

APPENDIX D:
BIOLOGICAL ASSESSMENT

**BIOLOGICAL ASSESSMENT FOR THE
HANNA DRAW COALBED METHANE EXPLORATION PROJECT,
CARBON COUNTY, WYOMING**

Prepared for

**Bureau of Land Management
Rawlins Field Office
Rawlins, Wyoming**

This Biological Assessment was prepared by TRC Mariah Associates Inc., an environmental consulting firm, with the guidance, participation, and independent evaluation of the Bureau of Land Management (BLM). The BLM, in accordance with Title 40 Code of Federal Regulations, Part 1506(a) and (b), is in agreement with the findings of the analysis and approves and takes responsibility for the scope and content of this document.

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1.0 INTRODUCTION

Williams Production RMT Company (Williams) of Denver, Colorado, proposes to explore and develop a coalbed methane (CBM) exploration project located in Townships 23 and 24 North, Ranges 80 and 81 West, Carbon County, Wyoming. This Biological Assessment (BA) presents recommendations/project commitments to ensure that the construction and subsequent operation of the proposed project would neither jeopardize the continued existence of threatened, endangered, proposed, and candidate (TEP&C) species, nor result in the permanent destruction or adverse modification of their critical habitats. Analysis of the effects of this proposed project on federal TEP&C species ensures compliance with the provisions of the *Endangered Species Act of 1973* (ESA), as amended (16 *United States Code* [U.S.C.] 1531, et seq.). In addition, this BA discusses the potential effects of the proposed project on federally listed TEP&C species occurring or potentially occurring on or adjacent to the Hanna Draw Exploration Project Area (HDEPA) (Figures 1.1 and 1.2).

TEP&C species are those that have been specifically designated as such by the USFWS. Endangered species are those in danger of extinction throughout all or a significant portion of their range. Threatened species are those likely to become endangered in the foreseeable future throughout all or a significant portion of their range. Proposed species (proposed for listing as threatened or endangered) are those for which the USFWS has issued proposed rules but for which a final listing decision has not been made, and candidate species are those for which the USFWS has sufficient data to list as threatened or endangered but for which proposed rules have not yet been issued.

Critical habitat for a threatened or endangered species includes: 1) the specific locations within the geographical area occupied by the species at the time it is listed (in accordance

Figure 1.1 Project Location.

Figure 1.2 Proposed Pipeline Corridor.

with the provisions of Section 4 of the ESA) on which are found physical or biological features that (a) are essential to the conservation of the species and (b) may require special management considerations or protection; and 2) specific areas outside the geographical area occupied by the species at the time it is listed, if determined by the Secretary (i.e., of the Interior, of Commerce, or of Agriculture) that such areas are essential for the conservation of the species. There is no designated critical habitat for any TEP&C species in the project area.

2.0 PROJECT DESCRIPTION

2.1 THE PROPOSED ACTION

Williams proposes an exploration CBM project located in Townships 23 and 24 North, Ranges 80 and 81 West, Carbon County, Wyoming, approximately 10 mi northeast of Hanna (Figures 1.1 and 1.2). The Proposed Action would involve the development of up to nine wells and associated facilities on federal lands and a ROW to construct and operate the interconnect pipeline on federal lands. Access is from Hanna along Carbon County Road 291 (Hanna Draw Road). The HDEPA encompasses approximately 18,151 acres (in the combined exploration drilling area and pipeline corridor), 6,735 acres (37%) of which are federal surface and mineral estate. The exploration project would consist of drilling, casing, completing, and producing up to 25 CBM wells for evaluation. Up to nine of these wells would be on federal lands administered by the BLM, whereas the 16 remaining wells would be on private lands. The 16 wells on private land have been approved and permitted by the Wyoming Oil and Gas Conservation Commission (WOGCC); nine of these wells have already been drilled. Twenty-three possible new well locations are shown on Figure 1.1, but only 16 new wells would be drilled. Seven contingency locations are identified to enable Williams flexibility on where to drill the exploratory wells. Development of the nine wells on federal lands (Proposed Action) would begin in the fourth quarter of 2001. All wells would be located to minimize potentially adverse environmental impacts. Production wells would be spaced at 80 acres or eight wells per 640-acre section.

The exploration area outlined on Figure 1.1 lies within the Hanna Draw Federal Unit, a BLM-designated leasing unit currently leased by Williams. Only the exploration area and a proposed interconnect pipeline corridor (Figure 1.2) are evaluated as “the project area” or “the HDEPA” in this BA. Where necessary, the exploration area (as depicted on Figure 1.1) is discussed separately from the interconnect pipeline (Figure 1.2).

Ancillary facilities would include access roads, gas and water gathering lines, a power source, a central gathering/metering facility (CGF), a reservoir, and, if the field proves economically viable, a compressor station and the interconnect pipeline. No power lines are currently proposed.

All produced water would be contained in the existing reservoir, and no uncontained surface water discharge is proposed at this time. Produced water quality would be monitored in accordance with state and federal regulations.

Two existing improved roads provide the primary access to the field. Field development of 16 new wells would require the construction/upgrading of a maximum of 6.5 mi of access roads with adjacent gas and produced water gathering lines (facilities corridors). Approximately 1.5 mi (not included in the 6.5 mi of access roads constructed or reconstructed) of existing undeveloped road have been upgraded. An estimated 3.75 mi of new road/ facilities corridors would be built on private lands and 2.75 mi of new road/facilities corridors would be built on federal land.

Each well would require gas and water gathering lines (gas lines to collect CBM from wells and transport it to a centralized pod to be located on private land and water lines to transport produced water to a reservoir for containment) and a power source. Natural gas gathering lines (made of up to 3-inch diameter high density polyethelene [HDPE]) from exploration wells would be tied into the pod for gas metering and subsequent venting. A network of waterlines exists on private lands in the project area. Short new lines (up to 6-inch diameter HDPE) would be required to collect produced water on the two federal sections; these would connect to the existing network. Water lines would converge in the water-containment reservoir (Figure 1.1) that is already permitted and constructed. Gas and water lines would be installed adjacent to and overlapping with the access roads ROWs. Power would be supplied by gas-driven engines, propane generators, or gas-powered generators fueled by produced gas.

Disturbance on federal lands would be approximately 162.7 acres initially and 39.7 acres after preliminary reclamation (Table 2.1).

It is anticipated that it would take approximately 8 days to drill, log, and case each well utilizing a conventional rotary drilling rig and associated rig equipment. Two additional days would be required to run a bond log, perforate, and set a pump with a completion rig. Road construction would occur concurrently with well drilling and testing, and, although some level of activity would be continual, peak drilling and construction would be scheduled for the fourth quarter of 2001.

The anticipated life-of-project (LOP) would be from 5 to 30 years, depending upon the success of the exploration project. Additional *National Environmental Policy Act* (NEPA) analyses would be conducted if additional facilities are required for project development.

Project documents and other information are located at the U.S. Bureau of Land Management (BLM) Rawlins Field Office in Rawlins, Wyoming.

2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, nine wells would not be developed on federal land. Project development within the HDEPA considered as components of the No Action Alternative are limited to the disturbances associated with the Road ROW granted by BLM to Williams in September 2001 to provide access to private land for the purposes of developing private leases. The interconnect pipeline would not be constructed at this time, although, if the field is productive, it would probably be constructed at a later date pending successful completion of the environmental review process.

The analysis of a No Action Alternative provides a benchmark, enabling decision-makers to compare the magnitude of environmental effects of the action alternative. Under the No Action

Table 2.1 Types and Approximate Acreage of Disturbance on Federal Land of Proposed Action and No Action Surface Alternatives.

	Proposed Action					
	Initial Disturbance Area (acres)			Life-of-Project (LOP) Disturbance Area (acres)		
	Existing	Proposed	Total	Existing	Proposed	Total
Well pads ¹	0.0	10.8	10.8	0.0	2.7	2.7
Facilities corridors ²	23.7	26.7	50.4	23.7	13.3	37.0
Interconnect pipeline ^{3,4}	0.0	101.5	101.5	0.0	0.0	0.0
Total	23.7	139.0	162.7	23.7	16.0	39.7

	No Action Alternative					
	Initial Disturbance Area (acres)			Life-of-Project (LOP) Disturbance Area (acres)		
	Existing	Proposed	Total	Existing	Proposed	Total
Well pads	0.0	0.0	0.0	0.0	0.0	0.0
Facilities corridors	23.7	0.0	23.7	23.7	0.0	23.7
Interconnect pipeline	0.0	0.0	0.0	0.0	0.0	0.0
Total	23.7	0.0	23.7	23.7	0.0	23.7

¹ Assumes initial disturbance of 1.2 acres for each well pad and LOP disturbance of 0.3 acre per well pad.

² Assumes 2.75 mi of new road with parallel gas gathering and water discharge lines (80-ft average disturbance width). All disturbance except for the estimated 40-ft wide road travelway and adjacent ditches would be reclaimed for the LOP.

³ Assumes an average disturbance width of 90 ft along the entire 19.5 mi long corridor. An estimated 9.3 mi would cross federal land.

⁴ The compressor station (about 4.0 acres of disturbance) would be located on private land.

Alternative, the BLM would deny development of the CBM project on federal lands as currently proposed by Williams, while allowing existing land uses to continue.

A No Action decision would only be considered under the following circumstances:

1. if there were no acceptable means of mitigating significant adverse impacts to stipulated surface resource values, this may trigger denial of Application for Permit to Drill (APD) and right-of-way (ROW) applications and require consideration and analysis of other alternative(s); or,
2. if the USFWS concluded that the Proposed Action would likely jeopardize the continued existence of TEP&C species, the APD and/or ROW application may be denied in whole or in part.

This BA will help to determine whether the proposed project meets either one of these conditions.

3.0 METHODS

A list of TEP&C species that potentially occur in the vicinity of the proposed project was obtained from the Wyoming Supervisor's Office of the U.S. Fish and Wildlife Service (USFWS) (2001). All TEP&C species identified from these sources are discussed in Chapter 4.0 of this BA.

Information pertaining to the natural history and distribution of the TEP&C species potentially occurring in the area was gathered from the above sources, published literature, and on-site surveys. The purpose of this BA is to provide a project-wide assessment of potential impacts to the TEP&C species potentially occurring in the area and to identify appropriate mitigations prior to project implementation. Mitigation measures identified in this BA would be applied to site-specific developments.

4.0 PROJECT-WIDE MITIGATION MEASURES FOR TEP&C SPECIES

Endangered species identified by the USFWS as potentially occurring in the HDEPA vicinity include black-footed ferret and blowout (Hayden's) penstemon (Table 4.1). Endangered fish species in the Colorado River [sic, see footnote 2 below] and endangered Platte River species were also identified as potentially affected by the project. Bald eagle and Canada lynx, both threatened species, are also discussed. Mountain plover, a species proposed for listing as threatened, may also occur in the vicinity of the project.

This section describes measures that would be utilized to avoid, minimize, or mitigate potential impacts to TEP&C species due to project development. Additional environmental protection measures designed specifically for other resources present on the area (e.g., soils, vegetation,

Table 4.1 USFWS List of TEP&C Species Potentially Affected by the Project.

Common Name	Scientific Name	Status ¹	Habitat/Location
Black-footed ferret	<i>Mustela nigripes</i>	E	Prairie dog colonies
Blowout penstemon	<i>Penstemon haydenii</i>	E	Sand dunes north of Ferris Mountains
Colorado River fish species	Various ²	E	Downstream riverine habitat of the Yampa, Green, and Colorado River systems
Platte River species	Various ³	E	Downstream riverine habitat of the Platte River in Nebraska
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	Found throughout state
Canada lynx	<i>Lynx canadensis</i>	T	Montane forests
Mountain plover	<i>Charadrius montanus</i>	P	Grasslands

¹ T = threatened, E = endangered, P = proposed for listing as threatened or endangered.

² Bonytail chub (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Hila cypha*), and razorback sucker (*Xyrauchen texanus*). These species were accidentally listed as potentially affected in the USFWS letter, but the project is not within the Colorado River drainage and so they would not be affected.

³ Whooping crane (*Grus americana*), interior least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), bald eagle (*Haliaeetus leucocephalus*), Eskimo curlew (*Numenius borealis*), and prairie fringed orchid (*Platanthera praeclara*).

wetlands, visual resources) are provided in the EA for this project. Exceptions to project-wide mitigation measures may be made on a case-by-case basis by the BLM if a thorough analysis determines that the TEP&C species for which the measure was developed would not be impacted. To ensure compliance with mitigation measures presented in this BA and in APD and ROW applications, Williams, or its designated contractor, would have qualified individuals available during construction operations to consult with the BLM on a case-by-case basis as necessary during project development.

All of the proposed project-wide mitigation/environmental protection measures identified in this chapter would be implemented on all project-affected lands (public and private). Development activities would be conducted in accordance with all appropriate federal, state, and county laws, rules, and regulations. Project-wide mitigation measures for TEP&C species are presented below.

Mitigation measures would include, but are not limited to, the following.

All Species:

1. To ensure construction activities occur commensurate with identified mitigations, a qualified biologist would be on site during construction as deemed appropriate by the BLM and as identified during APD and ROW application processing.
 2. Well pads, roads, gas and water gathering lines, the interconnect pipeline, and ancillary facilities would be located and designed to minimize disturbances to areas of high wildlife habitat value (e.g., prairie dog colonies, suitable mountain plover habitat, greater sage-grouse leks, cushion plant communities [i.e., potential mountain plover nesting habitat], playa lakes, wetlands, and riparian areas).
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3. Areas with high erosion potential and/or rugged topography (steep slopes, windblown deposits, floodplains, unstable soil) would be avoided, where practical.
 4. Removal or disturbance of vegetation would be minimized through construction site management (e.g., by utilizing previously disturbed areas, using existing ROWs, designating limited equipment/materials storage yards and staging areas, scalping), and Williams would develop and implement detailed reclamation specifications including stabilizing and revegetating disturbed areas to minimize impacts from project-related activities.
 5. To minimize wildlife mortality due to vehicle collisions, Williams would advise project personnel regarding appropriate speed limits on designated access roads as identified by BLM. Potential increases in poaching would be minimized through employee and contractor education regarding wildlife laws. If violations are discovered, the offending employee or contractor would be disciplined and may be dismissed by Williams and/or prosecuted by the Wyoming Game and Fish Department (WGFD) and/or USFWS.
 6. Areas potentially hazardous to TEP&C species (e.g., reserve pits, evaporation pits, hazardous material storage areas) would be adequately protected (e.g., fenced, netted) to prevent access by wildlife and ensure protection of migratory birds and other wildlife as deemed necessary by the BLM.
 7. Firearms and dogs would not be allowed on-site by project employees. Williams would enforce existing drug, alcohol, and firearms policies.
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8. To protect plant populations and wildlife habitat, project-related travel would be restricted to designated access roads--no off-road travel would be allowed except in emergencies.
9. Wildlife-proof fencing would be utilized on reclaimed areas if it is determined that wildlife species and/or livestock are impeding successful vegetation establishment.
10. Williams would finance site-specific surveys for blowout (Hayden's) penstemon and its habitat prior to any surface disturbance in areas determined by BLM to contain potential habitat. These surveys would be completed by a qualified botanist as authorized by the BLM, and this botanist would be subject to BLM's special status plant survey policy requirements. Data from these surveys would be provided to the BLM, and if blowout penstemon is found it would be avoided or its habitat is found BLM/USFWS recommendations for avoidance or mitigation would be implemented. Project facilities would be relocated, where practical, to avoid its habitat.

No species-specific mitigations are recommended for Platte River species, bald eagle, or Canada lynx because additional mitigation above and beyond that described for all species is not needed to avoid adversely affecting these species (Section 5.0 in this BA). Species-specific mitigations for black-footed ferret and mountain plover are described below.

Black-footed Ferret:

1. Williams and its contractors would be shown how to identify black-footed ferret and their sign and provided information about its habitat requirements, natural history, status, threats, possible impacts of gas development activities, and ways to minimize these impacts.
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2. All active white-tailed prairie dog towns/complexes would be mapped within the HDEPA on federal lands every 3-5 years beginning in 2002. Burrow density determinations would not be necessary because any colonies within the HDEPA are part of the larger complex supporting the reintroduced black-footed ferret population.
 3. Attempts would be made to locate all project components at least 50 m (164 ft) from these towns/complexes to avoid direct impacts to the towns.
 4. If suitable prairie dog town/complex avoidance is not possible, the USFWS is recommending surveys of towns/complexes for ferrets (personal communication, March 2001, with Pat Diebert, USFWS), which should be conducted on all federal lands in accordance with USFWS guidelines and requirements (USFWS 1989). This information would be provided to the BLM and USFWS.
 5. If any black-footed ferrets or their sign are found within a prairie dog town or complex previously determined to be unsuitable for, or free of, ferrets, the USFWS would be contacted immediately, all previously authorized projected-related activities ongoing in such towns or complexes would be suspended immediately, and Section 7(a)(4) conferencing with the USFWS and BLM would be initiated.
 6. Williams and its contractors would prohibit dogs from the HDEPA by project employees.
 7. Observations of black-footed ferrets, their sign, or carcasses would be reported within 24 hours to the BLM, Rawlins Field Office, and the USFWS.
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8. All suspected observations of black-footed ferrets, their sign, or carcasses on the HDEPA and the location of the suspected observation however obtained, would be reported within 24 hours to:

Wildlife Biologist, BLM
Larry Apple, (307) 328-4204
Rawlins Field Office
P.O. Box 2407
1300 North Third Street
Rawlins, WY 82301

Field Supervisor or Designee, USFWS
(307) 772-2374
Wyoming Field Office
4000 Airport Parkway
Cheyenne, WY 82001

Observations would include a description including what was seen, time, date, exact location, and observer's name, address, and telephone number. Carcasses or other suspected ferret remains would be collected by the BLM or USFWS employees and deposited with the USFWS, Wyoming Field office.

Mountain Plover:

1. Williams and its contractors would be shown how to identify mountain plover and provided information about its habitat requirements, natural history, status, threats, and possible impacts of gas development activities. Incidental observations of mountain plovers would be solicited from all field personnel.
 2. For construction during the period between May 1 and June 15, 2002, unless otherwise approved by the USFWS, mountain plover surveys would be conducted on all lands by a Williams-financed, BLM-approved biologist in accordance with existing or revised USFWS guidelines (USFWS 2001). These surveys have been completed in the
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exploration area in May and June 2001, and no mountain plover were observed (Section 5.6). Surveys would be completed prior to construction each year construction is to occur between April 10 and July 10.

3. If an active nest and/or mountain plover are found within 0.25 mi of proposed features, informal conferencing would occur with the USFWS.
 4. If an active nest is found in the survey area, planned activities would be delayed 37 days, or 1 week post-hatching, or if a brood of flightless chicks is observed, activities would be delayed at least 7 days.
 5. Where access roads and/or well locations have been constructed prior to the mountain plover nesting season (April 10 - July 10) and use of these areas has not been initiated for development actions prior to April 10, a BLM-approved biologist would conduct surveys of these disturbed areas prior to use to determine whether mountain plover are present. In the event plover nesting is occurring, Operators would delay development activities until nesting is complete.
 6. If nesting habitat is disturbed, these disturbed areas would be reclaimed to approximate original conditions (topography, vegetation, hydrology, etc.) after completion of activities in the area, in part to ensure suitable mountain plover breeding habitats are present on the reclaimed landscape. Seed mixes and application rates for reclamation would produce stands of vegetation suitable for plover nesting in suitable plover habitat while meeting the BLM's requirements for stabilizing soil and controlling weeds. Seed mixes and application rates for reclamation would be designed to produce stands of sparse low-growing vegetation suitable for plover nesting in previously suitable mountain plover habitat. Reclamation would attempt to return the plant community to the pre-existing condition as soon as possible.
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7. To minimize destruction of nests and disturbance to breeding plovers from construction and reclamation activities, grading, seeding, or other ground-disturbing activities would not occur from April 10 to July 10 unless surveys within 0.25 mi of project facilities consistent with USFWS-approved methods find that no plovers are nesting in the area.

8. All suspected observations of mountain plover adults, eggs, chicks, or carcasses on the HDEPA, however obtained, would be reported within 24 hours to:

Wildlife Biologist, BLM
Larry Apple, (307) 328-4204
Rawlins Field Office
P.O. Box 2407
1300 North Third Street
Rawlins, WY 82301

Field Supervisor or Designee, USFWS
(307) 772-2374
Wyoming Field Office
4000 Airport Parkway
Cheyenne, WY 82001

Observations would include a description including what was seen, time, date, exact location, and observer's name, address, and telephone number. Carcasses or other suspected plover remains would be collected by the BLM or USFWS employees and deposited with the USFWS, Wyoming Field office.

5.0 SPECIES ACCOUNTS

This chapter presents a discussion of the status, habitat, potential effects, and mitigation for USFWS TEP&C animal and plant species that may occur in the HDEPA and adjacent areas (Table 4.1).

5.1 BLACK-FOOTED FERRET

5.1.1 Current Status and Habitat Use

The black-footed ferret, a federally listed endangered species, is a mink-sized mammal, distinguished by black feet, a black raccoon-like face mask, and a black tip on an otherwise whitish tail. Within the HDEPA, the experimental nonessential population is managed as a species proposed for listing.

The black-footed ferret was once distributed throughout the high plains of the Rocky Mountain and western Great Plains regions (Forrest et al. 1985). Prairie dogs are the main food of black-footed ferrets (Sheets et al. 1972), and, historically, few black-footed ferrets have been collected away from prairie dog towns (Forrest et al. 1985). Black-footed ferrets were considered extinct until a small population was discovered near Meeteetse, Wyoming, in 1981. Following outbreaks of distemper, surviving black-footed ferrets were brought into captivity and a captive breeding program was initiated (USFWS 1988). Black-footed ferrets were reintroduced in the Shirley Basin of central Wyoming between 1991 and 1994. The HDEPA is within an area designated as "ferret-free" (WGFD and BLM 1991) prior to the reintroduction into Shirley Basin; thus, any ferrets that occur within the HDEPA would be considered part of an experimental/nonessential population.

Historically, this part of the Hanna Basin provided ferret habitat--confirmed ferret observations were recorded in 1968 and 1979, and in 1991 two observations of experimental population

ferrets were recorded 13 mi north and 20 mi northeast of the Hanna Draw Federal Unit (BLM 1993). The Hanna Draw Federal Unit, the northern portion of pipeline corridor, and surrounding areas are located within the Shirley Basin/Medicine Bow Black-footed Ferret Management Area, which itself is divided into Primary Management Zones (PMZs) 1 and 2 and areas outside the PMZs. PMZs are areas designated by WGFD and USFWS to assist in the management of the black-footed ferret reintroduction effort (WGFD and BLM 1991).

In May 2001, prairie dog colonies on all federal lands and on private lands accessible via public access within the Hanna Draw Federal Unit and the proposed pipeline corridor were mapped in the field using an ocular estimate of colony boundaries and a global positioning system. An estimated 111 acres of white-tailed prairie dog colonies occur within and adjacent to the HDEPA (Figure 5.1). As in the early 1990s (BLM 1993), a majority of the colonies are located within PMZ 2, just outside of the proposed exploration area and along the pipeline corridor. The two small (<10 acres each) colonies within the exploration area are outside the PMZs but within the Shirley Basin/Medicine Bow Black-Footed Ferret Management Area.

The four small prairie dog colonies within the proposed drilling area would be avoided, if possible, during exploration drilling, so no further work to identify potential black-footed ferret habitat or to search for black-footed ferrets would be necessary in the exploration area. If either colony would be disturbed, colony mapping would be completed and black-footed ferret searches would be conducted on federal land in accordance with USFWS guidelines (USFWS 1989). If any ferrets or ferret sign are observed, further development would be prohibited until conferencing with the USFWS has been completed.

Short segments of the pipeline corridor cross prairie dog colonies, and others may be present on lands not mapped in 2001. As with the proposed drilling area, if any colonies would be disturbed, black-footed ferret habitat mapping and ferret searches would be completed, if required, prior to disturbance.

Figure 5.1 White-tailed Prairie Dog Colonies.

5.1.2 Potential Effects

It is anticipated that the project would not adversely affect this species because no black-footed ferrets are known to occur in the HDEPA, it is unlikely that ferrets occur in the HDEPA, and mitigation measures (Section 4.0) for potential impacts to black-footed ferrets would be applied.

The proposed project may contribute some additional impacts to the cumulative effects on black-footed ferret habitat from ranching, oil and gas projects, coal mining, and transportation or on prairie dogs (i.e., black-footed ferret prey base) from pest control and recreational shooting through habitat loss and increased access.

In 1991, the USFWS anticipated a worst-case oil and gas development scenario of 20,664 acres of disturbance. As of December 2000, a total of 173 wells had been drilled within the management area, 149 of which have been permanently abandoned (BLM 1999). Ten producing wells occurred in the management area in 2000. Assuming an estimated 9 acres of disturbance per well (BLM 1999), a total of 1,557 acres have been disturbed, 1,341 of which have been reclaimed (i.e., the 149 abandoned wells), and 90 acres remain disturbed. The proposed development would not cause disturbance due to oil and gas development within the management area to exceed the expected levels.

5.1.3 Mitigation Measures

No additional mitigation is recommended.

5.2 BLOWOUT (HAYDEN'S) PENSTEMON

5.2.1 Current Status and Habitat

Blowout penstemon, a federally listed endangered species, is a perennial herb usually less than 30 cm tall, with greenish blue, waxy, linear leaves. The inflorescence is 6 to 16 cm long with 6 to 10 compact leafy whorls of milky-blue to pale lavender flowers.

Habitat for blowout penstemon is sparsely vegetated, actively shifting sand dunes and blowout depressions. Blowouts are craters that have been excavated out of the sands by the swirling action of prevailing westerly and northwesterly winds. These habitats are subject to environmental extremes in wind, temperature, and soil moisture. Blowout penstemon is a primary invader of blowouts and does not persist when a blowout becomes completely vegetated. The plant is known from three occurrences in Wyoming. The plant is a regional endemic restricted to the Sand Hills of western Nebraska and south-central Wyoming in the Ferris/Seminole Mountains region near Bear Mountain. One population is estimated at 300-500 plants, whereas the other two populations contain approximately 1,000 plants each.

Neither blowout penstemon nor actively sifting sand dunes or blowouts are known to occur on federal land within or immediately adjacent to the HDEPA (Wyoming Natural Diversity Database [WNDD] 2001; TRC Mariah Associates Inc. [TRC Mariah] 2001; personal communication, June 2001, with Jim Case, Wyoming Geological Survey).

5.2.2 Potential Effects

Blowout penstemon is not known or likely to be present on federal lands within the HDEPA due to the absence of suitable habitat (sand dunes). Therefore, the Proposed Action (nine wells on federal land) is unlikely to adversely affect the species, nor is it likely to contribute to regional cumulative effects to the species. Private lands would be surveyed for habitat/individuals prior to disturbance and any that are observed would be avoided until consultation with the USFWS has been completed. Therefore, no effects to this species are anticipated.

5.2.3 Mitigation Measures

No additional mitigation is recommended.

5.3 PLATTE RIVER SPECIES

Since 1978, the USFWS has consistently taken the position in its Section 7 consultations that federal agency actions resulting in water depletions to the Platte River system may affect the endangered whooping crane, interior least tern, pallid sturgeon, and eskimo curlew, as well as the threatened piping plover, bald eagle, and western prairie fringed orchid.

In general, depletions include evaporative losses and/or consumptive use, often characterized as diversions from the Platte River or its tributaries less return flows. Project elements that could be associated with depletions to the Platte River system include, but are not limited to, ponds (detention/ recreation/irrigation storage/stock watering), lakes (recreation, irrigation, storage/municipal, storage/ power generation), reservoirs (recreation, irrigation storage/ municipal, storage/power generation), created or enhanced wetlands, pipelines, wells, diversion structures, and water treatment facilities.

Any actions that may result in a water depletion to the Platte River system must: 1) be identified, 2) provide an estimate of the amount and time (by month) of average annual water depletion (both existing and new depletions), and 3) describe methods of arriving at such estimates (USFWS 2000).

North Platte River depletions are not anticipated as a result of the proposed project due to the depth of ground water-producing formations (approximately 5,000 ft) and the age of the ground water produced (approximately 5,000 years before present). All produced water would be discharged into the water containment reservoir where it would evaporate, so no net gain or loss

of water in the surface water system would occur. Thus, the proposed project is unlikely to adversely affect downstream Platte River species.

Grab samples of Hanna Draw Well No. 19 (a producing well) and Seminoe Reservoir were analyzed for deuterium and O^{16}/O^{18} to assess the probable age of produced water. Both samples show that the waters are of meteoric origin; however, they have very different stable isotopic compositions and are not directly related to one another (personal communication, June 2001, with Joe Frank, HydroGeo, Inc.). The Well No. 19 sample had a very negative isotopic composition that is commonly seen in ground water that has been recharged at high elevations or during the last major cold climatic regime, typically an ice age. Ground water in Well No. 19 could not have recharged from a high elevation, given its geographic location; therefore, the well water must have been recharged to the aquifer during the last ice age in this region (about 5,000 years ago), at the earliest.

5.4 BALD EAGLE

5.4.1 Current Status and Habitat Use

The bald eagle is a federally threatened species (downlisted from endangered and now proposed for removal from federal listing). This species requires cliffs, large trees, or sheltered canyons associated with concentrated food sources (e.g., fisheries or waterfowl concentration areas) for nesting and/or roosting areas (Edwards 1969; Snow 1973; Call 1978; Steenhof 1978; Peterson 1986). Bald eagles forage over wide areas during the non-nesting season (fall and winter) and scavenge on animal carcasses such as pronghorn, deer, and elk. Potential roosting sites and wintering areas are generally associated with rivers or lakes.

While bald eagle observations have been made adjacent to the HDEPA (Western EcoSystems Technology, Inc. 2000), no known bald eagle nests or winter roosts occur within or immediately adjacent to the HDEPA (WNDD 2001).

5.4.2 Potential Effects

Migrating bald eagles and those wintering at locations sufficiently close to the proposed project area may occasionally fly over the HDEPA while foraging; however, since no known nests or roosts occur near the project area nor are nests or roosts likely to be established due to a lack of trees and cliffs, the proposed project is unlikely to adversely affect bald eagles.

Cumulative impacts resulting from the proposed project likely would contribute only negligible additional effects, if any, to bald eagle habitat. Some foraging habitat would be disturbed, but large areas remain available to eagles. Also, all developments (including the proposed project) would avoid winter roosts and active nests, if present, further minimizing potential disturbance to the species.

5.4.3 Mitigation Measures

No additional mitigation is recommended.

5.5 CANADA LYNX

The threatened Canada lynx inhabits montane forests and is unlikely to occur in the project area. This species would not be affected by the proposed project.

5.6 MOUNTAIN PLOVER

5.6.1 Current Status and Habitat Use

The mountain plover is a medium-sized shorebird resembling the killdeer but with longer legs, more erect posture, and drabber coloration. It is uniformly sandy brown above and on its sides. Its throat, breast, and underwings are white. Breeding birds have a black loreal stripe extending

from bill to eye and a partially to solid black forehead (Knopf 1996). The mountain plover has been proposed for federal listing as a threatened species by the USFWS.

Mountain plovers nest on high plains, shortgrass prairie, shrub-steppe, and desert tablelands--commonly on or near prairie dog colonies or pastures heavily grazed by livestock. Nest sites are characterized by four factors: 1) dry soil, with no open water in the immediate vicinity; 2) very short vegetation; 3) a high proportion (typically >30%) of bare ground; and 4) flat or very gentle slopes (i.e., <5-12%) (Graul 1975; Graul and Webster 1976; Knowles et al. 1982; Olson 1984; Olson and Edge 1985; Knopf 1996). Mountain plovers breed in flat sites dominated by low and sparse grass in southeastern Wyoming. Parrish et al. (1992) documented preference for vegetation <10 cm tall and slopes of <3% in the Powder River Basin. In western Wyoming, breeding birds prefer sites dominated by bare ground and cushion plants with slopes of <5%.

Mountain plover are often found within or near prairie dog colonies in Wyoming. Their association with prairie dogs is likely due to a preference for similar habitats (both species prefer dry flat sites). Plovers also are likely attracted to the low vegetation and abundant bare ground created by prairie dog activities (Knowles et al. 1982; Olson and Edge 1985). Mountain plovers are opportunistic foragers that feed primarily on insects (Knopf 1994, 1996).

Nesting begins in April in Colorado (Knopf 1996) and eastern Wyoming. Breeding may begin 2-4 weeks later at the higher elevations of western Wyoming (WNDD 2000). Clutch completion occurs mid-May to late June. Both sexes incubate 2-4 eggs for 29 days at two separate nests; the female may lay a second clutch while the male incubates the first clutch (Graul 1975). Nests of different pairs tend to be clustered within large patches of apparently suitable habitat. It is not known whether breeding pairs are responding to more suitable habitat features or if this behavior is a social facilitation of breeding (Graul 1975; Knopf 1996). Breeding bird surveys between 1966 and 1987 show an overall decline in the continental population of mountain plovers (U.S. Forest Service [USFS] 1994a). Surveys completed in 1991 indicated that only 4,360 to 5,610 mountain plovers remained on the North American continent (USFS 1994b). Probably the most important factors influencing the decline of the species are human impacts, habitat alteration on breeding grounds, and degradation of wintering habitats (e.g., southern

Texas, California) (Knopf 1994, 1996). Loss of breeding habitat due to cultivation and prey base declines resulting from pesticide use are also threats to mountain plover survival (Wiens and Dyer 1975). Cattle often maintain the open grass habitat favored by mountain plovers, so livestock grazing may benefit the species (Klipple and Costello 1960).

In Wyoming, mountain plovers occur statewide from March to August in flat dry sites with open vegetation (e.g., grassland, sage-steppe, desert shrub) (Dorn and Dorn 1990; Oakleaf et al. 1992). The grasslands of eastern Wyoming may represent some of the best remaining breeding habitat in the region. Breeding birds are regularly encountered in the shrub-steppe basins of western Wyoming, northwestern Colorado, and northeastern Utah (WNDD 2000). This portion of mountain plover breeding range is relatively unstudied, and it is unknown what proportion of the current breeding population resides in Wyoming. Because low and sparse vegetation (preferred for nesting) is maintained largely by abiotic factors such as landform, soil, and precipitation in western Wyoming and because, in Wyoming, vegetation communities have been minimally altered by humans, range and abundance of this species in Wyoming may approximate historic levels (WNDD 2000).

The HDEPA is vegetated primarily by Wyoming big sagebrush steppe intermixed with grasslands (Section 3.1.1 in the EA). Very little of the area is suitable mountain plover breeding habitat, which is characterized by:

- generally flat and level or gently sloping terrain;
- sparse ground vegetation with at least 30% bare ground (ocular estimate);
- grasses, shrubs, and forbs (less than 4 inches tall), in spaced clumps or mats (i.e., cushion plant communities); and
- widely spaced and generally low-growing shrubs (4 to 16 inches tall).

Opuntia and/or low *Atriplex*, non-leaky stocktanks, heavily grazed or burned areas, and active prairie dog colonies are considered secondary indicators of mountain plover habitat. It is unusual to find mountain plovers on sites characterized by rough, irregular, or rolling terrain, dense vegetation, grass taller than 4 inches, or wet soil; therefore, they were not considered mountain plover habitat (Figure 5.2). Mountain plover have not been documented in the HDEPA (BLM 1993; WNDD 2001). No mountain plover have been observed in the Simpson

Figure 5.2 Potential Mountain Plover Habitat.

Ridge area, which was monitored for several years as part of a proposed wind power project (Western EcoSystems Technology, Inc. 2000).

Mountain plover surveys were conducted in suitable habitat in the proposed exploration area only during the weeks of May 4, May 28, and June 11, 2001, in accordance with USFWS guidelines (USFWS 2001). No mountain plover sightings were reported within the proposed drilling area. No mountain plover surveys were completed within the pipeline corridor in 2001. All potential habitat on federal land within the HDEPA slated for 2001 construction has been surveyed in 2001. All potential habitat slated for disturbance in future years would be surveyed prior to disturbance unless otherwise directed by the BLM.

5.6.2 Potential Effects

Since the exact locations of well pads, associated facilities, and the interconnect pipeline are not yet known, it is not possible to assess the amount of potential mountain plover habitat that would be lost, although it would likely be minimal given the small amount of potential habitat in the HDEPA. The loss of mountain plover breeding and foraging habitat due to proposed project activities may adversely affect individuals, if they utilize these potential habitats, through habitat loss and displacement from directly affected and adjacent areas; however, the proposed project is unlikely to result in a take of individuals in 2001 since project construction would occur between July 11 and April 9 outside the breeding and nesting period. With the implementation of project-wide mitigation measures (Section 4.0), no adverse effects are anticipated in future years. Given the apparent lack of mountain plover use within the proposed drilling area and the HDEPA as a whole, the limited and scattered nature of ground disturbance, and the reclamation of habitats to conditions suitable for plover breeding and nesting, the proposed project is unlikely to cause the long-term displacement of plovers from disturbed breeding and nesting areas. (If the mountain plover is listed, critical habitat will be designated by the USFWS which may affect reclamation requirements in suitable habitat.)

Cumulative impacts to the local mountain plover population as a result of the proposed project are unknown. Although disturbance due to ranching, oil and gas development, coal mining, and transportation has removed an unknown portion of potential mountain plover breeding and nesting habitat, the lack of or very limited utilization of potential habitat and the relatively small disturbance acreage and short-term nature of the disturbance make it unlikely that the proposed project, in combination with these actions, would jeopardize plover reproduction.

5.6.3 Mitigation Measures

Year 2001 drilling and related facilities construction would occur between July 11 and April 9 (i.e., outside the mountain plover breeding and nesting season). Williams surveys for mountain plover on the HDEPA, if required by the BLM and USFWS and unless otherwise directed by the USFWS, would occur prior to any disturbance scheduled to occur during the breeding and nesting season. Plover surveys would be completed along the pipeline route (once it is finalized) using the USFWS protocol for linear disturbances (USFWS 2001) prior to construction. Williams would reclaim mountain plover habitat by using seed mixtures that contain low-growing native species. If reclamation activities are planned between April 10 and July 10, surveys for mountain plovers would be implemented pursuant to USFWS protocol prior to disturbance.

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