**EA NO-WY-070-09-72**
**FINDING OF NO SIGNIFICANT IMPACT & DECISION RECORD**
**FOR**
**The Termo Company**
**Federal 22 19-4769 Well**

**DECISION:** It is my decision to authorize the following Application for Permit to Drill (APD) for The Termo Company:

| Well Name & Number | QTR | Sec. | T | R | Lease # |
|---|---|---|---|---|---|
| Federal 22 | SENW | 19 | 47N | 69W | WYW148201 |

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

**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.

**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

**BUREAU OF LAND MANAGEMENT**
**BUFFALO FIELD OFFICE**
**ENVIRONMENTAL ASSESSMENT**
**EA # WY-070-09-72**

**PROJECT NAME:** Federal 22 Conventional Well

| Well Name & Number | QTR | Sec. | T | R | Lease # |
|---|---|---|---|---|---|
| Federal 22 | SENW | 19 | 47N | 69W | WYW148201 |

**OPERATOR/APPLICANT:** The Termo Company

**AFFECTED SURFACE OWNER:** Boyd Bishop**,** Bishop Land and Livestock Co. Inc.

**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.

**LAND USE PLAN CONFORMANCE:** This proposed action is in conformance with the terms and conditions of the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management, Buffalo Field Office, April 2001 and the Powder River Oil and Gas Project EIS and Resource Management Plan Amendment (PRB FEIS) approved April 30, 2003**.**

**NEED FOR THE PROPOSED ACTION:** The actions as described in the above-referenced APDs are needed to further develop oil and gas reserves in the United States. The APD was submitted by private industry for development of oil/gas on one valid federal oil and gas mineral lease issued to the applicant by the BLM.

Information contained in the APDs is considered an integral part of this environmental assessment and is, therefore, incorporated by reference (CFR 1502.21).

**DESCRIPTION OF THE PROPOSED ACTION & ALTERNATIVES**

**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**

The Federal 22 well is located as follows:

| Well Name & Number | QTR | Sec. | T | R | Lease # |
|---|---|---|---|---|---|
| Federal 22 | SENW | 19 | 47N | 69W | WYW148201 |

The proposed action is to drill one conventional oil well beyond the Parkman formation to a depth of approximately 8000 feet. The proposed well location is located southeast of Gillette, WY, south of Bishop Road.

The proposed action involves:

| Activity | Length (feet) | Width (feet) | Acres of Disturbance |
|---|---|---|---|
| Federal 22 constructed pad | 300 | 150 | 1.03 |
| Pits | 75 | 150 | 0.25 |
| Topsoil/Spoils | +-75' | +-50' | 0.08 |
| Federal 22 Access Road | 2800 | 14 | 0.89 |
| Total Disturbance for Federal 22 | | | 2.25 |

The proposed Federal 22 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 road is approximately 2.25 acres. This estimate includes disturbance associated with the well pad, the spoil and topsoil storage areas, and the construction equipment and vehicle disturbance. If the well is a producer, the access road 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 this location production facilities will be installed on the well pad. These facilities can include two 400bbl crude tanks, one 400bbl produced water tank, and a 6x20 vertical heater treater. Once the well is in production, a pumper will be on location daily to monitor production facilities and to ensure that the equipment is functioning properly.

The pumping unit will have a 50 horse power electric motor. The power source to run the pumping unit will come from a 100KW generator to be placed on the well pad. The generator will be fueled by the natural gas produced at the well head, a byproduct of conventional oil production. The generator's noise level is expected to be 80-90 decibels at 3 feet distance. This value could change due to varying load levels on the generator. If the well is a producer, overhead power to the well will be added via sundry.

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/gas well on private surface/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 Surface Use Plan of Operations and 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.

**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 environmental benefits for doing this.

**Changes as a result of the pre-approval onsite inspection**

1. The first approximately 200 feet of the access road was re-routed to take advantage of the natural topography to facilitate drainage.
2. The southeastern corner of the location was pulled in approximately 30 feet and rounded off to reduce disturbance on the steep portion of the fill slope.

**DECRIPTION OF THE AFFECTED ENVIRONMENT**

The Application for Permit to Drill (APD) for the Federal 22 well was received on 01/30/2009. Field inspection of the proposed well location was conducted on 04/07/2009. The following individuals participated:

| NAME | TITLE | AGENCY |
|---|---|---|
| Dan Murry | Permitting | The Termo Company |
| Jerry Dillinger | Dirt work | |
| Chris Durham | Wildlife Biologist | BLM |
| Pat Cole | Wildlife Biologist | BLM |
| Melanie Hunter | Natural Resource Specialist | BLM |

Mandatory NEPA items evaluated for the proposed project are presented in the table below.

| Mandatory Item | Potentially Impacted | No Impact | Not Present On Site | BLM Evaluator |
|---|---|---|---|---|
| Threatened & Endangered Species | | | | Pat Cole |
| Floodplains | | | X | Melanie Hunter |
| Wilderness Values | | | X | Melanie Hunter |
| ACECs | | | X | Melanie Hunter |
| Water Resources | | X | | Melanie Hunter |
| Air Quality | X | | | Melanie Hunter |
| Cultural or Historical Values | | | X | Seth Lambert |
| Prime or Unique Farmlands | | | X | Melanie Hunter |
| Wild & Scenic Rivers | | | X | Melanie Hunter |
| Wetland/Riparian | | | X | Melanie Hunter |
| Native American Religious Concerns | | | X | Seth Lambert |
| Hazardous Wastes or Solids | | X | | Melanie Hunter |
| Invasive, Nonnative Species | X | | | Melanie Hunter |
| Environmental Justice | | | X | Melanie Hunter |

**Topographic Characteristics**

The Federal 22 well is located approximately 22 miles SE of Gillette, Wyoming. The well location is south of the Dillinger Ranch field, off of Bishop Road. There is one other conventional well (fee minerals) and a separate production facility located within the same section as the proposed Federal 22 well, but no other development. The surface ownership at the well location is private.

The project is located in the Upper Belle Fourche watershed, at approximately 4500 feet in elevation. Yellow Hammer Creek is the major drainage in the area. The Project area topography is gently rolling sagebrush/grassland. Northwest of the project are the Yellow Hammer Buttes, which range from 4500 to 4800 feet. The general area falls within a 10-14" precipitation zone, with most of the precipitation falling during late winter and spring. The surface ownership within the project area is private, with cattle grazing and oil and gas development being the primary surface uses.

**Vegetation & Soils**

General vegetation communities within the project area consist of mixed sagebrush/grassland mosaic. Wyoming big sagebrush intermixed with various native bunch grasses dominates the vegetative composition of the project area. Cool-season grasses make up the majority of the understory with the balance made up of short warm-season grasses, annual cool-season grass, and miscellaneous forbs. Common grasses noted during the onsite investigation include needle and thread, western wheatgrass, cheatgrass, threadleaf sedge, little bluestem, and buffalo grass. Broom snakeweed, rubber rabbitbrush, and prickly pear are found interspersed throughout the area.

**Soils**

Topsoil depths to be salvaged for reclamation range from 0 to 4 inches on ridges to 8+ inches in bottomland.

Soils within the project area were identified from the *South Campbell County Survey Area, Wyoming (WY605).* 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. During the drilling phase minimal surface disturbance is planned. During production phase of operations, the road will be engineered and built to the required standards for the anticipated average daily traffic surface and will be kept in a safe and useable condition throughout the life of the project.

**Table 1: Soils Description**

| Well Name | Soil Map Unit Symbol | Map Unit Name | Ecological Site |
|---|---|---|---|
| Federal 22 | 163 | HILIGHT-WAGS-BADLAND COMPLEX, 3 TO 45 PERCENT SLOPES | SHALLOW CLAYEY (10-14 NP) |
| Road Segment 1 | 158 | HILAND-BOWBAC FINE SANDY LOAMS, 6 TO 15 PERCENT SLOPES | SANDY (10-14 NP) |
| Road Segment 2 | 163 | HILIGHT-WAGS-BADLAND COMPLEX, 3 TO 45 PERCENT SLOPES | SHALLOW CLAYEY (10-14 NP) |

**Table 2: Well Reclamation Potential**

| Well Name | Soil Map Unit Symbol | Reclamation Potential |
|---|---|---|
| Federal 22 | 163 | Poor |

The main soil limitation at the proposed well site and constructed road location include: shallow soil depth (<20 inches), low organic matter content, water erosion potential and soil droughtiness. Topsoil identification, salvage and storage are important for the successful reclamation of site.

**Table 3: Road Reclamation Potential**

**Road Segment.**

| Soil Map Unit Symbol | Road Segment | Reclamation Potential |
|---|---|---|
| 158 | 1 | Moderate |
| 163 | 2 | Poor |

For more detailed soil information, see the NRCS Soil Survey 605 – South Campbell County.
The main soil limitations at the existing road segment include potential win erosion hazard, low water holding capacity, and low water holding capacity.

**Vegetation**

The project area is within the 10-14 inch precipitation zone.

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. Shallow clayey soils are found at the well location, and the portion of the road that will be constructed during the production phase. The existing road that may need upgrading is a sandy ecological site.

*Shallow Clayey Sites* occur on nearly level to steep slopes on landforms which include hill sides, ridges and escarpments in the 10-14"precipitation zone. The soils of this site are shallow (less than 20" to bedrock), well-drained soils that formed in alluvium or alluvium over residuum derived from unspecified shale. These soils have moderate to slow permeability. The bedrock is clay shale which is virtually impenetrable to plant roots. The present plant community is a Mixed Sagebrush/Grass. Wyoming big sagebrush is a significant component of this Mixed Sagebrush/Grass plant community. Big sagebrush is a significant component of this plant community. Cool-season grasses make up the majority of the understory with the balance made up of short warm-season grasses, annual cool-season grass, and miscellaneous forbs. Dominant grasses include rhizomatous wheatgrasses, and green needlegrass. Other grasses include blue grama, prairie junegrass, and Sandberg bluegrass. Forbs, commonly found in this plant community, include Louisiana sagewort (cudweed), plains wallflower, hairy goldaster, slimflower scurfpea, and scarlet globemallow. Fringed sagewort is commonly found. Plains pricklypear and winterfat can also occur. Cheatgrass has invaded the site.

*Sandy Sites* occur on nearly level to steep slopes on landforms which include alluvial fans, hillsides, plateaus, ridges and stream terraces in the 10-14 inch precipitation zone. The soils of this site are moderately deep to very deep (greater than 20"to bedrock), well drained soils that formed in eolian deposits or residuum derived from unspecified sandstone. These soils have moderate, moderately rapid or rapid permeability. The main soil limitations include low available water holding capacity, and high wind erosion potential. The present plant community is a Needleandthread/ Threadleaf sedge/ Fringed sage Plant Community. Cool-season mid-grasses make up the majority of the understory with the balance made up of short warm-season grasses, annual cool-season grass, and miscellaneous forbs. The dominate understory grasses includes needleandthread, threadleaf sedge, prairie junegrass, and fringed sagewort.

**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 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;
- 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.

**Invasive Species**
The Cambell County Weed and Pest Control District has documented the presence of Diffuse Knapweed within T47N R70W, immediately to the west of the project area, so it is likely also found within the project area. Cheatgrass was also identified at the onsite. 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:**
To evaluate potential wildlife occurrences and effects associated with the proposed project, inventory surveys were performed in February and April 2009 for roosting bald eagles, raptor nests, greater sage-grouse leks, and sharp-tailed grouse leks (ICF Jones & Stokes, 2009a and 2009b). Further, habitat assessments were conducted for mountain plovers and Ute ladie's tresses orchids. All surveys were conducted according to the Powder River Basin Interagency Working Group's protocols, which are available on the CBM Clearinghouse website (www.cbmclearinghouse.info).

Bureau of Land Management (BLM) biologists conducted field visits with The Termo Company personnel on April 7, 2009 to review wildlife survey information for accuracy and assess wildlife habitat suitability.

Big Game
Big game species expected to occur in the proposed project area include pronghorn antelope and mule deer. The project area occurs within identified winter-yearlong habitat for mule deer and within designated yearlong pronghorn antelope habitat. Winter-yearlong use occurs 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. Yearlong use occurs 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.

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 Powder River Basin Final Environmental Impact Statement (BLM, 2003, page 3-151).

Raptors

Two nests were identified within 0.5 miles of the proposed project activities (Table 1). These nests were first documented in February 2009 (ICF Jones and Stokes, 2009a). A site inspection conducted on April 7, 2009 revealed improved condition for nest #1 and verified good condition for nest #2. Red-tailed hawks were noted in the vicinity of the nests during the April site inspection. The buttes overlooking the proposed project site appeared adequate to attract nesting raptors. ICF Jones and Stokes (2009b) again inspected the proposed project area for raptor use on April 20, 2009. This inspection revealed that nest #2 was being used for nesting activity by red-tailed hawks. Further, they observed several red-tailed hawks, kestrels, and a golden eagle within one mile of the proposed project location.

Table 1. Raptor nests identified within 0.5 mile of activities proposed for The Termo Company Federal 22 19-4769 oil well.

| Nest # | UTMs | Legal | Sub-strate[1] | Mnth/ Year | Condition | Status[2] | Species[3] |
|---|---|---|---|---|---|---|---|
| 1 | 485473E 4876830N | S19 T47N R69W | CTL | 2/09 | Poor | INAC | UNRA |
| | | | | 4/09 | Fair | UNKN | UNRA |
| 2 | 485152E 4875961N | S19 T47N R69W | CTL | 2/09 | Good | INAC | UNRA |
| | | | | 4/09 | Good | OCCU | RETA |

Notes:

1 CTL = Cottonwood Live.

2 OCCU=occupied. INAC = Inactive. UNKN = Unknown

3 UNRA = Unknown raptor. RETA=Red-tailed hawk

Sagebrush Obligates

Sagebrush obligates are species that require sagebrush for some part of their life cycle. They cannot survive without sagebrush and its associated perennial grasses and forbs. Shrubland- and grassland-dependent birds are the fastest-declining group of species in North America (Knick et al. 2003). Sagebrush obligates that may occur in the project area and that are listed as Sensitive species by BLM Wyoming include sage thrasher, Brewer's sparrow, and greater sage-grouse. Sage thrasher and Brewer's sparrow 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. Brewer's sparrows are associated closely with sagebrush habitats having abundant scattered shrubs and short grass (Paige and Ritter 1999). Greater sage-grouse are discussed in more detail below.

Sagebrush dependent species are affected by habitat loss, degradation, and fragmentation as well as human-caused disturbance (e.g., vehicle access, noise, etc.) associated with oil and gas development activities.

Bald Eagle
No bald eagles were observed during site visits conducted in February (ICF Jones & Stokes, 2009) or April 2009. Further, no bald eagle nests are known to occur within 25 miles of the proposed project location. However, scattered cottonwood trees occur in nearby drainages, and scattered juniper and ponderosa pine trees occur in the nearby Yellowhammer Buttes that could serve as bald eagle roosting sites. Bald eagle roosts are known to occur approximately three miles west and four miles south of the proposed project location.

Greater Sage-grouse
The Federal 22 19-4769 proposed project location occurs outside of modeled high sage-grouse population density (Doherty, pers. comm..), and outside of areas mapped for high quality nesting (Doherty 2008) and winter habitat (Doherty et al. 2008). However, the project is 2.7, 2.4, and 2.3 miles from known sage grouse leks and provides adequate year-round sage-grouse habitat (ICF Jones & Stokes, 2009a). Occurrence of valuable sagebrush habitat immediately adjacent to the project site was verified by BLM biologists during an April 7, 2009 site visit. Further, aerial grouse surveys conducted in April 2009 (Jones & Stokes, 2009b) revealed presence of female grouse within approximately 0.5 and 1.5 miles of the proposed project location.

Table 2. Sage-grouse Leks within 4 Miles of the Beaver Creek Additions II and SGP Project Area

| Lek Name | Legal Location | Distance from Project Area (mi) | Occupied? |
|---|---|---|---|
| Yellowhammer | T48N R70W Section 35 | 3.6 | No |
| Bishop | T47N R69W Section 10 | 2.8 | Yes (active 2004) |
| Whitetail Creek | T47W R69W Section 28 | 2.5 | No |
| Flora | T47N R70W Section 35 | 2.6 | Yes (active 2007) |

**Cultural Resources**
Class III cultural resource inventory was performed for the Termo federal well 2219-4769 prior to on-the-ground project work (BFO project no. 70090051). Arcadis conducted a block class III cultural resource inventory following the Archeology and Historic Preservation, Secretary of the Interior's Standards and Guidelines (48CFR190) and the *Wyoming State Historic Preservation Office Format, Guidelines, and Standards for Class II and III Reports*. Seth Lambert, BLM Archaeologist, reviewed the report for technical adequacy and compliance with Bureau of Land Management (BLM) standards, and determined it to be adequate.

**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.

**ENVIRONMENTAL CONSEQUENCES**

**Vegetation & Soils**
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 pad as well as the access road would result in

the loss of both native and non-native vegetation, and increased erosion potential on approximately 2.25 acres. This figure includes disturbance associated with the well pad, the spoil and topsoil storage area, and the construction equipment and vehicle disturbances.
The effects to soils resulting from well pad and access road construction include:

- Mixing of horizons which occur where construction on roads, pads 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 revegetation. This drastically disturbed site may change the ecological integrity of the site and the recommended seed mix.
- Loss of soil vegetation cover, 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 dependant 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.
- Modification of hill slope hydrology.
- 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.

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. Seed mixes were determined based on soil map unit types and dominant ecological sites found within the project area.

**Air Quality**
In the project area, air quality impacts would occur during construction (due to surface disturbance by earth-moving equipment, vehicle traffic fugitive dust, well testing, as well as drilling rig and vehicle engine exhaust) and production (including well production equipment, booster and pipeline compression engine exhaust). The amount of air pollutant emissions during construction would be controlled by watering disturbed soils, and by air pollutant emission limitations imposed by applicable air quality regulatory agencies. Air quality impacts modeled in the PRB FEIS concluded that projected oil & gas development would not violate any local, state, tribal or federal air quality standards.

**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.

Downy brome (*Bromus tectorum)* and Japanese brome (*Bromus Japonicus*) are known to exist in the affected environment. These two species are found in such high densities and numerous locations throughout NE Wyoming that a control program is not considered feasible at this time.

**Wildlife:**

Big Game
Direct habitat disturbance associated with the proposed project includes upgrade of 750 feet of access road (approximately 1 acre) and 1.83 acres of disturbance at the well pad for a total disturbance area equaling roughly three acres. Big game are also likely to be temporarily displaced during construction and drilling activities but are anticipated to re-occupy the site following those activities. Of greater concern are on-going daily disturbances associated with "pumper" access. Gates will prevent unauthorized access to the proposed project location, and there are no other known companies using the portion of the road from the gate closest to the well site to the well site; a distance of approximately 0.5 miles.

Due to the small area of habitat loss, limited daily disturbance, minimal existing oil and gas infrastructure, and requirement for final reclamation of disturbed area, significant impacts to big game are not anticipated to occur due to the proposed activity (BLM, 2003, page 4-181-201).

Aquatics
Aquatic environments will not be impacted by the proposed activity because no water is anticipated to be produced and proposed infrastructure will be constructed and placed in upland locations.

Migratory Birds
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. Additional direct and indirect effects to migratory birds are discussed in the Powder River Basin Final Environmental Impact Statement (BLM, 2003, pp. 4-231-235).

Raptors
Proximity of an active red-tailed hawk nest and documented use of the area by multiple raptor species warrants timing stipulations designed to prevent human-induced impacts to nesting raptors (see Conditions of Approval below).

Black-footed Ferret
No black-tailed prairie dog colonies exist near the existing powerline nor will be affected by project activities. Consequently, BLM has determined that implementation of the proposed project will have no effect on the black-footed ferret.

Ute Ladies'-tresses Orchid
The project area does not contain suitable Ute ladies'-tresses habitat, and no known population of the species exists in the vicinity. While a small ephemeral drainage parallels the proposed access road to the Federal 22 19-4769 well, it will not be disturbed during proposed development activities. Based on the lack of suitable habitat, BLM has determined that implementation of the project will have no effect on the Ute Ladies'-tresses orchid.

Sensitive Species

BLM will take necessary actions to meet the policies set forth in sensitive species policy. BLM Manual 6840.22A 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 ESA 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.” Table 2 summarizes anticipated project effects on sensitive species.

Table 2. 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, permanent water in plains and foothills | NP | NI | no existing waterways. |
| Spotted frog (Ranus pretiosa) | 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 does not include overhead power |
| Brewer's sparrow (Spizella breweri) | Basin-prairie shrub | S | MIIH | Sagebrush cover will be affected. |
| Burrowing owl (Athene cunicularia) | Grasslands, basin-prairie shrub | S | NI | No prairie dog colony present. |
| Ferruginous hawk (Buteo regalis) | Basin-prairie shrub, grasslands, rock outcrops | S | NI | No nest present. |
| Greater sage-grouse (Centrocercus urophasianus) | Basin-prairie shrub, mountain-foothill shrub | S | MIIH | Sagebrush cover 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. |

| Common Name (scientific name) | Habitat | Presence | Project Effects | Rationale |
|---|---|---|---|---|
| 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 | No surface water reservoirs are planned. |
| 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 colonies present. |
| Fringed myotis (Myotis thysanodes) | Conifer forests, woodland chaparral, caves and mines | S | NI | |
| Long-eared myotis (Myotis evotis) | Conifer and deciduous forest, caves and mines | S | NI | |
| Spotted bat (Euderma maculatum) | Cliffs over perennial water. | NP | NI | Cliffs & perennial water not present. |
| Swift fox (Vulpes velox) | Grasslands | S | NI | |
| Townsend's big-eared bat (*Corynorhinus townsendii*) | Caves and mines. | NP | NI | Habitat not present. |
| Common Name (scientific name) | Habitat | Presence | Project Effects | Rationale |

| | | | | |
|---|---|---|---|---|
| *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

Sagebrush obligates
Significant impacts to sagebrush obligates are not anticipated due to the small area of habitat loss, limited sagebrush occurrence within disturbed areas, limited daily disturbance, and requirement for final reclamation of disturbed area at well abandonment.

Bald Eagles
While scattered cottonwood and junipers occur near the proposed project location, no bald eagles were observed during site visits conducted in February and April 2009, the nearest documented bald eagle nest is located 25 miles away, and the nearest winter roost is located three miles from the proposed project location. Consequently, BLM has determined that the proposed project is not likely to impact bald eagles because no known roosts or nests occur within several miles of the proposed project location.

Black-tailed prairie dog
No black-tailed prairie dog colonies were noted within the project boundary nor will be affected by project activities. Consequently, BLM has determined that implementation of the proposed project will have no impacts on the black-tailed prairie dogs.

Sage Grouse
The effects of energy development on sage grouse include human-caused disturbances, direct mortality, and reduced habitat effectiveness. Human disturbance may displace sage-grouse from otherwise suitable habitat. For example, yearling female greater sage-grouse avoided nesting in areas within 0.6 miles of producing well pads in southwestern Wyoming (Holloran et al. 2007), and brood-rearing females avoided areas within 0.6 miles of producing wells in southern Alberta (Aldridge and Boyce 2007). Disturbance associated with the proposed activity is likely to be most intense during road and well pad construction. Due to the occurrence of three sage-grouse leks within three miles of the proposed activity, immediately adjacent sagebrush habitat, and because female sage-grouse were observed within 0.5 and 1.5 miles of the project location in spring 2009, timing restrictions are warranted for construction activities (see Conditions of Approval below). Timing restrictions will reduce disturbance to nesting and early brood-rearing hens that are associated with surrounding leks.

Energy development may increase the frequency and intensity of human disturbance to wildlife including sage grouse. The proposed activity includes daily visits by "pumpers". However, this frequency of disturbance is mitigated by the fact that the project site lies behind three existing gates and there are no other known companies using the portion of the road from the third gate to the well site.

Power for the Federal 22 19-4769 is proposed to occur by on-site generation. Consequently, auditory disturbance (e.g., masking of sage-grouse auditory cues) is a concern, particularly at lek locations. The nearest sage-grouse lek is located 2.3 miles away from the proposed project location. While noise generation is estimated by the operator to be a maximum of 100 dB at the site of the proposed generator (Dan Murry personal communication), produced noise will be attenuated by distance to less than 49 decibels (10 dBA above background noise) at the nearest display ground (Blickley and Patricelli 2006).

Direct sage grouse mortality may result from energy development infrastructure (e.g., powerline strikes) and from vehicle collisions. The potential for the current proposal to contribute to direct mortality is limited by the lack of overhead power, and by the fact that gates prevent unauthorized access to the proposed project location where no other known companies use the portion of the road from the third gate to the well site.

Habitat effectiveness can be reduced by direct loss, degradation, and fragmentation of sagebrush ecosystems. The proposed projects direct impacts to sagebrush habitat are limited due to the relatively

limited disturbance footprint (i.e., roughly three acres) and the lack of sagebrush habitat within the disturbance footprint. However, habitat disturbances may also facilitate the establishment and subsequent spread of invasive species with severe ecological implications (i.e., cheat grass invasion). It would be incumbent on the project proponent to develop and vigilantly implement an integrated pest management plan that effectively prevents habitat degradation associated with invasive plant invasion.

Habitat fragmentation includes the progressive isolation of sagebrush patches; and facilitated predation associated with roads, ponds, overhead powerlines, and well-site facilities. For example: roads provide easy hunting routes for red fox, ponds provide water subsidies for nest-destroying ravens, overhead powerlines increase vulnerability of foraging sage grouse broods to perched raptors, and well-site facilities can provide denning sites for skunks and/or raccoons. Energy production infrastructure can facilitate change in abundance, composition, and effectiveness of local predator populations with negative implications for sage grouse. The proposed project is anticipated to add incrementally to fragmentation due to construction of 2,878 feet of access road, and construction of a single well pad. However, these proposed project-related features are not planned within sagebrush habitat, and the effects of these features can be reduced by minimizing the extent of road or well pad disturbance footprint.

There is one other oil well, two plugged and abandoned wells, and one shut-in water source within one mile of the proposed Federal 22 19-4769 well. For this reason, significant cumulative effects associated with development of the Federal 22 19-4769 are not anticipated.

Sharp-tailed Grouse
The nearest known sharp-tailed grouse lek occurs 11.3 miles northwest of the proposed project location, and no sharp-tailed grouse were observed during surveys (ICF Jones & Stokes 2009a and 2009b). Consequently, development of the proposed project is not anticipated to significantly affect sharp-tailed grouse.

Mountain plover
Due to the lack of prairie dog colonies, rolling topography, and relatively tall vegetation, the area is not anticipated to support nesting mountain plover and the proposed activity is not likely to affect mountain plover.

**Cultural Resources**
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 05/13/09 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).

**Cumulative Impact Analysis**
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 these wells, when considered with any existing development are insignificant. For a complete description of cumulative impacts, please refer to the PRB Final EIS Volume 2, Chapter 4, pages 4-1 through 4-364.

**Consultation/Coordination:**

| Contact | Title | Organization | Present at Onsite? |
|---|---|---|---|
| Dan Murry | Permitting | Termo Company | Yes |

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