING OF NO SIGNIFICANT IMPACT & DECISION RECORD
FOR
C & H Well Servicing

DECISION: It is my decision to authorize the following Application for Permit to Drill (APD) for C&H Well Servicing:

Well Name & Number	QTR	Sec.	T	R	Lease #
Federal 14-35	NENE	35	53N	72W	WYW101101

This approval is subject to adherence with operating plans and mitigation measures contained in the Surface Use Plan of Operations and Drilling Plan in the APD. This approval is also subject to adherence with the attached Conditions of Approval and all mitigation and monitoring requirements contained within the Powder River Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS) approved April 30, 2003.

RATIONALE: The decision to authorize the proposed action will not result in any undue or unnecessary environmental degradation. The lessee has the right to develop their existing lease provided no significant adverse or irreversible impacts occur to critical resources.

The proposed action is in conformance with the Powder River Oil and Gas Project EIS and Resource Management Plan Amendment (PRB FEIS) approved April 30, 2003 and the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management (BLM), Buffalo Field Office, April 2001.

FINDING OF NO SIGNIFICANT IMPACT: Based on the analysis of the potential environmental impacts of the proposed action in the attached environmental assessment, I have determined that NO significant impacts are expected and, therefore, an environmental impact statement is not required.

for Paul Beels
Field Manager

9/18/09
Date

BUREAU OF LAND MANAGEMENT
BUFFALO FIELD OFFICE
ENVIRONMENTAL ASSESSMENT
EA # WY-070-09-137

PROJECT NAME: Federal 14-35

WELL NAME & Number/ LOCATION/LEASE:

Well Name & Number	QTR	Sec.	T	R	Lease #
Federal 14-35	NENE	35	53N	72W	WYW101101

OPERATOR/APPLICANT: C & H Well Servicing.

AFFECTED SURFACE OWNERS: 60 Bar Ranch Limited Liability Company - Rod & Katie Smith

COUNTY: Campbell

INTRODUCTION
This environmental assessment (EA) was conducted by the Buffalo Field Office (BFO) Bureau of Land Management (BLM) to address site specific analysis of each of the above APDs. This site-specific analysis tiers onto 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. It addresses the El Paso Company's 3 proposed oil wells and essential infrastructure (roads, power, water and pipelines) for development in Campbell County, Wyoming, T. 46N, R. 74W. The EA details site specific impacts of the proposed Bliss POD.

Background
The Powder River Basin expands from the gently rolling hills on the eastern portion of the basin to the Powder River breaks area toward the Big Horn Mountains on the west side of the basin. Due to the nature of the topography and underlying geology in the PRB, placement of well locations, production facilities, pipelines and utilities may require relocation to less environmentally sensitive areas during the planning stages of development.

Purpose and Need
Three APDs were submitted to BLM by private industry for development of oil/gas on valid federal oil and gas leases. The purpose of the proposal is to produce oil on federal leases. Leases are issued to applicants by the BLM to further develop oil and gas reserves in the United States. There is a need to analyze the entire project area to thoroughly ascertain the operator's needs, calculate disturbance, and effectively apply environmental mitigation.

Agency Responsibilities
Federal mineral royalties are directed to the United States. Due to nature of the mineral, Federal oil and gas can be drained by neighboring oil and gas development. Concurrent development of Federal minerals avoids drainage by private entities and protects the financial interest of the United States.

BLM recognizes extraction of oil and gas resources play an essential role in meeting the nation's need for energy resources. As a result, private exploration and development of the Federal Reserves are integral

in the agencies' oil and gas leasing program 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 energy production and provides mitigation measures to protect multiple resources.

Relationship to Statutes, Regulations, or Other Plans
The proposed action is in conformance with the terms and the conditions of the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management, Buffalo Field Office, April 2001 (BFO 2001), the PRB FEIS 2003 and as required by 43 CFR 1610.5 (CFR 2006).

Current Land Use Plan
The proposed action responds to multiple-use goals and objectives stated in the 1985 Buffalo RMP and the 2003 PRB FEIS. The action conforms to the terms and the conditions of the RMP and the PRB FEIS, as required by 43 CFR 1610.5.

Buffalo Resource Management Plan Revision and Interim Protection of Sage-Grouse
The Buffalo RMP is currently under revision. Sage-grouse are currently under consideration for listing under the Endangered Species Act. Therefore, the BFO established sage-grouse "focus areas" with rigorous interim protections in order to preserve decision space during this time. Actions proposed in focus areas would encounter more stringent protections for sage–grouse. Future actions within focus areas may be considered on 640 acre spacing. BFO will consider plans of development that demonstrate proposals managed in a manner which effectively conserves sage-grouse habitat.

Outside the focus areas, BFO will continue to apply mitigating measures and consider well densities up to 80-acre spacing depending on quality of sage-grouse habitat. Site-specific mitigating measures will be applied incorporating the best available science and technology.

This C & H Well Servicing well is not within a sage-grouse focus area. The following EA will further determine if the project area has high quality sage-grouse habitat, as indicated by the University of Montana model. The analysis will identify potential mitigation measures under BLM's multiple-use mandate.

Surface Ownership and Mineral Ownership
The proposed project is located on both private and BLM administered surface. Rod & Katie Smith are the private surface owners in this project.

ALTERNATIVES INCLUDING THE PROPOSED ACTION

Three alternatives, A, B, and C were evaluated. A brief description of each alternative follows.

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.

Alternative B: Proposed Action
Alternative B is the "proposed action" alternative, as originally submitted to the BLM by C & H Well Servicing, prior to any BLM review or modifications.

Well Name & Number	QTR	Sec.	T	R	Total Depth
Federal 14-35	NENE	35	53N	72W	9,050 ft TVD

The proposed action is to drill and develop one conventional oil well below the Opeche shale formation (approx. 8,809 feet) to the Minnelusa C dolomite target formation at a true vertical depth of 9,050 feet. The proposed location is within an approved oil field. There are 2 oil wells and associated infrastructure in the vicinity of the well location, operated by C & H Well Servicing Company.

The proposed Federal 14-35 well location requires the construction of one engineered (cut & fill) well pad, as well as an improved access road. The total surface disturbance associated with the construction of this location and access roads is approximately 2.4 acres. This figure includes disturbance associated with the well pads, the spoil and topsoil storage areas, and the construction equipment and vehicle disturbance. The access roads will be constructed to meet the standards of the anticipated traffic flow and all-weather requirements. Construction will include ditching, draining, graveling, and crowning of the roadbed.

If production is established on the Federal 14-35 location, production gathering lines and electrical line will be buried along an existing scoria road right of way to the existing Royal (Federal) 35-7 oil well. The Royal (Federal) 35-7 facility includes three 400bbl crude tanks, one 400bbl produced water tank, and a 6x20 horizontal heater treatment.

Once the well is put into production, two visits to the well site are anticipated per day: a pumper will be on location daily to monitor the production facilities at the Royal 35-7 and to ensure that the equipment is functioning properly. An oil load out truck and a water load out truck will also visit the Royal 35-7 site daily. Due to the variable rates at which the crude tanks and water tanks reach capacity it is unlikely these visits could be synchronized.

At a minimum the pumping unit on the Fed 14-35 location would require a working area of approximately 2.5 acres. The pumping unit will be approx 20 foot tall and have a maximum height of 30 feet at the top of its stroke. The pumping unit will be driven by a 30 horse power electric prime mover and a 5 horse power electric recycle pump. The power source to run the pumping unit will come from power drop from the existing overhead power to the Royal 35-7 well. From the drop all power lines will be buried to the Fed 14-35.

Drilling and construction activities are anticipated to be completed within two years, the term of an APD. Drilling and construction occurs year-round in the PRB. Weather may cause delays lasting several days but rarely do delays last multiple weeks. Timing limitations in the form of COAs and/or agreements with surface owners may impose longer temporal restrictions on portions of this project.

The action would be subject to the attached Conditions-of-Approval for drilling of an oil well on private surface and federal mineral lands within the Buffalo Field Office jurisdiction. For more detail on design features and construction practices of the proposed action, refer to the Thirteen Point Surface Use Plan of

Operations and Eight Point Drilling Plans in each APD. These plans have been written and reviewed to ensure that environmental impacts to both surface and subsurface resources are eliminated or minimized. Also see the individual APD for a map showing the proposed access road and well location.

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 at on-site visits, following the initial project proposal.

Changes as a result of the pre-approval onsite inspection:
The following table provides a summary of observations and changes made at the pre-approval onsite.

Well ID	QTR	Section	T/R	Notes
Federal 14-35	NENE	35	53/72	Engineered pad dimensions were modified by shortening the length of the pad by 25 feet to obtain a near balance of cut and fill, move out of sage brush and move out of a minor drainage.

Activity	Length (feet)	Width (feet)	Acres of Disturbance
Federal 14-35 Constructed Pad	300	240	1.8
Cut/fills & Topsoil/spoil stockpiles	Varies	Varies	0.5
Federal 14-35 Access Road	50	35	0.1
Pipeline and Electric Utility Corridor	500	30	0.3
Total Disturbance for Federal 14-35			2.7

I. Site Specific Surface Use Conditions of Approval

1. All changes made at the pre-approval onsite will be followed. They have all been incorporated into the operator's APD package.

2. All proposed access roads, culverts, pads, and other locations where engineered construction will occur will be completely slope staked for the pre-construction meeting.

3. All C & H Well Servicing representatives and contractors will have a copy of the approved APD package and COAs at all times while conducting construction activities.

4. Onshore Order #1, as revised effective 05-07-07, requires that all operators certify to the Field Office in writing that they have supplied a copy of the Surface Use Plan to each of the private surface owners affected by the project. This self-certification must be received by the Buffalo Field Office before construction on the project begins.

5. Clearly visible signs will be placed on the topsoil pile and the spoil pile. The top soil pile and spoils pile will be stabilized by any means necessary (e.g. Pam 12 application, erosion matting, and seeding.) to prevent its loss from wind and water erosion.

6. All topsoil removed during construction activities will be re-spread for interim reclamation success.

7. Redesign of the pad was not able to eliminate the spoil pile therefore; any long term soil piles will be stabilized. (See site specific COA # 5)

8. When pits are backfilled and the pad has been reduced to minimum production requirements (i.e. pulled into its anchor points) there should be no remaining spoils piles. This will be discussed in the Pre-construction meeting.

9. If there are no site specific conflicts with production and/or development, then interim reclamation will include seeding up to the anchors points.

10. The operator will follow the guidance provided in the Wyoming Policy on Reclamation (IM WY-90-231) specifically the following:
    Reclamation Standards:

    C. 3 The reclaimed area shall be stable and exhibit none of the following characteristics:
    a. Large rills or gullies.
    b. Perceptible soil movement or head cutting in drainages.
    c. Slope instability on, or adjacent to, the reclaimed area in question.

    C.4. The soil surface must be stable and have adequate surface roughness to reduce runoff and capture rainfall and snow melt. Additional short-term measures, such as the application of mulch, shall be used to reduce surface soil movement.

    C.5. Vegetation canopy cover (on unforested sites), production and species diversity (including shrubs) shall approximate the surrounding undisturbed area. The vegetation shall stabilize the site and support the planned post disturbance land use, provide for natural plant community succession and development, and be capable of renewing itself. This shall be demonstrated by:
    a. Successful onsite establishment of species included in the planting mixture or other desirable species.
    b. Evidence of vegetation reproduction, either spreading by rhizomatous species or seed production.

    C.6. The reclaimed landscape shall have characteristics that approximate the visual quality of the adjacent area with regard to location, scale, shape, color and orientation of major landscape features and meet the needs of the planned post disturbance land use.

11. If storage of construction equipment on well locations becomes necessary beyond typical construction timeframes, a sundry will be submitted to designate this area for long term storage.

12. All permanent above-ground structures (e.g., production equipment, tanks, etc.) not subject to safety requirements will be painted to blend with the natural color of the landscape. The paint used will be a color which simulates "Standard Environmental Colors." The color selected for the Federal 14-35 well is Covert Green, (Munsell Soil Color 2.5Y 6/2).

13. Please contact Travis Kern – Natural Resource Specialist at (307) 684-1074, Bureau of Land Management, Buffalo, if there are any questions concerning surface use COAs.

II. Site Specific Wildlife Conditions of Approval

Greater Sage-grouse

The following condition of approval will alleviate impacts to sage-grouse:

1. Surface disturbing activities (Construction, drilling, reclamation) will be prohibited from 1 March to 15 June for the life of the project.

2. For any surface-disturbing activities proposed in sagebrush shrublands, the operator will conduct clearance surveys for sage grouse breeding activity during the sage grouse's breeding season (1 March to 15 June) before initiating the activities. The surveys must encompass all sagebrush shrublands within 0.5 mile of the proposed activities.

Raptors

The following condition of approval will alleviate impacts to raptors:

1. The project will have a timing limitation stipulation of no surface disturbing activities from 1 February through 31 July.

Alternatives Considered but Eliminated from Detailed Study

One alternative would be to move the location of the drill site. Based on the onsite inspection, there are no significant environmental reasons for doing this.

DESCRIPTION OF THE AFFECTED ENVIRONMENT

The APD was received on July 2, 2009. A field inspection of the proposed well was conducted on August 12, 2009. By the following BLM personnel:

- BJ Earle, Archeologist
- Scott Jawors, Wildlife Biologist
- Courtney Frost, Wildlife Biologist
- Travis Kern, Natural Resource Specialist
- Travis Kern, Hydrology

Representing the operator:

- Carroll Hinsdale

Topographic Characteristics

The project area is located in an upland habitat located about 2 miles west of the Little Powder River. The area is composed of broad ridges that slope gently north northwest. Sediments are residual in origin and consist of shallow to moderately deep clay loams. Fragment of low quality clinker, sandstone, and ironstone are mixed in with the sediments. Bull Creek drainage is 1.5 south of the project area. The crest and upper slopes of the ridges east and south of the project area are vegetated in Ponderosa Pine and Rocky Mountain Juniper.

Vegetation & Soils

Vegetation

Species typical of short grass prairie comprise the project area flora. Specifically, the three major vegetative types that occur within the proposed project area are: sagebrush shrubland (30%), mixed-grass prairie (65%), and herbaceous riparian (5%). Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) dominance and cover varies from sparse to dense throughout the area. The herbaceous component is made up of several grass species, including western wheatgrass (*Agropyron smithii*), slender wheatgrass (*Agropyron trachycaulum*), threadleaf sedge (*Carex filifolia*), and needle and thread grass (*Stipa comata*). Other species found in the project areas include: blue grama (*Bouteloua gracilis),* prairie junegrass (*Koeleria cristata*), fringe sagewort (*Artemisia frigida*), and downy brome (*Bromus tectorum)* and plains prickly pear cactus (*opuntia*).

The Federal 14-35 well location is situated within sagebrush/grassland habitat dominated by patchy sage brush with herbaceous grasslands component.

The main tree species observed in the area include Ponderosa Pine and Rocky Mountain Juniper on crests and upper slopes of the ridges east and south of the project area.

Soils

The soils vary from primarily clayey to loamy in the project area. Topsoil depths to be salvaged for reclamation range from 4 to 6 inches. Erosion potential varies from minor to moderate depending on site specific disturbances associated with the construction of the well pads and access roads at each location.

Soils have developed in alluvium and residuum derived from the Wasatch Formation. Lithology consists of light to dark yellow and tan siltstone and sandstones with minor coal seams. Soils have surface and subsurface textures of silt loam and fine sandy loam. Soil depths vary from deep on lesser slopes to shallow and very shallow on steeper slopes. Soils are generally productive, though varies with texture, slope and other characteristics. Soils differ with topographic location, slope and elevation. Topsoil depths to be salvaged for reclamation range from 0 to 4 inches on ridges to 8+ inches in bottomland. Erosion potential varies from minor to severe depending on the soil type, vegetative cover and slope. The main soil limitations in the project area include: depth to bedrock, low organic matter content, and low reclamation potential. Soils within the project area were identified from the North Campbell County Survey Area, Wyoming (WY705). The soil survey was performed by the Natural Resource Conservation Service according to National Cooperative Soil Survey standards. The BLM uses county soil survey information to predict soil behavior, limitations, or suitability for a given activity or action. The agencies long term goal for soil resource management is to maintain, improve, or restore soil health and productivity, and to prevent or minimize soil erosion and compaction. Soil management objectives are to ensure that adequate soil protection is consistent with the resource capabilities.

Dominate soils affected by the proposed action include:

Map Unit Symbol	Map Unit Name
297	Muleherder-Ironbutte channery loams, wooded, 10 to 60 percent slopes

For more detailed soil information, see the NRCS Soil Survey 705 – North Campbell County.
Additional site specific soil information is included in the Ecological Site interpretations.

Vegetation

Ecological Site Descriptions are used to provide site and vegetation information needed for resource identification, management and reclamation recommendations. To determine the appropriate Ecological Sites for the area contained within this proposed action, BLM specialists analyzed data from onsite field reconnaissance and Natural Resources Conservation Service published soil survey soils information.
The map unit symbols for the soils identified above and the associated ecological sites for the identified soil map unit symbols found within the POD boundary are listed in the table below.

Map Units and Ecological Sites

297	Ponderosa Pine/Little Bluestem

The dominate Ecological Sites and Plant Community identified in this POD and its infrastructure is Ponderosa Pine/Little Bluestem.

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 oxides of nitrogen [NOx]) from existing natural gas fired compressor engines used in production of natural gas and CBNG; 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; 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.

Invasive Species

The Campbell County Weed & Pest Control District has documented the presence of the following Wyoming State Designated Noxious Weeds on the surface owner's property: Leafy Spurge and Spotted Knapweed. White Top and Canada thistle are also present on the surface owner's property. The state-listed noxious weeds are listed in PRB FEIS Table 3-21 (p. 3-104) and the Weed Species of Concern are listed in Table 3-22 (p. 3-105).

Wildlife

Wildlife species that occur in the Powder River Basin were identified in the PRB FEIS (pp. 3-113 to 3-206). A habitat assessment was performed by BLM wildlife biologists on 12 August 2009. During that time, the biologist evaluated impacts to wildlife resources and recommended project modifications where wildlife issues arose. Earlier in the year, BLM biologists requested permission to survey the project area in more detail to verify presence or absence of wildlife, but this request was denied by the landowner.

In addition to the onsite evaluation, BLM wildlife biologists also consulted databases compiled and managed by BLM BFO wildlife staff, the PRB FEIS, Wyoming Game and Fish Department datasets, and the Wyoming Natural Diversity Database (WYNDD) to evaluate the affected environment for wildlife species that may occur in the project area. This section describes the affected environment and impacts to wildlife that are known or likely to occur in the area of the proposed action.

Big Game

According to WGFD data, the only big game species expected to occur within the project area is mule deer. The affected environment for mule deer is discussed in the PRB FEIS on pp. 3-122.

The project area is located in Hunt Area 18 and contains yearlong and winter-yearlong range for mule deer. Yearlong use is when a population of animals makes general use of suitable documented habitat sites within the range on a year-round basis. Animals may leave the area under severe conditions. Winter-yearlong use is when a population or a portion of a population of animals makes general use of the documented suitable habitat sites within this range on a year-round basis, but during the winter months there is a significant influx of additional animals into the area from other seasonal ranges. According to the most recent data available on the WGFD website (Job Completion Report for 2007), the population of mule deer within hunt area 18 was 49,560 animals, which was below the WGFD objective of 52,000 animals.

Migratory Birds

Migratory birds are those that migrate for the purpose of breeding and foraging at some point in the year.

According to WO Instruction Memorandum No. 2008-050, BLM must include migratory birds in every NEPA analysis of actions that have the potential to affect migratory bird species of concern in order to fulfill its obligations under the Migratory Bird Treaty Act.
The WGFD Wyoming Bird Conservation Plan (Nicholoff 2003) identified three groups of high-priority bird species in Wyoming: Level I – those that clearly need conservation action, Level II – species where the focus should be on monitoring, rather than active conservation, and Level III – species that are not otherwise of high priority but are of local interest.

Shrub-steppe vegetation dominates the project area. Many species that are of high management concern use shrub-steppe areas for their primary breeding habitats (Saab and Rich 1997). Nationally, grassland and shrubland birds have declined more consistently in the last 30 years than any other ecological association of birds (WGFD 2009). Species that may occur in these vegetation types in northeast Wyoming, according to the Wyoming Bird Conservation Plan, are listed in the following table and are grouped by Level as identified in the Plan.

Migratory bird species that occur in shrub-steppe habitats in northeast Wyoming (Nicholoff 2003)

Level	Species	Wyoming BLM Sensitive
Level I	Brewer's sparrow	Yes
	Ferruginous hawk	Yes
	Greater sage-grouse	Yes
	McCown's longspur	
	Sage sparrow	Yes
Level II	Lark bunting	
	Lark sparrow	
	Loggerhead shrike	Yes
	Sage thrasher	Yes
	Vesper sparrow	
Level III	Common poorwill	
	Say's phoebe	

The affected environment for migratory birds is discussed in the PRB FEIS (pp. 3-150 to 3-153). The discussion includes a list of habitat requirements and foraging patterns for the species listed above, with the exception of common poorwills and Say's phoebes, which are discussed here.

Common poorwills inhabit sparse, rocky sagebrush; open prairies; mountain-foothills shrublands; juniper woodlands; brushy, rocky canyons; and ponderosa pine woodlands. They prefer clearings, such as grassy meadows, riparian zones, and forest edges for foraging. They lay eggs directly on gravelly ground, flat rock, or litter of woodland floor. Nests are often placed near logs, rocks, shrubs, or grass for some shade. They feed exclusively on insects, catching them by leaping from the ground or a perch, or picking them up from the ground. Say's phoebes inhabit arid, open country with sparse vegetation, including shrub-steppe, grasslands, shrublands, and juniper woodlands. They nest on a variety of substrates such as cliff ledges, banks, bridges, eaves, and road culverts and often reuse nests in successive years. They eat mostly insects and berries.

Raptors
The affected environment for raptors is discussed in the PRB FEIS on pp. 3-141 to 3-148.

Several small stands of ponderosa pine are located within 0.5 miles of the project location and provide suitable nest substrate for raptors. According to the BLM raptor database, species that have nested in

ponderosa pines across the Powder River Basin have included golden eagles, long-eared owls, merlins, Swainson's hawks, Cooper's hawks, American kestrels, and red-tailed hawks. The closest known raptor nest is a ferruginous hawk nest, located approximately 3.3 miles to the southwest.

Plains Sharp-tailed Grouse

Plains sharp-tailed grouse are discussed in this document because specific concerns for this species were identified during the scoping process for the PRB FEIS. The affected environment for plains sharp-tailed grouse is discussed in the PRB FEIS on pp. 3-148 to 3-150.

Habitat within the project area has limited potential to support sharp-tailed grouse. The mosaic of grasslands and sagebrush-grasslands that occurs along the grassy ridges and knolls present within one mile of the project area may provide marginal nesting habitat. A nearby wooded draw to the northeast wooded draws may provide adequate foraging habitat. The nearest known plains sharp-tailed grouse lek is approximately 1.8 miles to the southwest of the project area. No plains sharp-tailed grouse were noted in the project area by the BLM biologist.

Sensitive Species

Wyoming BLM has prepared a list of sensitive species on which management efforts should be focused towards maintaining habitats under a multiple use mandate. The goals of the policy are to:

- Maintain vulnerable species and habitat components in functional BLM ecosystems
- Ensure sensitive species are considered in land management decisions
- Prevent a need for species listing under the ESA
- Prioritize needed conservation work with an emphasis on habitat

Table 1 lists those species on the Wyoming BLM sensitive species list that, according to the PRB FEIS, may occur in the Powder River Basin Oil and Gas Project Area, which includes the project area for the 14-35 well. The table also includes a brief description of the habitat requirements for each species and whether the species is expected to occur in the project area. The affected environment for greater sage-grouse, a species that is currently being considered for listing as threatened or endangered under the Endangered Species Act, is discussed in more detail in this section. The authority for the sensitive species 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.

Greater Sage-Grouse

The affected environment for greater sage-grouse (herein referred to as sage-grouse) is discussed in the PRB FEIS (pg. 3-194 to 3-199). In addition to being listed as a Wyoming BLM sensitive species, sage-grouse are listed as a WGFD SGCN, with a rating of NSS2, because populations are declining, and they are experiencing ongoing significant loss of habitat. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. They are also listed by USFWS as a Bird of Conservation Concern for Region 17, which encompasses the project area. BCCs are those species that represent USFWS's highest conservation priorities, outside of those that are already listed under ESA. The goal of identifying BCCs is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions. Golden eagles were also identified as a Level III species in the Wyoming Bird Conservation Plan. Golden eagles are sensitive to extensive human activity around nest sites and are threatened by loss of nesting habitat to industrial development, powerline executions, and other factors (Nicholoff 2003).

In recent years, several petitions have been submitted to USFWS to list sage-grouse as threatened or endangered under the ESA. On 12 January 2005, 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 USFWS's decision-making process was flawed and ordered USFWS to conduct a new Status Review (Winmill Decision Case No. CV-06-277-E-BLW, December 2007).

The BFO has taken several steps to consider the evolving information on impacts to sage-grouse which could result from development activities on federal lands. These steps include:

- February 2008: BFO consolidated research and data to identify high-quality sage-grouse habitat in the Powder River Basin. University of Montana developed models indicating quality of habitat using topographic and vegetative criteria and habitat selection by radio-collared birds to identify areas with high potential for use by nesting/wintering birds. The models are divided into habitat categories of 1 through 5. Categories 1 & 2 are not considered suitable habitat. Category 3 may have the vegetative components necessary for suitable habitat. Categories 4 & 5 have the vegetative components for suitable habitat, and meet criteria for topography, slope and other landscape level characteristics that were indicated through analysis of radio-collared sage-grouse. The 4 and 5 categories of habitats are considered "high-quality".
- March 2008: BFO, Wyoming State Office (WYSO) and Washington Office (WO) established the need for a Resource Management Plan (RMP) approach to evaluate impacts to sage-grouse and habitat. A RMP amendment or revision was discussed. The decision to begin a RMP revision was approved two years ahead of the originally scheduled date.
- May 28, 2008: BFO conducted a public meeting to present habitat information developed through research in the Powder River Basin. BFO solicited additional information from the public and energy development companies to refine sage-grouse habitat maps. The objective was to establish areas of interim management for sage-grouse to preserve decision space during the RMP process.
- August 13, 2008: BFO released its *Guidance for general management actions during BFO Resource Management Plan Revision* and a map identifying the Focus Areas. The guidance contained criteria for any proposed development in Focus Areas (Appendix B). For fluid mineral development inside Focus Areas, this 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." The guidance also states that "Efforts will be made to assure that the impacts of surface disturbing projects will be consistent with a well pad density of 640 acres." Efforts to minimize impacts to high-quality sage-grouse habitats outside the Focus Areas will be far less restrictive, with well densities up to 80-acre spacing, but may include site-specific mitigating measures suggested by the best available science.
- August 1, 2008: Concurrent with BFO efforts, the Governor of the State of Wyoming issued an Executive Order (EO 2008-2) mandating special management for all lands within sage-grouse Core Population Areas. Lands for special management were identified by the Wyoming Governor's Sage-Grouse Implementation Team, and generally followed the boundaries of the majority of the Focus Areas identified by the BFO. This team also recommended stipulations to be placed on development activities on state lands to ensure existing habitat function is maintained within those areas. EO 2008-2 also identifies objectives outside of Core Areas, including that "…development scenarios should be designed and managed to maintain populations, habitats and essential migration routes outside core population areas."

- August 13, 2008 to the Present: BFO crafted an updated impacts assessment to be included in all project analyses affecting sage-grouse habitat. This analysis included research conducted in the Powder River Basin and other sage-grouse research published since the 2003 PRB FEIS and ROD. The analysis explicitly tied impacts to the impacts accepted under the 2003 ROD.
- October 1, 2008: BFO officially began the RMP revision. This process was accelerated by two years to more rapidly assess impacts to sage-grouse.
- April 14, 2009: BFO/WYSO entered into an agreement with the University of Montana and the Miles City Field Office to conduct a population viability analysis in the Powder River Basin. The
- emphasis will be on the adequacy of BFO Focus Areas for maintenance of a persistent sage-grouse population. Information gathered will be used in developing alternatives for the RMP revision.
- May, 2009: The WGFD released an updated version of its *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats*, which further described management objectives for sage-grouse outside Core Areas: "Non-core areas should not be construed as "sacrifice areas" since this conservation strategy requires habitat connectivity and movement between populations in core areas. The goal in non-core areas is to maintain habitat conditions that will sustain at least a 50% probability of lek persistence over the long term."

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

- Early initiation of a RMP revision, based on the evaluation of monitoring data generated under the mitigation monitoring and reporting plan (MMRP) in Appendix E of the PRB FEIS ROD.
- 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 B).
- 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 BFO, and the University of Montana.
- Development of alternatives that modify the proposed action to reflect the best available science in sage-grouse management.
- 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.

Suitable (as defined in Soehn et al. 2001) sage-grouse habitat is present in the project area. The area consists of a continuous stand of moderately dense sagebrush, characterized by approximately 20-25% canopy cover, based on an ocular estimate at the onsite. The understory is dominated by a mix of perennial and annual grass. Due to the timing of the onsite, forb cover could not be assessed.

The State Wildlife Agencies' Ad Hoc Committee for Consideration of Oil and Gas Development Effects to Nesting Habitat (2008) recommends that impacts be considered for leks within four miles of oil and gas developments. WGFD records indicate that four sage-grouse leks occur within four miles of the project area. These four lek sites are identified in the following table.

Sage-grouse leks within 4 miles of the 14-35 project area

Lek Name	Legal Location	Distance from Project Area (mi)	Occupied?
Hay Creek	SENW S16 T52N R72W	4	yes
Holler	NWSE S26 T53N R72W	0.5	yes
Holler North	NWSE S24 T53N R72W	1.6	yes
McGee	SWNW S04 T52N R72W	2.6	yes

ENVIRONMENTAL IMPACTS OF THE PROPOSED ATION AND ALTERNATIVES

Construction of the engineered well pad and access road would result in primarily the loss of native vegetation and increased erosion potential on approximately 2.7 acres of private surface. This impact will be minimal due to the application of re-vegetation and reclamation along the banks of the road and pad. The access road and pad will be constructed as shown in the APD. The entire area impacted 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 the well is capable of production, all disturbed areas not needed for production purposes will be expediently recontoured and reclaimed.

SUMMARY OF DISTURBANCE

Facility	No. or Mileage	Factor	Disturbance (acres)	Duration
Well Pad(s)	300ft. *240ft.	W*L/43560 acre	2.3	Long Term
Improved Roads	50 ft	35' Corridor	0.1	Long Term
Pipelines	500 ft	30’ Corridor	.34 in previously approved corridor	Short Term

CULTURAL RESOURCES

A Class III inventory (BFO No. 70090108) was conducted for cultural resources. No cultural remains were located in the project area during inventory or two on-site visits by the review archaeologist. BJ Earle, BLM Archaeologist, reviewed the report for technical adequacy and compliance with BLM standards and determined it to be adequate. No historic properties will be impacted by the proposed project. Following the Wyoming State Protocol Section VI(A)(1) the Bureau of Land Management electronically notified the Wyoming State Historic Preservation Officer (SHPO) on 9/4/2009 that no historic properties exist within the APE. 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).

WATERSHED

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.

The cumulative impacts of the proposed action, when considered with other existing and proposed development in the project area are not expected to be significant. The application of mitigative measures will ensure that the incremental impacts of this well, when considered with any existing development are insignificant. For more information on cumulative impacts, please refer to the PRB FEIS.

Wildlife

Big Game

Impacts to big game are discussed in the PRB FEIS on pp. 4-181 to 4-215. As discussed in that document, impacts to mule deer may occur through alterations in hunting and/or poaching, increased vehicle collisions, harassment and displacement, increased noise, increased dust, alterations in nutritional status

and reproductive success, increased fragmentation, loss or degradation of habitats, reduction in habitat effectiveness, and declines in populations.

Migratory Birds

Direct and indirect effects to migratory birds are discussed in the PRB FEIS (pp. 4-231 to 4-235). More recent research suggests that impacts will occur. Ingelfinger (2004) identified that the density of some breeding bird species declined within 100 m of dirt roads within a natural gas field. In the study, the density of Brewer's sparrows declined by 36%, and the density of breeding sage sparrows declined by 57%. 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 through displacement were much greater than the direct physical habitat losses. Though no timing restrictions are typically applied specifically to protect migratory bird breeding or nesting, sage-grouse and raptor nesting timing limitations will also protect nesting migratory birds. Also, BLM recommended shortening the well pad by 25 feet to minimize disturbance to sagebrush habitat, which will also minimize impacts to sagebrush-dependent species.

Migratory bird species within the Powder River Basin nest in the spring and early summer and are vulnerable to the same effects 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, nesting migratory birds are also protected. Where these timing limitations are not applied and migratory bird species are nesting, migratory birds remain vulnerable.

Raptors

Direct and indirect effects to raptors are discussed in the PRB FEIS (pp. 4-216 to 4-221). Human activities in close proximity to active raptor nests may interfere with nest productivity. Romin and Muck (1999) indicate that activities within 0.5 miles of a nest are prone to cause adverse impacts to nesting raptors. If mineral activities occur during nesting, they could be sufficient to cause adult birds to remain away from the nest and their chicks for the duration of the activities. This absence can lead to overheating or chilling of eggs or chicks. Prolonged disturbance can also lead to the abandonment of the nest by the adults. Both actions can result in egg or chick mortality. In addition, routine human activities near these nests can draw increased predator activity to the area and increase nest predation.

To reduce the risk of decreased productivity or nest failure, the BLM BFO requires a 0.5 mile radius timing limitation during the breeding season around active raptor nests and recommends all infrastructure requiring human visitation be located in such a way as to provide an adequate biologic buffer for nesting raptors. A biologic buffer is a combination of distance and visual screening that provides nesting raptors with security such that they will not be flushed by routine activities. Because surveys were not allowed by the landowner, BLM could not verify absence of raptor nests in potential habitats within 0.5 miles of the project area. BLM will therefore assume that nests are present and require a timing limitation on surface-disturbing activities.

Plains Sharp-tailed Grouse

Sharp-tailed grouse may avoid habitats adjacent to the project area. The nearest known lek is not expected to be impacted.

Sensitive Species

Table 1 lists expected impacts for sensitive species that may occur in the project area. Impacts on the greater sage-grouse, a species that is currently being considered for listing as threatened or endangered under the Endangered Species Act, are discussed in more detail in this section.

Table 1. Summary of Sensitive Species Habitat and Project Effects.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Amphibians				
Northern leopard frog (*Rana pipiens*)	Beaver ponds and cattail marshes from plains to montane zones.	NP	NI	Habitat not present.
Columbia spotted frog (*R*anus pretiosa)	Ponds, sloughs, small streams, and cattails in foothills and montane zones. Confined to headwaters of the S Tongue R drainage and tributaries.	NP	NI	The project area is outside the species' range, and the species is not expected to occur .
Fish				
Sturgeon chub (*Macrhybopsis gelida)*	Swift, rocky riffles throughout the Powder River.	NP	NI	Habitat not present.
Yellowstone cutthroat trout (*Oncoryhynchus clarki bouvieri*)	Cold-water rivers, creeks, beaver ponds, and large lakes in the Upper Tongue sub-watershed	NP	NI	The project area is outside the species' range, and the species is not expected to occur .
Birds				
Baird's sparrow (*Ammodramus bairdii*)	Shortgrass prairie and basin-prairie shrubland habitats; plowed and stubble fields; grazed pastures; dry lakebeds; and other sparse, bare, dry ground.	S	MIIH	Sagebrush cover will be affected.
Bald eagle (*Haliaeetus leucocephalus*)	Mature forest cover often within one mile of large water body with reliable prey source nearby.	NP	NI	Habitat not present.
Brewer's sparrow (*Spizella breweri*)	Sagebrush shrubland	S	MIIH	Sagebrush cover will be affected.
Ferruginous hawk (*Buteo regalis*)	Basin-prairie shrub, grasslands, rock outcrops	S	MIIH	Nesting habitat may be impacted and human activities will increase
Greater sage-grouse (*Centrocercus urophasianus*)	Basin-prairie shrub, mountain-foothill shrub	K	WIPV	Sagebrush cover will be affected.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
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	Suitable 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	Dense forest habitat not present.
Peregrine falcon (*Falco peregrinus*)	Cliffs	NP	NI	No nesting habitat present.
Sage sparrow (*Amphispiza billneata*)	Basin-prairie shrub, mountain-foothill shrub	S	MIIH	Sagebrush cover will be affected.
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	Habitat not present.
Western Burrowing owl (*Athene cunicularia*)	Grasslands, basin-prairie shrub	NP	NI	Habitat not present.
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.
Mammals				
Black-tailed prairie dog (*Cynomys ludovicianus*)	Prairie habitats with deep, firm soils and slopes less than 10 degrees.	NP	NI	No known colonies present.
Fringed myotis (*Myotis thysanodes*)	Conifer forests, woodland chaparral, caves and mines	S	MIIH	Construction may impact foraging areas and alter habitat conditions.
Long-eared myotis (*Myotis evotis*)	Conifer and deciduous forest, caves and mines	S	MIIH	Construction may impact foraging areas and alter habitat conditions.
Swift fox (*Vulpes velox*)	Grasslands	NP	NI	Habitat not present.
Townsend's big-eared bat (*Corynorhinus townsendii*)	Caves and mines.	S	MIIH	Construction may impact foraging areas and alter habitat conditions.
Plants				

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
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	Project area outside of species' range.

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

Greater Sage-Grouse

Direct and Indirect Effects

Implementation of the project will adversely impact nesting habitat, both through direct loss and avoidance of the area by sage-grouse. To mitigate impacts, BLM recommended that the well pad be shortened by 25 feet to minimize direct loss of sage-grouse nesting habitat. This change was incorporated in the project design.

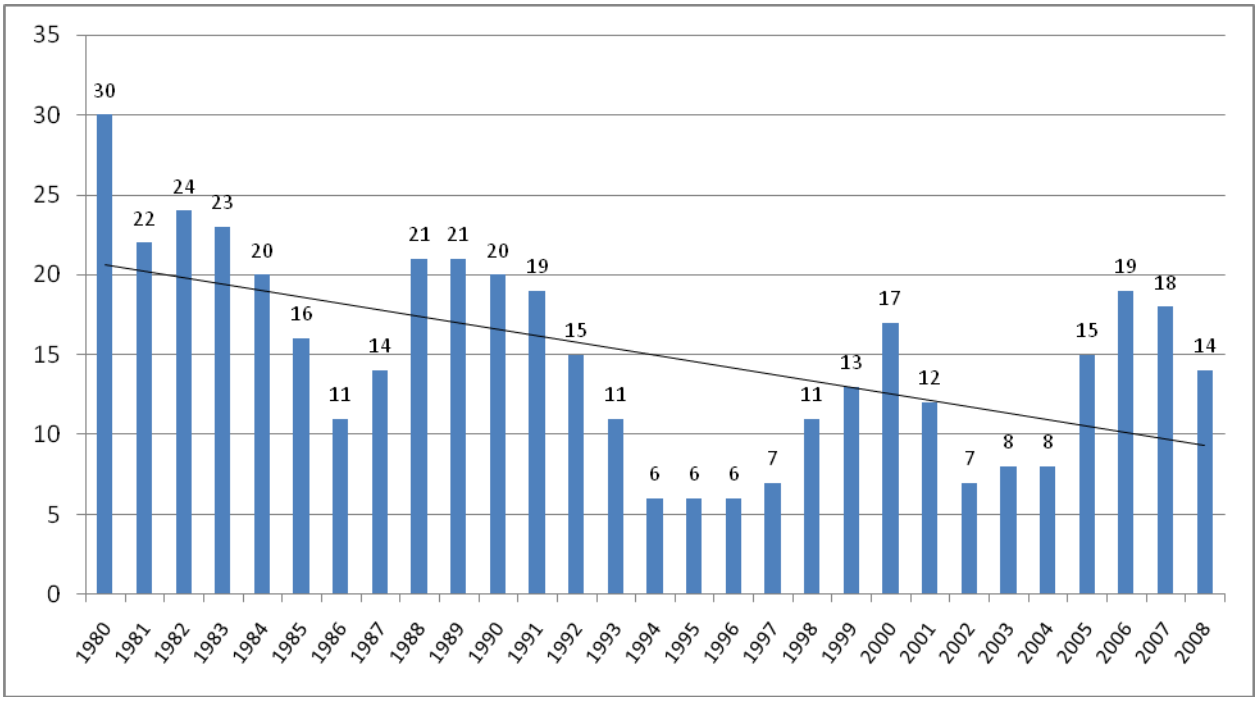
To protect nesting and brood rearing sage-grouse, BLM will implement a timing limitation (1 March to 15 June) on all surface-disturbing activities associated with the proposed project.

Direct and indirect impacts to sage-grouse are discussed in more detail in the PRB FEIS on pg. 4-257 to 4-273.

Cumulative Effects

The sage-grouse population within northeast Wyoming has been exhibiting a steady long term downward trend, as measured by lek attendance (WGFD 2008b). Figure 3 illustrates a ten-year cycle of periodic highs and lows. Each subsequent population peak is lower than the previous peak. The research described below suggests that these declines may be a result, in part, of CBNG development in this region of Wyoming and that the leks within the cumulative impact assessment area are experiencing similar declines.

Figure 1 Average number of male sage-grouse per active lek within the WGFD Sheridan region, 1980-2007



Research has shown that declines in lek attendance are correlated with oil and gas development. In a typical landscape in the Powder River Basin, energy development within two miles of leks is projected to reduce the average probability of lek persistence from 87% to 5% percent (Walker et al. 2007). Several studies have shown that well density can be used as a metric for evaluating impacts to sage-grouse, as

measured by declines in lek attendance (Braun et al. 2002, Holloran et al. 2005, and Walker et al. 2007). These studies indicated that oil or gas development exceeding approximately one well pad per square mile, resulted in calculable impacts on breeding populations, as measured by the number of male sage-grouse attending leks (State Wildlife Agencies' Ad Hoc Committee for Sage-Grouse and Oil and Gas Development 2008).

There are currently 171 wells (Wyoming Oil and Gas Conservation Commission [WOGCC] 09/2009) within the cumulative impact assessment area, an area of 98 square miles, which amounts to a density of approximately 1.7 wells per square mile. Currently, there are approximately 14 proposed wells (Automated Fluid Minerals Support System [AFMSS] 09/2009) (including the one from this project) within four miles of the four leks. With the addition of the proposed wells, the well density within four miles of the leks increases to 1.9 wells per square mile, which is almost twice the one well per square mile recommendation by the State Wildlife Agencies' Ad Hoc Committee for Sage-Grouse and Oil and Gas Development.

In its *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats* (2009), WGFD categorized levels of oil and gas development into thresholds that correspond to moderate, high, and extreme impacts to habitat effectiveness for various species of wildlife, based on well pad densities and acreages of disturbance. All three levels of impact result in a loss of habitat function by directly eliminating habitat; disrupting wildlife access to, or use of habitat; or causing avoidance and stress to wildlife. Impacts to sage-grouse are categorized by number of well pad locations per square mile within two miles of a lek and within identified nesting/brood-rearing habitats greater than two miles from a lek. Moderate impacts occur when well density is between one and two well pad locations per square mile or where there is less than 20 acres of disturbance per square mile. High impacts occur when well density is between two and three well pad locations per square mile or when there are between 20 and 60 acres of disturbance per square mile. Extreme impacts occur when well density exceeds three well pad locations per square mile or when there are greater than 60 acres of disturbance per square mile. Extreme impacts mean those where the function of an important wildlife habitat is substantially impaired or lost

The proposed project is within two miles of two sage-grouse leks. Both of these leks have less than one well per square mile within two miles of the leks and are therefore not impacted according to the WGFD recommendations. Implementation of the proposed project will not alter those categorizations.

Declines in lek attendance associated with oil and gas development may be a result of a suite of factors including avoidance (Holloran et al. 2005, Holloran et al. 2007, Aldridge and Boyce 2007, Walker et al. 2007, Doherty et al. 2008, WGFD 2009), loss and fragmentation of habitat (Connelly et al. 2000, Braun et al. 2002, Connelly et al. 2004, WGFD 2004a, Rowland et al. 2005, WGFD 2005, Naugle et al. in press), reductions in habitat quality (Braun et al. 2002, WGFD 2003, Connelly et al. 2004, Holloran et al. 2005) and changes in disease mechanisms (Naugle et al. 2004, WGFD 2004b, Walker et al. 2007, Cornish pers. comm.).

The BFO Resource Management Plan (BLM 2001) and the PRB FEIS Record of Decision (BLM 2003) included a two-mile timing limitation on surface-disturbing activities around sage-grouse leks. The two-mile measure originated with the Western Association of Fish and Wildlife Agencies (WAFWA) (BLM 2004). Wyoming BLM adopted the two-mile recommendation in 1990 (BLM 1990).

The two-mile recommendation was based on early research which indicated between 59% and 87% of sage-grouse nests were located within two miles of a lek (BLM 2004). These studies were conducted within vast contiguous stands of sagebrush, such as those that occur in Idaho's Snake River plain.

Additional research across more of the sage-grouse's range have since indicated that nesting may occur much farther than two miles from the breeding lek (BLM 2004). Holloran and Anderson (2005), in their Upper Green River Basin study area, reported that only 45% of their sage-grouse hens nested within 1.9 miles of the capture lek. Moynahan and Lindberg (2004) found that only 36% of their sage-grouse hens nested within 1.9 miles of the capture lek. Habitat conditions, and, thus, sage-grouse biology, within the BFO are more similar to Moynahan's north-central Montana study area than the Upper Green River area. Moynahan's study area occurred in mixed-grass prairie and sagebrush steppe, dominated by Wyoming big sagebrush (Moynahan et al. 2007). Recent research in the Powder River Basin 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 (Walker et al. 2007, Walker 2008, Naugle et al. *In press*). Based on these studies, the BLM has determined that a two-mile timing limitation is insufficient to reverse the population decline.

A timing limitation does nothing to mitigate loss and fragmentation of habitat and changes in disease mechanisms. Rather than limiting mitigation to only timing restrictions, more effective mitigation strategies may include, at a minimum, burying power lines (Connelly et al. 2000b); 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). Walker et al. (2007) recommend maintaining extensive stands of sagebrush habitat over large areas (at least one mile in size) around leks to ensure sage-grouse persistence. The size of such a no-development buffer would depend on the amount of suitable habitat around the lek and the population impact deemed acceptable. Connelly et al. (2000) recommended locating all energy-related facilities at least two miles from active leks.

Several guidance documents are available that recommend practices that would reduce impacts of development on greater sage-grouse. These include *Northeast Wyoming Sage-Grouse Conservation Plan* (Northeast Wyoming Sage-grouse Working Group 2006), *Sage-Grouse Habitat Management Guidelines for Wyoming* (Bohne et al. 2007), *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats* (WGFD 2009), *Bureau of Land Management National Sage-Grouse Habitat Conservation Strategy* (USDI 2004), and *Greater Sage-Grouse Comprehensive Conservation Strategy* (Stiver et al. 2006).

The PRB FEIS (BLM 2003) states that "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)." Based on the impacts described in the Powder River Basin Oil and Gas Project FEIS and the findings of more recent research, the proposed action may contribute to a decline in male attendance at the five leks that occur within four miles of the project area, and, potentially, extirpation of the local grouse population.

Implementation of committed mitigation measures contained in the seven Surface Use Plans of Operations and Drilling Plans, in addition to the following Conditions-of-Approval, would ensure that no adverse environmental impacts would result from approval of the proposed action:

III. Standard Conditions of Approval

A. General- Archeology

1. If any cultural values [sites, artifacts, human remains (Appendix L FEIS)] are observed during

operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. The authorized officer will conduct an evaluation of the cultural values to establish appropriate mitigation, salvage or treatment. The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials, and contact the authorized BLM officer (AO). Within five working days the AO will inform the operator as to:

- whether the materials appear eligible for the National Register of Historic Places;
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and,
- a time-frame for the AO to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction measures.

2. If paleontological resources, either large or conspicuous, and/or a significant scientific value are discovered during construction, the find will be reported to the Authorized Officer immediately. Construction will be suspended within 250 feet of said find. An evaluation of the paleontological discovery will be made by a BLM approved professional paleontologist within five (5) working days, weather permitting, to determine the appropriate action(s) to prevent the potential loss of any significant paleontological values. Operations within 250 feet of such a discovery will not be resumed until written authorization to proceed is issued by the Authorized Officer. The applicant will bear the cost of any required paleontological appraisals, surface collection of fossils, or salvage of any large conspicuous fossils of significant scientific interest discovered during the operation.

B. Construction

1. The operator will limit vegetation removal and the degree of surface disturbance wherever possible. Where surface disturbance cannot be avoided, all practicable measures will be utilized to minimize erosion and stabilize disturbed soils.

2. Construction and drilling activity will not be conducted using frozen or saturated soil material during periods when watershed damage or excessive rutting is likely to occur.

3. Remove all available topsoil (depths vary from 4 inches on ridges to 12+ inches in bottoms) from constructed well locations including areas of cut and fill, and stockpile at the site. Topsoil will also be salvaged for use in reclamation on all other areas of surface disturbance (roads, pipelines, etc.). Clearly segregate topsoil from excess spoil material. Any topsoil stockpiled for one year or longer will be signed and stabilized with annual ryegrass or other suitable cover crop.

4. The operator will not push soil material and overburden over side slopes or into drainages. All soil material disturbed will be placed in an area where it can be retrieved without creating additional undue surface disturbance and where it does not impede watershed and drainage flows.

5. Construct the backslope no steeper than 1½:1, and construct the foreslope no steeper than 2:1, unless otherwise directed by the BLM Authorized Officer.

6. Maintain a minimum 20-foot undisturbed vegetative border between toe-of-fill of pad and/or pit areas and the edge of adjacent drainages, unless otherwise directed by the BLM Authorized Officer.

7. With the overall objective of minimizing surface disturbance and retaining land stability and productivity, the operator shall utilize equipment that is appropriate to the scope and scale of work being done for roads and well pads (utilize equipment no larger than needed for the job).

8. To minimize electrocution potential to birds of prey, all overhead electrical power lines will be constructed to standards identified by the Avian Power Line Interaction Committee (1996).

9. The operator shall utilize wheel trenchers or ditch witches to construct all pipeline trenches, except where extreme topography or other environmental factors preclude their use.

10. A flare pit will be constructed on the well pad for use during drilling operations. It will be located at least 100 feet from the well head and will be located down-wind from the prevailing winds.

11. Reserve pit will be adequately fenced during and after drilling operations until reclaimed so as to effectively keep out wildlife and livestock. This requires that it be fenced on the three nonworking sides prior to drilling and on the remaining side immediately following rig release. Fencing will be constructed in accordance with BLM specifications. (Plastic snow fence is not acceptable fencing material for conventional wells.)

12. The reserve pit will be oriented to prevent collection of surface runoff. After the drilling rig is removed, the operator may need to construct a trench on the uphill side of the reserve pit to divert surface drainage around it. If constructed, the trench will be left intact until the pit is closed.

13. The reserve pit will be lined with an impermeable liner if permeable subsurface material is encountered. An impermeable liner is any liner having a permeability less than 10-7 cm/sec. The liner will be installed so that it will not leak and will be chemically compatible with all substances that may be put in the pit. Liners made of any man-made synthetic material will be of sufficient strength and thickness to withstand normal installation and pit use. In gravelly or rocky soils, a suitable bedding material such as sand will be used prior to installing the liner.

14. The reserve pit will be constructed so that at least half of its total volume is in solid cut material (below natural ground level).

15. Culverts will be placed on channel bottoms on firm, uniform beds, which have been shaped to accept them, and aligned parallel to the channel to minimize erosion. Backfill will be thoroughly compacted.

16. The minimum diameter for culverts will be 18 inches. However, all culverts will be appropriately sized in accordance with standards in BLM Manual 9113.

17. Construction and other project-related traffic will be restricted to approved routes. Cross-country vehicle travel will not be allowed.

18. Maximum design speed on all operator constructed and maintained roads will not exceed 25 miles per hour.

19. Pipeline construction shall not block nor change the natural course of any drainage. Pipelines shall cross perpendicular to drainages. Pipelines shall not be run parallel in drainage bottoms. Suspended pipelines shall provide adequate clearance for maximum runoff.

20. Pipeline trenches shall be compacted during backfilling. Pipeline trenches shall be routinely inspected and maintained to ensure proper settling, stabilization and reclamation.

21. During construction, emissions of particulate matter from well pad and road construction would be minimized by application of water or other non-saline dust suppressants with at least 50 percent control efficiency. Dust inhibitors (surfacing materials, non-saline dust suppressants, and water) will be used as necessary on unpaved roads that present a fugitive dust problem. The use of chemical dust suppressants on public surface will require prior approval from the BLM Authorized Officer.

22. Operators are required to obtain a National Pollution Discharge Elimination System (NPDES) Storm Water Permit from the Wyoming DEQ for any projects that disturb five or more acres (changing to one acre in March 2005). This general construction storm water permit must be obtained from WDEQ prior to any surface disturbing activities and can be obtained by following directions on the WDEQ website at http://deq.state.wy.us. Further information can be obtained by contacting Barb Sahl at (307) 777-7570.

23. The operator shall submit a Sundry Notice (Form 3160-5) to BLM for approval prior to construction of any new surface disturbing activities that are not specifically addressed in the approved APD or 13 Point Surface Use Plan.

C. Operations/Maintenance

1. Confine all equipment and vehicles to the access road(s), pad(s), and area(s) specified in the approved APD.

2. All waste, other than human waste and drilling fluids, will be contained in a portable trash cage. This waste will be transported to a State approved waste disposal site immediately upon completion of drilling operations. No trash or empty barrels will be placed in the reserve pit or buried on location. All state and local laws and regulations pertaining to disposal of human and solid waste will be complied with.

3. Rat and mouse holes shall be filled and compacted from the bottom to the top immediately upon release of the drilling rig from the location.

4. The operator will be responsible for prevention and control of noxious weeds and weeds of concern on all areas of surface disturbance associated with this project (well locations, roads, water management facilities, etc.) Use of pesticides shall comply with the applicable Federal and

State laws. Pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of Interior. Prior to the use of pesticides on public land, the holder shall obtain from the BLM authorized officer written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the authorized officer to such use.

5. Sewage shall be placed in a self-contained, chemically treated portable toilet on location.

6. The operator and their contractors shall ensure that all use, production, storage, transport and disposal of hazardous and extremely hazardous materials associated with the drilling, completion and production of this well will be in accordance with all applicable existing or hereafter promulgated federal, state and local government rules, regulations and guidelines. All project-related activities involving hazardous materials will be conducted in a manner to minimize potential environmental impacts. In accordance with OSHA requirements, a file will be maintained onsite containing current Material Safety Data Sheets (MSDS) for all chemicals, compounds and/or substances which are used in the course of construction, drilling, completion and production operations.

7. Produced fluids shall be put in test tanks on location during completion work. Produced water will be put in the reserve pit during completion work per Onshore Order #7.

8. The only fluids/waste materials which are authorized to go into the reserve pit are RCRA exempt exploration and production wastes. These include:
   - drilling muds & cuttings
   - rigwash
   - excess cement and certain completion & stimulation fluids defined by EPA as exempt

   It does not include drilling rig waste, such as:
   - spent hydraulic fluids
   - used engine oil
   - used oil filter
   - empty cement, drilling mud, or other product sacks
   - empty paint, pipe dope, chemical or other product containers
   - excess chemicals or chemical rinsate

   Any evidence of non-exempt wastes being put into the reserve pit may result in the BLM Authorized Officer requiring specific testing and closure requirements.

9. Operators are advised that prior to installation of any oil and gas well production equipment which has the potential to emit air contaminants, the owner or operator of the equipment must notify the Wyoming Department of Environmental Quality, Air Quality Division (phone 307-777-7391) to determine permit requirements. Examples of pertinent well production equipment include fuel-fired equipment (e.g., diesel generators), separators, storage tanks, engines and dehydrators.

10. If this well is drilled during the fire season (June-October), the operator shall institute all necessary precautions to ensure that fire hazard is minimized, including but not limited to mowing vegetation on the access route(s) and well location(s), keeping firefighting equipment readily available when drilling, etc.

D. Dry Hole/Reclamation

1. All disturbed lands associated with this project, including the pipelines, access roads, water management facilities etc will be expediently reclaimed and reseeded in accordance with the surface use plan and any pertinent site-specific COAs.

2. Disturbed lands will be recontoured back to conform with existing undisturbed topography. No depressions will be left that trap water or form ponds.

3. The fluids and mud must be dry in the reserve pit before recontouring pit area. The operator will be responsible for recontouring of any subsidence areas that develop from closing a pit before it is completely dry. The plastic pit liner (if any) will be cut off below grade and properly disposed of at a state authorized landfill before beginning to recontour the site.

4. Before the location has been reshaped and prior to redistributing the topsoil, the operator will rip or scarify the drilling platform and access road on the contour, to a depth of at least 12 inches. The rippers are to be no farther than 24 inches apart.

5. Distribute the topsoil evenly over the entire location and other disturbed areas. Prepare the seedbed by disking to a depth of 4-to-6 inches following the contour.

6. Waterbars are to be constructed at least one (1) foot deep, on the contour with approximately two (2) feet of drop per 100 feet of waterbar to ensure drainage, and extended into established vegetation. All waterbars are to be constructed with the berm on the downhill side to prevent the soft material from silting in the trench. The initial waterbar should be constructed at the top of the backslope. Subsequent waterbars should follow the following general spacing guidelines:

Slope (percent)	Spacing Interval (feet)
≤ 2	200
2 – 4	100
4 – 5	75
≥ 5	50

7. The operator will drill seed on the contour to a depth of 0.5 inch, followed by cultipaction to compact the seedbed, preventing soil and seed losses. To maintain quality and purity, the current years tested, certified seed with a minimum germination rate of 80% and a minimum purity of 90% will be used. On BLM surface or in lieu of a different specific mix desired by the surface owner, use the following:

Species - *Cultivar*	**Full Seeding (lbs/ac PLS*)**	**% in Mix**	**Lbs/Acre PLS***
Thickspike Wheatgrass - *Critana*	6	20	3.0
Prairie sandreed – *Goshen*	4	30	2.4
Bluebunch Wheatgrass - *Goldar*	7	20	3.0
Indian ricegrass – *Paloma or Rimrock*	6	20	2.4
Slender Wheatgrass - *Primar*	7	5	0.8
**Native blue flax (*Linum lewisii*)	4	5	0.4
Totals		100%	12.0 lbs/acre

Slopes too steep for machinery may be hand broadcast and raked with twice the specified amount of seed. Complete fall seeding after September 15 and prior to prolonged ground frost. To be effective, complete spring seeding after the frost has left the ground and prior to May 15.

8. BLM will not release the performance bond until the area has been successfully revegetated (evaluation will be made after the second complete growing season) and has met all other reclamation goals of the surface owner and surface management agency.

9. A Notice of Intent to Abandon and a Subsequent Report of Abandonment must be submitted for abandonment approval.

10. For performance bond release approval, a Final Abandonment Notice (with a surface owner release letter on split-estate) must be submitted prior to a final abandonment evaluation by BLM.

11. Soil fertility testing and the addition of soil amendments may be required to stabilize some disturbed lands.

12. Any mulch utilized for reclamation needs to be certified weed free.

E. Producing Well

1. Landscape those areas not required for production to the surrounding topography as soon as possible. The fluids and mud must be dry in the reserve pit before recontouring pit area. The operator will be responsible for recontouring and reseeding of any subsidence areas that develop from closing a pit before it is completely dry.

2. Reduce the backslope to 2:1 and the foreslope to 3:1, unless otherwise directed by the BLM Authorized Officer. Reduce slopes by pulling fill material up from foreslope into the toe of cut slopes.

3. Production facilities (including dikes) must be placed on the cut portion of the location and a minimum of 15 feet from the toe of the back cut unless otherwise approved by the BLM Authorized Officer.

4. A dike will be constructed completely around the production facilities (i.e. production tanks, water tanks, and heater-treater). The dikes for the production facilities must be constructed of

impermeable soil, hold 110% of the capacity of the largest tank plus 1-foot of freeboard, and be independent of the back cut.

5. Any chemicals used in treating the wells (e.g., corrosion inhibitor, emulsion breaker, etc.) will be in a secure, fenced-in area with appropriate secondary containment structure (dikes, catchment pan, etc.).

6. The load out line coming from the oil/condensate tank(s) will have a suitable containment structure to capture and recycle any oil spillage that might occur.

7. Individual production facilities (tanks, treaters, etc.) will be adequately fenced off (if entire facility not already fenced off).

8. Any spilled or leaked oil, produced water or treatment chemicals must be reported in accordance with NTL-2A and immediately cleaned up in accordance with BLM requirements. This includes clean-up and proper disposition of soils contaminated as a result of such spills/leaks.

9. Distribute stockpiled topsoil evenly over those areas not required for production and reseed as recommended.

10. Upgrade and maintain access roads and drainage control (e.g., culverts, drainage dips, ditching, crowning, surfacing, etc.) as necessary and as directed by the BLM Authorized Officer to prevent soil erosion and accommodate safe, environmentally-sound access.

11. Prior to construction of production facilities not specifically addressed in the APD, the operator shall submit a Sundry Notice to the BLM Authorized Officer for approval.

12. If not already required prior to constructing and drilling the well location, the operator shall immediately upgrade the entire access road to BLM standards (including topsoiling, crowning, ditching, drainage culverts, surfacing, etc.) to ensure safe, environmentally-sound, year-round access.

13. Waterbars shall be installed on all reclaimed pipeline corridors per the guidelines in E #6.

Consultation/Coordination:

Contact	Title	Organization	Phone Number	Present at Onsite?
Rod Smith	Owner	60 Bar Ranch		No
Katie Smith	Owner	60 Bar Ranch		No
Ed Reich	Operations Manager	Western Interior Oil & Gas	307-234-7192	No
Leo Giangiacomo	Vic President	Western Interior Oil & Gas	307-234-7192	No

References and Authorities:

The National Environmental Policy Act of 1969 (NEPA), as amended (Pub. L. 91-90, 42 U.S.C. 4321 et seq.).

Code of Federal Regulations (CFR)

- 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.

Approved Resource Management Plan for Public Lands Administered by the Bureau of Land Management Buffalo Field Office. Prepared by the United States Department of the Interior, Bureau of Land Management, Buffalo Field Office, April 2001.

Powder River Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment. Prepared by the Department of the Interior, Bureau of Land Management, Wyoming State Office in Campbell, Converse, Johnson and Sheridan Counties, Wyoming. Approved April 30, 2003.

Reviewers

Travis Kern, Natural Resource Specialist
Casey Freise, Supervisory Natural Resource Specialist
Travis Kern, Hydrology
James Evans, Petroleum Engineer
Sharon Soule, Legal Instruments Examiner
BJ Earle, Archaeologist
Scott Jawors, Wildlife Biologist
Courtney Frost, Wildlife Biologist
Gerald Queen, Geologist
Kerry Aggen, Geologist
Duane Spencer, Field Manager

Lead Preparer: Travis Kern