3.0 AFFECTED ENVIRONMENT

This chapter provides a description of the CGIDP area for those resources addressed in this EA. Additional detailed descriptive information can be found in the Cave Gulch EIS (BLM 1997a). It also summarizes information presented in the Cave Gulch EIS, updates the available information where appropriate, and adds information on the 1,920-acre (three-section) addition to the southwest portion of the CGIDP area.

3.1 LOCATION, SETTING, AND HISTORICAL USE

The CGIDP area is located in northwestern Natrona County in central Wyoming approximately 40 mi west of Casper and 43 mi east of Shoshoni (see Figure 1.1). U.S. Highway 20-26 crosses the southern portion of the CGIDP area, and County Roads 104 and 212 intersect U.S. Highway 20-26 and generally run north/south through the CGIDP area. A Burlington Northern and Sante Fe Railway Company (BNSF) railroad line runs through the northeast corner of the CGIDP area. Approximately 65% of the topography is gently rolling hills dissected by small ephemeral drainage channels. The remaining 35%--located between County Road 104 and the BNSF railroad line--consists of steeply sloping hills and badland areas. Elevations range from 5,840 to 6,400 ft above mean sea level.

The CGIDP area is in the Missouri River drainage basin and straddles the divide between the headwater tributaries of the Powder River (the eastern portion of the area) and the Big Horn River (the western portion of the CGIDP area) (Blackstone 1988). The area lies along the western edge of the Casper Arch, south of the Big Horn Mountains, north of the Granite Mountains, and between the Wind River Basin and Powder River Basin physiographic provinces (Knight 1994).

Climate is typical of high deserts in the intermountain west (Knight 1994). Record high and low temperatures at the Powder River weather station (approximately 7 mi east of the CGIDP area) are 103ºF and -42ºF, respectively, with an average of approximately 33 days/year above 90ºF. Winter nighttime temperatures fall to 0ºF or below about 26 nights/year on average, and approximately 195 days/year have minimum temperatures at or below 32ºF. An average of 100 frost-free days/year occurs in the western portion of Natrona County. Average annual precipitation is approximately 12 inches, and the prevailing winds are from the southwest with an average annual wind speed of approximately 13 mph (Martner 1986; Curtis and Grimes 2004).

Historically, the CGIDP area has been used for oil and gas development, livestock grazing, wildlife habitat, and recreational hunting. It also provides rotation or year-round grazing for cattle; however, stocking rates are low primarily due to sparse vegetation (Soil Conservation Service 1988; BLM 1997a). Based on a survey of the Cave Gulch EIS area in December 2003, oil and gas-related activity has resulted in approximately 905 acres of surface disturbance, including 219 acres of LOP disturbance (see Table 2.2).

3.2 CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT

Critical elements of the human environment as defined by the BLM (1988, 1999), their status in the CGIDP area, and their potential to be affected by the Proposed Action are presented in Table 3.1. BLM resource specialists have determined that six of the 14 critical elements of the human environment are not present in the CGIDP area or are not affected by the Proposed Action, and they are not discussed further in this EA. Eight critical elements (air quality; cultural resources; invasive species; Native American religious concerns; threatened and endangered species; wastes [hazardous and solid]; water quality; and wetlands/riparian areas) are present, may be affected by the Proposed Action, and are analyzed in detail in this EA.

Based on comments received during the public scoping period that ended on June 7, 2004, as well as additional information concerning the CGIDP area, BLM resource specialists determined that this EA should also analyze potential impacts to the following resources: geology, geologic hazards, and minerals; soils; vegetation; wildlife; BLM-sensitive species; land use, including livestock grazing and recreation; socioeconomics; health, safety, and transportation; and visual resources.

3.3 PHYSICAL RESOURCES

3.3.1 Air Quality

The following information concerning air quality in the CGIDP area was taken from Section 3.3 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Information has been updated where appropriate.

Table 3.1 Critical Elements of the Human Environment.[1]

Element	Status	Analyzed in Detail in This EA
Air quality	Potentially affected	Yes
Areas of critical environmental concern	Not present	No
Cultural resources	Potentially affected	Yes
Environmental justice related issues	Not present	No
Farmlands (prime or unique)	Not present	No
Floodplains	Not present	No
Invasive, nonnative species (noxious weeds)	Potentially affected	Yes
Native American religious concerns	Potentially affected	Yes
Threatened and endangered species	Potentially affected	Yes
Wastes (hazardous and solid)	Potentially affected	Yes
Water quality	Potentially affected	Yes
Wetlands/riparian areas	Potentially affected	Yes
Wild and scenic rivers	Not present	No
Wilderness (wilderness study areas and wilderness areas)	Not present	No

[1] From the BLM NEPA Handbook H-1790-1 (BLM 1988, 1999).

Ambient air quality data is not available for the CGIDP area; however, air quality is assumed to be in attainment for all Wyoming Ambient Air Quality Standards (WAAQS) and National Ambient Air Quality Standards (NAAQS). The only air quality emissions within the CGIDP area are those associated with the natural gas development and production facilities described in the Cave Gulch EIS. The WAAQS and NAAQS set upper limits for concentrations of specific air pollutants at all locations where the public has access (Table 3.2) (Wyoming Department of Environmental Quality, Air Quality Division [WDEQ/AQD] 2000a:8). Air quality in the 1,920-acre addition to the southwest portion of the CGIDP area is similar to that described in the Cave Gulch EIS.

3.3.2 Geology, Geologic Hazards, and Minerals

The following information concerning geology, geologic hazards, and minerals in the CGIDP area was taken from Section 3.1 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Information regarding geology and geologic hazards in the 1,920-acre addition has been added.

Table 3.2 Selected National and Wyoming Air Quality Standards.

Air Pollutant	Averaging Time Period	NAAQS ($\mu g/m^3$)[1]	WAAQS ($\mu g/m^3$)[2]	Incremental Increase Above Legal Baseline	
				PSD Class I	PSD Class II
Particulate matter <10 microns in diameter (PM_{10})	24-hour	150	150	8	30
	AAM[3]	50	50	4	17
Particulate matter <2.5 microns in diameter ($PM_{2.5}$)	24-hour	65	65	ns[4]	ns
	AAM	15	15	ns	ns
Ozone	1-hour	235	235	ns	ns
	8-hour	157	na[5]	ns	ns
Nitrogen dioxide (NO_2)	AAM	100	100	2.5	25
Sulfur dioxide (SO_2)	3-hour	1,300[6]	1,300	25	512
	24-hour	365	260	5	91
	AAM	80	60	2	20
Carbon monoxide (CO)	1-hour	40,000	40,000	ns	ns
	8-hour	10,000	10,000	ns	ns

1 NAAQS = National Ambient Air Quality Standards (adapted from 40 C.F.R. 50.5-50.12). Primary standard unless otherwise noted. National Primary Standards establish the level of air quality necessary to protect public health from any known or anticipated effects of a pollutant, allowing a margin of safety to protect sensitive members of the population.
2 WAAQS = Wyoming Ambient Air Quality Standard (adapted from WDEQ/AQD [2000b]).
3 AAM = annual arithmetic mean.
4 ns = no standard.
5 na = not applicable.
6 Secondary standard. National Secondary Standards establish the level of air quality to protect the public welfare by preventing injury to agricultural crops and livestock deterioration of materials and property and adverse impacts to the environment.

3.3.2.1 Geology and Geologic Hazards

The CGIDP area is located along the western edge of the Casper Arch and adjacent to the eastern edge of the Wind River Basin of Wyoming. The Wind River Basin is characterized by large intermontane structural basins bounded by mountain uplifts that have Precambrian rocks at their core. Subsequent erosion removed many of these mountains, and sediments filled the adjacent basins. These sedimentary deposits are exposed at the surface in the CGIDP area (Knight 1994) and are dominated by residuum mixed with alluvium, slope wash, and bedrock outcrops. No major geologic hazards (landslides, subsidence, or active faults) have been identified, and seismic activity is moderately low. No earthquakes have originated in the CGIDP area (BLM 1997a). Geology/geologic hazards in the three-section area are similar to that found in the rest of the CGIDP area.

3.3.2.2 Minerals

Leaseable Minerals. Natural gas, oil, and coal are the only leaseable minerals that occur in the CGIDP area (BLM 1997a). Natural gas and oil are the primary economic mineral resources within the CGIDP area and vicinity and occur in the Tertiary Wind River and Fort Union Formations and the Cretaceous Lance/Meeteetse, Frontier, Muddy, and Cloverly formations. There have been four oil and gas fields developed within the CGIDP area. Two of these fields (Arminto and Lox) were discovered in 1924 and 1921, respectively, and abandoned in 1924 and 1976, respectively. The Bullfrog field was discovered in 1983, and there has been no recorded production. Fewer than 20 wells have been drilled in these three fields combined (WOGCC 2004). The Waltman field was discovered in 1959, and as of May 2004 the field has produced approximately 1.5 million barrels of oil (MBBO) and 411 billion ft^3 of natural gas (BCFG) (WOGCC 2004).

There were approximately 150 oil and natural gas wells within the CGIDP area at the end of 2003, as well as three water injection wells associated with natural gas production. Most of these wells are concentrated in the north-central portion of the CGIDP area (Figure 3.1). At least 90% of the CGIDP area has a high or moderate potential for oil and gas development (Anderson et al. 1990).

Coals within the Wind River Basin, including the CGIDP area, generally do not show the maturation characteristics required for significant coalbed natural gas production. In 1996, the Wind River Basin was estimated to hold 935 trillion cubic feet (TCF) of in-place gas; however, much of this gas was considered technically unrecoverable. Steeply dipping Lance and Meeteetse Formation coal beds in the Waltman area within the Wind River Coal Field may present additional targets for coalbed natural gas development (BLM 2004).

A portion of the CGIDP area overlies the Wind River Coal Field, and coal is found in the Fort Union and Wind River formations; however, there are no active surface or underground coal mines in the CGIDP area or in western Natrona County. The coal is ranked as sub-bituminous, with a heat value of between 7,530 and 8,370 British thermal units [BTU]/pound, and it seldom reaches 3 ft in thickness. This coal has low national importance for the next 20 to 30 years and coal development potential has not been identified in this portion of the Casper Field Office area (BLM 1997a, 2004).

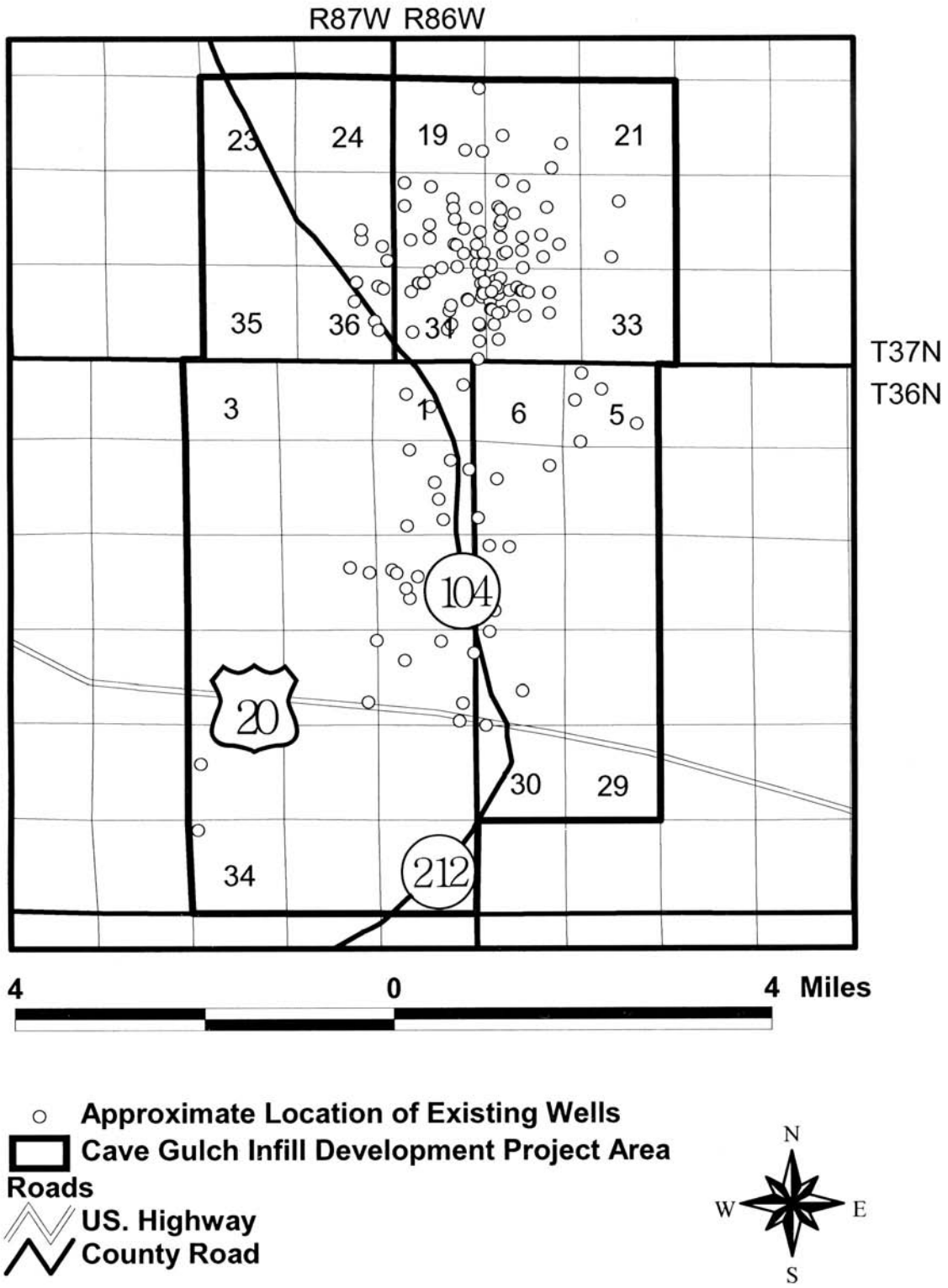

Figure 3.1 Location of Existing Wells Within the CGIDP Area.

Locatable Minerals. There are no active locatable mineral or nonmetallic mineral mines, no economically recoverable deposits, and no leases or claims for locatable minerals within the CGIDP area (BLM 2004).

Salable Minerals. There are no active salable mineral quarries (sand, gravel, granite, etc.) within the CGIDP area; however, several gravel quarries have been developed in the past, and additional reserves are likely present (BLM 2004).

3.3.3 Paleontological Resources

Information concerning paleontological resources was taken from Section 3.1 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Additional information for the 1,920-acre addition has been added.

Numerous important fossil vertebrates have been collected from the Wind River Formation within the CGIDP area, including the remains of fish, crocodiles, turtles, and mammals in the lower portion of the formation. At least eight orders and 14 species of mammals have been identified as a result of limited surveys. Based on a review of the scientific literature and the results of field surveys, there is a high probability that additional fossils of scientific importance could be collected from outcrops of the Wind River Formation in the CGIDP area (Figure 3.2); however, there is a low probability that scientifically important fossils could be collected from the remaining portions of the CGIDP area, including the 1,920-acre addition.

3.3.4 Soil Resources

Information concerning soil resources was taken from Section 3.3 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Additional information for the 1,920-acre addition has been added.

The Natural Resources Conservation Service (NRCS) has prepared an Order III soil survey of Natrona County that includes the entire CGIDP area (NRCS 1997). Soil map units within the CGIDP area are discussed in detail in the Cave Gulch EIS and are incorporated by reference. Soil map units within the additional 1,920-acre area include three soil map units: Hiland, Keyner, and Petrie (NRCS 1997). These

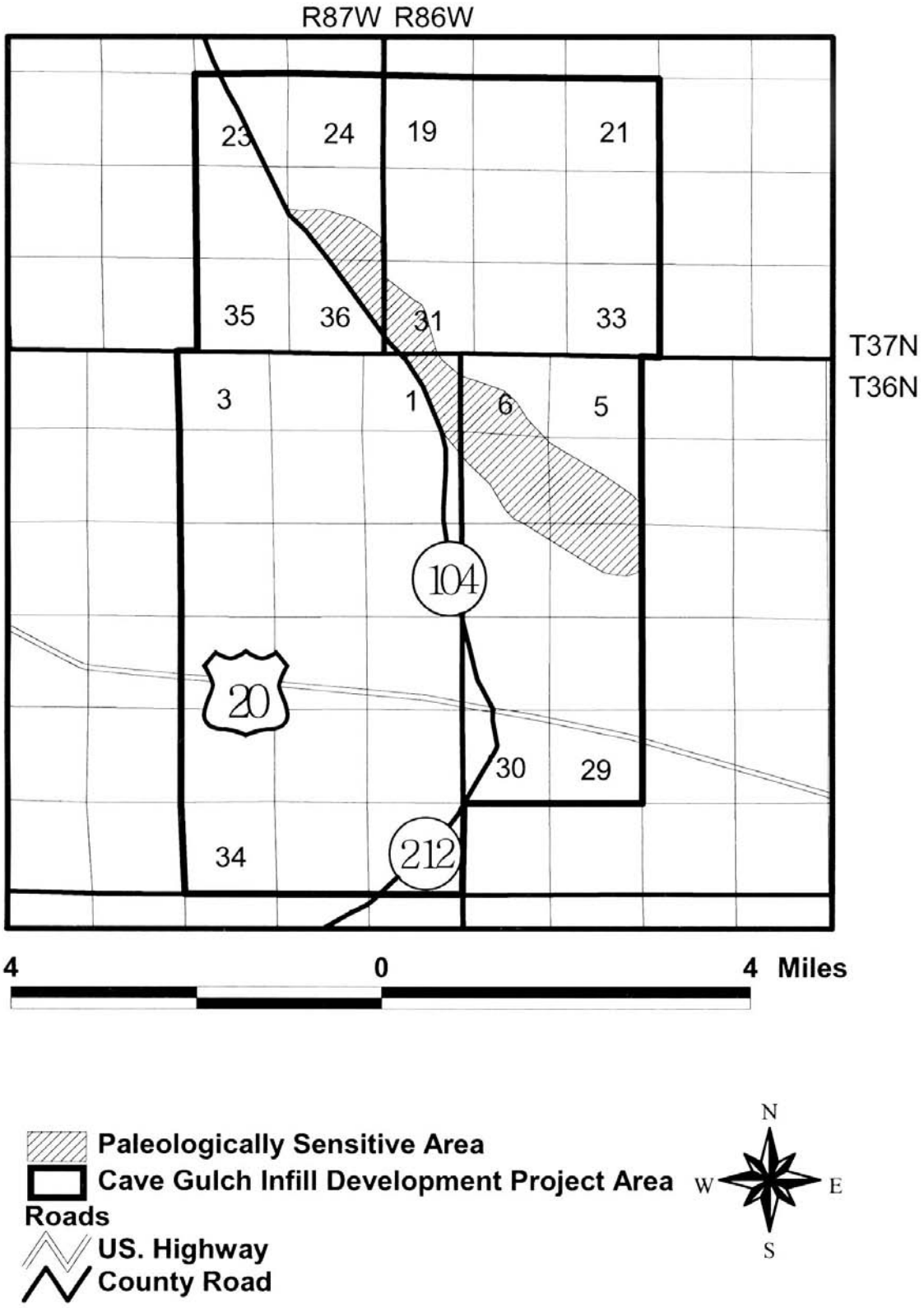

Figure 3.2 Location of Paleontologically Sensitive Area Within the CGIDP Area.

soil map units have been described and included in the Cave Gulch EIS and are incorporated by reference. Depth to bedrock ranges from only a few inches to more than 60 inches. Soil permeability is generally moderate, with some soils having low permeability. No prime farmlands or farmlands of state or local importance occur within the CGIDP area.

Monitoring of disturbed sites in 1999 and 2000 determined that soil conditions were generally stable on most sites. A few sites required additional erosion control measures (Parsons Brinkerhoff 1999; Mullins 2000). Erosion monitoring conducted by BLM in 2003 (the last year for which information is available) determined that 13 of the 15 evaluated sites met erosion control objectives with only minor maintenance required. Two sites were in need of significant remediation work, and the Operators were informed of the situation. The BLM reported that erosion control measures have proven effective in preventing excessive erosion on reclaimed areas and that soil stability was generally good (BLM 2003). The following criteria was used to determine the significance of cumulative impacts to soils in the Cave Gulch EIS (Section 4.3.2 Impact Significance Criteria):

> The proposed project would increase the total cumulative soil disturbance within the project area to more than a total of 10 percent of a given watershed intersected by the project area, and/or the watersheds comprising the CIA area.

Based on the BLM's delineation of disturbance in the Cave Gulch EIS area in December 2003, total disturbance in the nine watersheds within the Cave Gulch EIS area ranged from 0% to 9.6% (average of 3.6%). The three watersheds with surface disturbance of 5% or more were Poison Creek (5.7%), Cave Gulch (9.3%), and Waltman Draw (9.6%).

3.3.5 Water Resources

The following information concerning water resources in the CGIDP area was taken from Section 3.4 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Information has been updated where appropriate, and information for the 1,920-acre addition has been added.

3.3.5.1 Surface Water Resources

The CGIDP area, including the 1,920-acre addition, is located at the headwaters of both the Powder River and the Big Horn River (BLM 1997a). Approximately 80% of the project area is located within the Powder River drainage, with the remaining 20% located within the Big Horn River drainage (Figure 3.3).

Both the Powder River and Big Horn River are tributaries of the Yellowstone and Missouri Rivers to the north, with confluences located in Montana.

Approximately 82% of the total linear drainage in the CGIDP area exhibits ephemeral flows--the drainage only carries water in response to a direct precipitation event or snowmelt. The remaining 18% of the drainage channels exhibit intermittent flow, characterized by a nearly continuous flow due to surface runoff and shallow ground-water flows. Some shallow ground water flows are likely sustained by seepage from approximately 27 small impoundments that have been created by diking or damming ephemeral channels. Water levels in these impoundments are not permanent and depend on runoff events. As a result of the continued drought in Wyoming, most of these impoundments do not hold water on a year-round basis.

No surface water quality data are available from the CGIDP area (Wyoming Water Research Data System 2004); however, water quality is expected to be highly variable depending on the nature and intensity of the runoff event and the characteristics of the affected soils. A comparison of water quality from the general area to Wyoming Department of Environmental Quality/Water Quality Division (WDEQ/WQD) water class standards (WDEQ/WQD 2001) indicates that surface water quality would typically meet Class III criteria (livestock class of use) (USGS 2004). All of the drainage channels within the CGIDP area have been designated as having Class 4 surface water quality as defined by the WDEQ/WQD. The Class 4 designation means that these waters cannot support fish (WDEQ/WQD 2001). None of the drainage channels or reservoirs are included in the WDEQ/WQD 2000 303(d) list of water bodies with water quality impairments.

3.3.5.2 Ground Water Resources

Ground-water resources within the CGIDP area include deep and shallow aquifers, as well as confined and unconfined aquifers. Transmissivities and hydraulic conductivities have not been estimated but are likely consistent with values found in other Fort Union and Wind River Formation materials (BLM 1997a). There are no known seeps or springs within the CGIDP area. According to Wyoming State Engineer's Office records, approximately 32 water wells have been drilled in the CGIDP area. One well is 1,250 ft deep; however, most are less than a few hundred feet deep. Static water levels range from 10 to 336 ft below the surface and the wells produce 5 to 35 gallons per minute. Water from these wells has been used for livestock watering, monitoring, irrigation, and domestic purposes (Wyoming State Engineer's Office 2004).

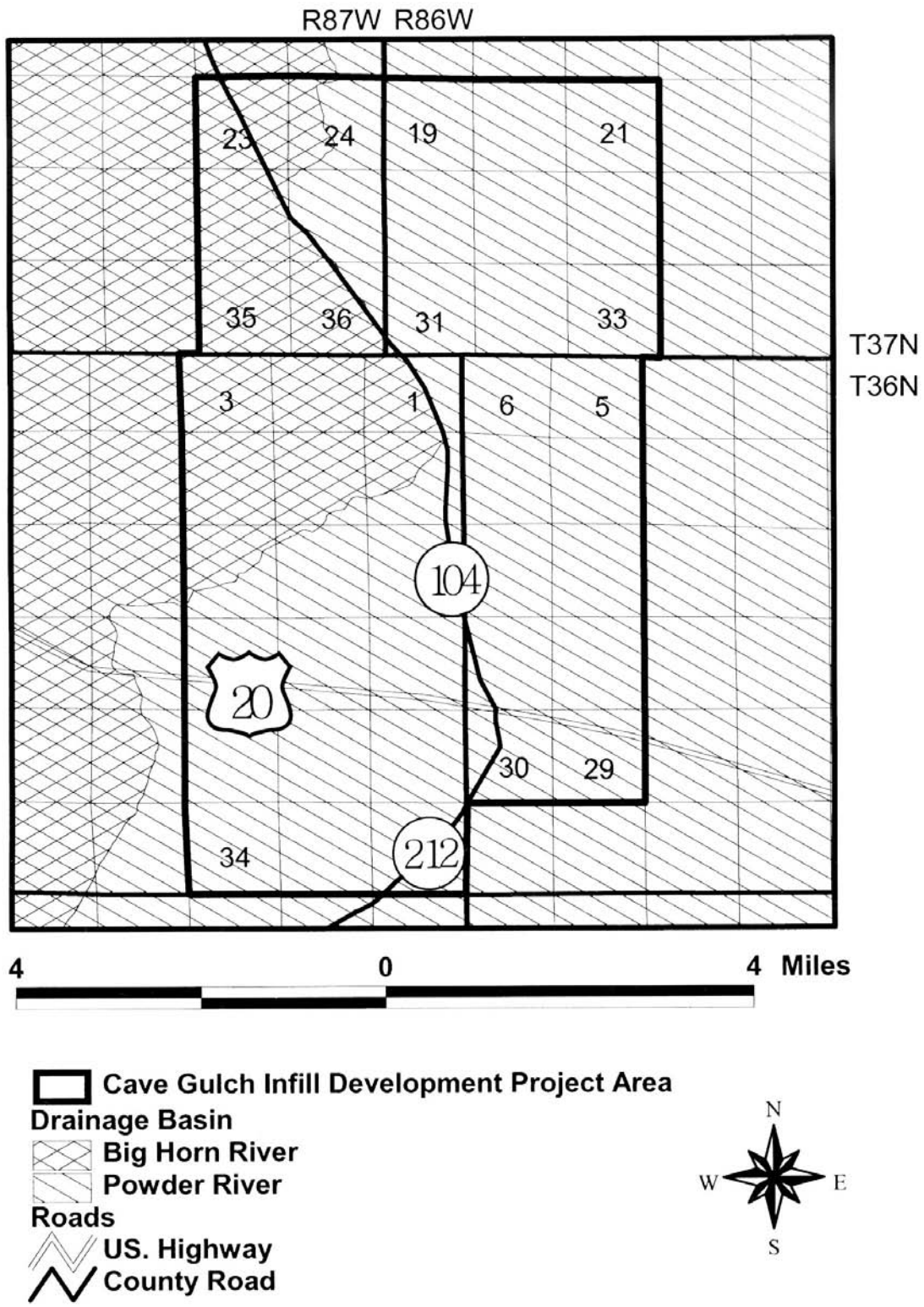

Figure 3.3 Location of Major Drainage Basins Within the CGIDP Area.

There are no site-specific ground water quality data for the CGIDP area. However, groundwater quality is likely highly variable and is related to the depth of the aquifer and the geologic formation (U.S. Geological Service [USGS] 2004).

3.3.5.3 Wetlands Resources

The following information concerning wetlands in the CGIDP area was taken from Section 3.5 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Information has been updated where appropriate, and information for the 1,920-acre addition has been added.

No formal jurisdictional wetland delineations have been conducted in the CGIDP area. However, National Wetland Inventory (NWI) maps produced by the U.S. Fish and Wildlife Service (USFWS) show potential wetlands along numerous drainage channels and reservoirs. The NWI maps indicate that there are less than 300 acres (approximately 1.1% of the CGIDP area) of potential wetlands in the CGIDP area (BLM 1997a).

3.4 BIOLOGICAL RESOURCES

3.4.1 Vegetation (including Invasive Non-native Species)

The following information concerning vegetation in the CGIDP area was taken from Section 3.5 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Information has been updated where appropriate, and information for the 1,920-acre addition has been added.

The CGIDP area includes primarily three vegetation types: 1) mixed desert scrub, 2) badlands, and 3) alkali bottomlands. Approximately 87% of the CGIDP area is composed of mixed desert scrub associated with the rolling hills located throughout most of the CGIDP area. Approximately 12% of the overall project area is composed of badland vegetation type associated primarily with steep slopes and badland areas located in an area generally east of Natrona County Road 104 and south/southwest of the BNSF railroad tracks. The alkali bottomlands vegetation type covers approximately 1% of the CGIDP area in scattered bottomlands and saline depressions. Most of the vegetation within the 1,920-acre project addition is mixed desert scrub with small areas of alkali bottomlands.

No comprehensive site-specific surveys have been conducted to determine the presence of noxious or invasive non-native species within the CGIDP area; however, Canadian thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), cheatgrass (*Bromus tectorum*), Russian knapweed (*Acroptilon repens*), and halogeton (*Halogeton glomeratus*) have been documented on previously disturbed areas within the CGIDP area (BLM 2003). It is also possible that Japanese brome, hoary cress, and saltcedar occur.

3.4.2 Wildlife Resources

The following information concerning wildlife resources in the CGIDP area was taken from Section 3.7 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Information has been updated where appropriate, and information for the 1,920-acre addition has been added.

3.4.2.1 Big Game

Pronghorn antelope and mule deer are the two big game species found in the CGIDP area, including the 1,920-acre project addition.

Pronghorn Antelope. Although pronghorn antelope are not abundant in the CGIDP area, but portions of four herd units do occur--Beaver Rim (632), Badwater (634), Rattlesnake (745), and North Natrona (746). Less than 1.5% of the total area of any herd unit is included in the CGIDP area, and approximately 0.5% of the combined acreage of the four herd units is included. The entire CGIDP area is either yearlong or winter/yearlong range, and no crucial winter range occurs. The closest crucial winter or crucial winter/yearlong range is approximately 0.5 mi to the northwest. At the end of 2003, the North Natrona herd unit had a population 11% above the Wyoming Game and Fish Department (WGFD) population objective, whereas the three other herd units (Beaver Rim, Badwater, and Rattlesnake) had populations that were below WGFD population objectives (-9%, -6%, and -6%, respectively). Drought continues to be one of the primary factors depressing pronghorn antelope populations (WGFD 2004).

Mule Deer. Mule deer are not abundant in the CGIDP area. Portions of four herd units occur there--Southwest Bighorns (208), Beaver Rim (648), Rattlesnake (758), and North Natrona (759). Less than 1.5% of the total area of any herd unit is included in the CGIDP area, and approximately 0.6% of the combined acreage of the four herd units is included. Approximately 50% of the CGIDP area is either yearlong or winter/yearlong range and the remaining 50% of the project area is designated as “out” (areas that do not contain enough animals or important habitat for the species). No crucial winter range occurs

in the CGIDP area--the closest crucial winter or crucial winter/yearlong range is approximately 5 mi to the north. At the end of 2003, two of the herd units (Rattlesnake and North Natrona) had populations below WGFD population objectives (-35% and -48%, respectively). The Southwest Bighorns and Beaver Rim herd units are not addressed because they do not provide any useable habitat in the CGIDP area. Drought continues to be one of the primary factors depressing mule deer populations (WGFD 2004).

3.4.2.2 Other Mammals

Other mammal species known to occur or to potentially occur in the CGIDP area include coyote, badger, deer mouse, least chipmunk, Wyoming ground squirrel, white-tailed jackrabbit, and desert cottontail (WGFD 1999; BLM 1997a). Prairie dog colonies may exist in the extreme northern portion of CGIDP area; however, to date no mapping has been completed. There are no prairie dog colonies within the CGIDP area south of the BNSF railroad.

3.4.2.3 Raptors

Section 3.7.2.3 of the draft Cave Gulch EIS (BLM 1997a) contains a comprehensive discussion of raptors and historic raptor nesting activity within the Cave Gulch EIS area and the Greater Cave Gulch Raptor Analysis Area (GRAA).

Appendix B of the Cave Gulch ROD--the Raptor Management and Monitoring Plan--called for the following monitoring to be conducted.

- Monitoring of raptor nesting activity in the Cave Gulch EIS area and the GRAA. (The GRAA is a 273-mi^2 area surrounding the Cave Gulch EIS area.) These surveys were completed from 1996 through 1998 by private consultants. BLM contracted with WGFD to monitor the GRAA in 1999; however, the survey was less intensive than the 1996-1998 surveys.

- Annual monitoring of the 14 artificial nesting structures (ANS) mandated in Section 2.2.1 of Appendix B of the Cave Gulch ROD. The Operators were responsible for monitoring the ANS sites from 1998 through 2000, with BLM assuming monitoring responsibilities subsequent to 2000. Monitoring by private consultants occurred in 1998, 1999, and 2004.

- Annual prey-base surveys conducted by the Operators during September from 1997 through 2000. Surveys were completed in 1997 and 1998.

- Reports were to be submitted to BLM by December 1 of each survey year documenting the results of monitoring and survey activities. Reports were submitted for the monitoring conducted by private contractors.

- Following completion of the surveys in 2000, the BLM in coordination with the USFWS and the WGFD were to evaluate the effectiveness of raptor mitigation, with the evaluation completed no later than June 1, 2001. This evaluation was never performed by BLM.

As indicated above, compliance with raptor monitoring in the GRAA has been somewhat sporadic since issuance of the Cave Gulch ROD. Nest monitoring and prey-base surveys were conducted through the years 1999 and 1998, respectively. No comprehensive inventories were conducted in 1999 and 2000. BLM contracted with the WGFD for fixed-wing aircraft raptor nesting inventories throughout the CFO area for 2001 and 2002. However, these aerial inventories involved flying linear transects spaced at 0.5-mi intervals and did not specifically target raptor nests previously identified within either the Cave Gulch EIS area or the GRAA. No comprehensive written report was provided to BLM documenting the results of these inventories as they pertained to raptor nesting activity in the Cave Gulch EIS area or the GRAA specifically.

Comprehensive inventories of nesting activity within the Cave Gulch EIS area, but not the GRAA, were conducted in 2003 and 2004. Raptor nesting activity was not observed in the Cave Gulch EIS area in 2003, and in 2004 one nest was occupied by a pair of golden eagles; however, nesting success was not determined.

In accordance with the mitigation contained in Appendix B of the Cave Gulch ROD, the Cave Gulch EIS Operators installed 14 ANSs in areas east-northeast of the Cave Gulch EIS area prior to the 1998 breeding/nesting season. Monitoring determined that one ANS was occupied by a pair of ferruginous hawks in 1998, and three chicks were produced. In 1999, two ANSs were occupied by ferruginous hawks. Nesting activity at these ANS sites was not monitored again until 2004, at which time five of the 14 ANSs were active, as follows.

- One ANS (ANS #7) was occupied by a pair of ferruginous hawks and produced at least one chick.

- One ANS (ANS #15) was occupied by a pair of golden eagles and two chicks were observed in the nest.
- One ANS (ANS #18) was occupied by a pair of ferruginous hawks and three chicks observed in the nest.
- One ANS (ANS #39) was occupied by pair of ferruginous hawks and produced at least one chick.
- One ANS (ANS #43) was occupied by pair of ferruginous hawks and produced at least one chick.

3.4.2.4 Upland Game Birds

Mourning dove and greater sage-grouse are the only upland game birds that occur in the CGIDP area, including the three-section addition. Greater sage-grouse is a BLM-sensitive species and background information is presented in Section 3.4.3.3 of this EA. Mourning doves are found in the CGIDP area during the summer months in sagebrush-grass, mountain brush, and riparian habitats.

3.4.2.5 Migratory and Non-Migratory Birds

Bird species distribution as reported in *The Atlas of Birds, Mammals, Reptiles and Amphibians in Wyoming* (WGFD 1999) includes a compilation of observations mapped by latitude and longitude, with Wyoming divided into 28 regions. These regions are based upon a one degree separation of both latitude and longitude. The CGIDP falls with Wyoming Distribution Areas (latilongs) 11 and 18 as defined by WGFD (1999). Avian distribution data for the Partners in Flight (PIF) priority species potentially occurring within the CGIDP is included in Table 3.3. Only those birds that have been classified by WGFD (1999) as confirmed breeders (nest and/or young observed), with circumstantial evidence of breeding (nest and/or young not located), or that have been observed at any time (season) within the general area (but without any evidence of breeding) are included in the list.

Most of the birds listed in Table 3.3 typically nest either on the ground or in shrubs; therefore, activities associated with the Proposed Action have the potential to destroy individual nests, eggs, and/or young of some of these species. Projected losses are indeterminate as there are no Breeding Bird Survey (BBS) routes located within the immediate vicinity of the CGIDP to provide information on breeding bird densities.

Concerns regarding the decline of both migratory and non-migratory bird populations both locally and on a continental scale have resulted in a nationwide bird conservation planning effort. Management goals and objectives for bird conservation are found in the Land Bird Strategic Plan, Presidential *Executive Order* (EO) 13186 dated January 17, 2001, and the Proposed Memorandum of Understanding associated with the above Presidential EO. Bird Conservation Plans prepared at the state and regional levels also include objectives for bird conservation. As evidenced by EO 13186, there has been national direction to implement actions that incorporate these goals.

3.4.2.6 Amphibians, Reptiles, and Fish

No site-specific surveys have been conducted for amphibians, reptiles, or fish, and based on range and habitat preference relatively few amphibians or reptiles likely occur in the CGIDP area. However, according to the WGFD, it is possible that tiger salamander, northern leopard frog, boreal chorus frog, northern sagebrush lizard, great short-horned lizards, bull snake, intermountain wandering garter snake, and prairie rattlesnake may be found in suitable habitats in the CGIDP area (WGFD 1999). Due to the lack of permanent water bodies or perennial streams, the CGIDP area is not likely to support any fish populations (WGFD 1999; BLM 1997a).

3.4.3 Threatened, Endangered, Proposed, and Candidate Species and BLM-Sensitive Species

The following information concerning threatened, endangered, proposed, and candidate (TEPC) species and BLM-sensitive species was taken from Section 3.7 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Information has been updated where appropriate, and information for the 1,920-acre addition has been added.

The *Endangered Species Act* (16 U.S.C. 1531-1543) protects listed threatened and endangered plant and animal species and their critical habitats. A list of TEPC species that potentially occur in the CGIDP area was provided by the Wyoming State Office of the USFWS (2004a) (Table 3.4). Endangered species are in danger of extinction throughout all or a significant portion of their range. Threatened species are likely to become endangered in the foreseeable future throughout all or a significant portion of their range. Proposed species are those for which the USFWS has published proposed rules in the *Federal Register* for listing of the species, but for which a final rule has not been adopted. No candidate species occur in the area.

Table 3.3 List of Partners In Flight (PIF) Priority Bird Species Potentially Found Within the CGIDP Area.[1]

Common Name	Scientific Name	Habitat Type [2]	WGFD Distribution [3]	
			Area 11	Area 18
Level I Species (Conservation Action)				
Ferruginous Hawk	*Buteo regalis*	SS/SGP	B	B
Greater Sage Grouse	*Centrocercus urophasianus*	SS	B	B
Mountain Plover	*Charadrius montanus*	SS/SGP	B	B
Upland Sandpiper	*Bartramia longicauda*	SGP	N	B
Long-billed Curlew	*Numenius Americana*	SGP	O	B
Burrowing Owl	*Athene cunnicularia*	SGP	O	B
Short-eared Owl	*Asio flammeus*	SGP	O	O
Baird's Sparrow	*Ammodramus bairdii*	SGP	O	N
Brewer's Sparrow	*Spizella breweri*	SS	O	B
Sage Sparrow	*Amphispiza belli*	SS	O	B
McCown's Longspur	*Calcarius mccownii*	SS/SGP	B	B
Level II Species (Monitoring)				
Black-chinned Hummingbird	*Archilochus alexandri*	SS	O	N
Loggerhead Shrike	*Lanius ludovicianus*	SS	B	B
Sage Thrasher	*Oreoscoptes montanus*	SS	B	B
Vesper Sparrow	*Pooecetes gramineus*	SS	B	B
Lark Sparrow	*Chondestes grammacus*	SS	B	B
Lark Bunting	*Calamospiza melanocorys*	SGP	B	B
Grasshopper Sparrow	*Ammodramus savannarum*	SGP	N	O
Dickcissel	*Spiza Americana*	SGP	N	O
Bobolink	*Dolichonyx oryzivorus*	SGP	O	O
Level III Species (Local Interest)				
Common Poorwill	*Phalaenoptilus nuttallii*	SS	B	B
Say's Phoebe	*Sayornis saya*	SS	B	B

1 Source: Wyoming Bird Conservation Plan, Version 2.0 (Nicholoff 2003).
2 SS = Shrub-steppe habitat.
SGP = Shortgrass prairie.
3 B = Nest or young dependent upon parent birds observed.
B = Circumstantial evidence of breeding.
O = Species has been observed, but there was no evidence of nesting.
N = Species has not been observed in the area.

3.4.3.1 Federally Listed Animal and Plant Species

Federally listed species identified by the USFWS that may occur in the vicinity of the CGIDP area include the endangered black-footed ferret, the threatened bald eagle, and the threatened Ute ladies'-tresses, as well as five species found downstream in the North Platte River drainage that could be affected by water depletions (USFWS 2004a) (Table 3.4). A 2003 decision by the USFWS determined that the mountain plover does not warrant protection under the *Endangered Species Act*, and the USFWS recently issued a similar decision on greater sage-grouse and elected not to list the species. Therefore, neither of these species is protected under the *Endangered Species Act.*

In addition to the TEPC species identified by the USFWS, additional TEPC species have been identified by BLM that could potentially occur within the general area including Preble's meadow jumping mouse, Colorado butterfly plant, and blowout penstemon.

Black-footed Ferret (*Mustela nigripes*). The black-footed ferret, an endangered species, was once distributed throughout the high plains of the Rocky Mountain and western Great Plains regions (Clark and Stromberg 1987; Forrest et al. 1985). Prairie dogs are the main food of black-footed ferrets (Sheets et al. 1972), and historically a few black-footed ferrets have been collected away from prairie dog towns (Forrest et al. 1985). The nearest black-footed ferret reintroduction area is located approximately 70 mi southeast of the CGIDP area in the Shirley Basin Black-footed Ferret Reintroduction Area, Carbon County, Wyoming.

The *Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act* (USFWS 1989) defines potential black-footed ferret habitat as any white-tailed prairie dog town or complex greater than 200 acres. As indicated in Section 3.4.2.2, limited numbers of prairie dogs are known to occur in the CGIDP area north of the BNSF railroad; however, these prairie dog towns have not been delineated (BLM 1997a). Although potential black-footed ferret habitat may occur within the CGIDP area, it is located outside any area requiring black-footed ferret surveys (USFWS 2004b). In addition, no recent black-footed ferret observations have been recorded in the vicinity of the CGIDP area (Wyoming Natural Diversity Database [WNDD] 2004); therefore, it is unlikely that any black-footed ferrets would occur in the CGIDP area, and the species is not discussed further in this EA.

Table 3.4 Federally Listed Threatened, Endangered, Proposed, and Candidate Species and Their Potential Occurrence Within the CGIDP Area, 2003.

Common Name	Scientific Name	Federal Status [1]	Potential Occurrence Within the CGIDP Area [2]
Mammals			
Black-footed ferret	*Mustela nigripes*	E	X
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	T	X
Birds			
Bald eagle[3]	*Haliaeetus leucocephalus*	T	O
Interior least tern [4]	*Sterna antillarum*	E	X
Piping plover [4]	*Charadrium melodus*	T	X
Eskimo curlew [4]	*Numenius borealis*	E	X
Fish			
Pallid sturgeon [4]	*Scaphirhynchus albus*	E	X
Plants			
Blowout penstemon	*Penstemon haydenii*	E	X
Colorado butterfly plant	*Gaura neomexicana* [5]	T	X
Ute ladies'-tresses	*Spiranthes diluvialis*	T	X
Western prairie fringed orchid [4]	*Platanthera praeclara*	T	X

[1] Federal status:
E = listed as federally endangered.
T = listed as federally threatened.

[2] Species occurrence:
O = occasional; this species may occur in the CGIDP Area during specific times of the year and may be locally common when suitable food is available; generally not present for extended periods.
X = unlikely; there has been no recent historical record of the species' occurrence in the CGIDP Area; probability of encountering the species during the Proposed Action is very unlikely.

[3] Proposed for removal from federal listing.

[4] North Platte River Species.

[5] Subspecies *coloradensis*.

Bald Eagle *(Haliaeetus leucocephalus)*. The bald eagle is a threatened species (down-listed from endangered and now proposed for removal from federal listing) that requires cliffs, large trees, or sheltered canyons associated with a concentrated food source (fish or waterfowl concentration areas) for nesting and/or roosting areas. Bald eagles forage over wide areas during the non-nesting season (fall and winter) and scavenge on animal carcasses such as pronghorn, deer, elk, sheep, and cattle (Edwards 1969; Snow 1973; Call 1978; Steenhof 1978; Peterson 1986).

No bald eagle nests or winter roosts are known to occur within the CGIDP area, and the lack of suitable nesting or winter roosting habitat likely precludes such use. The BLM has designated the Jackson Canyon area on the west end of Casper Mountain as an area of critical environmental concern (ACEC) to

protect concentrated bald eagle winter roosting activity therein. The Jackson Canyon ACEC is directly adjacent to the North Platte River and is located approximately 40 mi southeast of the CGIDP area. Survey flights during the early 1980s suggested that more bald eagles were foraging in rangelands than along the rivers and other large water bodies. In this regard, open rangelands throughout east-central Wyoming are probably being used opportunistically by bald eagles for foraging; however, no bald eagles have been observed in the CGIDP area in conjunction with BLM or BLM-approved inventories within the project area.

The BLM has also designated two winter roost areas on Pine Mountain--approximately 13 mi east-southeast of the CGIDP area--and numerous bald eagle concentration areas are located immediately adjacent to the North Platte River approximately 20 mi southeast of Pine Mountain and approximately 40 mi southeast of the CGIDP area. Bald eagles historically were drawn to the Pine Mountain winter roost area because domestic sheep were grazed on the mountain and winter-killed sheep were available for food. The private landowner who currently owns portions of Pine Mountain reported that bald eagles regularly used Pine Mountain as a winter roost when sheep were grazed on the mountain; however, few bald eagles are seen in the area since winter sheep grazing was discontinued (personal communication, February 27, 2004, with John Wing, Pine Mountain landowner).

The WNDD provided no records of bald eagles in the vicinity of the CGIDP area (WNDD 2004).

Ute ladies'-tresses *(Spiranthes diluvialis)*. Ute ladies'-tresses, a threatened species, is a perennial orchid that inhabits moist streambanks, wet meadows, and abandoned stream channels at elevations of 1,780 to 6,800 ft (Fertig 2000; Spackman et al. 1997). Where Ute ladies'-tresses occurs in ephemeral drainages, groundwater is typically shallow (within approximately 18 inches of the ground surface) (personal communication, March 16, 2000, with Pat Deibert, USFWS, Cheyenne, Wyoming; personal communication, March 22, 2000, with Walt Fertig, WNDD, Laramie, Wyoming). The plant has been found locally in the North Platte River drainage below Alcova Reservoir and in Cheyenne and Niobrara River drainages in southeastern Wyoming.

Four occurrences of the species have been recorded in Wyoming, with all discoveries made between 1993 and 1997. The closest recorded occurrence of Ute ladies'-tresses to the CGIDP area is in northwestern Converse County approximately 60 mi to the east, and there have been no occurrences recorded in the CGIDP area or anywhere else in Natrona County (Fertig 2000; WNDD 2004). Because the CGIDP does

not occur within the drainages of the North Platte, Cheyenne, or Niobrara rivers, the Proposed Action would not affect Ute ladies'-tresses, and the species is not discussed further in this EA.

Preble's meadow jumping mouse *(Zapus hudsonius preblei)*. Preble's meadow jumping mouse, a threatened species, is a potential resident in riparian habitats east of the Laramie Mountains and south of the North Platte River drainages. There are no perennial or intermittent streams with associated riparian habitats within the CGIDP area, and the project area is not within the area of expected occurrence for the Preble's meadow jumping mouse. Therefore, the species is not discussed further in this EA.

Colorado butterfly plant *(Gaura neomexicana* spp. *coloradensis)*. This threatened plant species is a potential resident on subirrigated alluvial soils on level or slightly sloping floodplains and drainage bottoms at elevations of 5,000 to 6,400 ft. Colonies are often found in low depressions or along bends in wide meandering stream channels. Known populations of this species are restricted to approximately 1,700 acres of habitat in Laramie County, Wyoming, western Kimball County, Nebraska, and Weld County, Colorado, within the drainages of both the North and South Platte rivers. There are no perennial or intermittent streams with associated subirrigated alluvial soils or floodplains within the CGIDP. Furthermore, because the CGIDP is not located within the North Platte River drainage--the expected area of occurrence--impacts to the Colorado butterfly plant are not expected to occur, and the species is not discussed further in this EA.

Blowout penstemon *(Penstemon haydenii)*. This endangered plant is a potential resident in "blowouts"--sparsely vegetated depressions in active sand dunes created by wind erosion that typically form on windward sandy slopes where the vegetation has been removed or disturbed. The only known populations of blowout penstemon in Wyoming are found at the eastern end of the Ferris sand dune system at the head of Schoolhouse Creek and the west side of Bradley Peak in Carbon County (BLM 2003). There are no active sand dunes within the CGIDP, and this species is not expected to occur within the project area. As a consequence, this species is not discussed further in this EA.

North Platte River Species. In addition to the species listed above, the USFWS also identified five TEPC species that may occur in the downstream riverine habitats of the North Platte River in Nebraska. These species include the endangered interior least tern *(Sterna antillarum)*, the threatened piping plover *(Charadrium melodus)*, the endangered pallid sturgeon *(Scaphirhynchus albus)*, the endangered Eskimo curlew *(Numenius borealis)*, and the threatened Western prairie fringed orchid *(Platanthera praeclara)*. These species could be adversely affected by surface water depletions (consumption) in the North Platte

River system resulting from project-related activities. However, the CGIDP area is not located within the North Platte River drainage, and no surface water depletions to the North Platte River system would occur as a result of the CGIDP; therefore, these species are not discussed further in this EA.

3.4.3.2 BLM-Sensitive Animal and Plant Species

BLM-sensitive species are those species that may warrant future designation as proposed species but for which available data are not currently sufficient for USFWS to make such a decision. Based on habitat preference and geographic location, numerous BLM-sensitive species are known to occur or potentially occur within the CGIDP area (Table 3.5). BLM-sensitive animal and plant species potentially occurring in or in the vicinity of the CGIDP area include spotted bat, Townsend's big-eared bat, white-tailed prairie dog, swift fox, ferruginous hawk, greater sage-grouse, burrowing owl, loggerhead shrike, sage thrasher, northern leopard frog, mystery wormwood, and Nelson's milkvetch (WNDD 2004). There may be some overlap of avian species between Table 3.3 and Table 3.5.

Greater Sage-grouse. There are five historic greater sage-grouse (*Centrocercus urophasianus*) leks known to exist within the general area:

- Broad Mesa 1: SE¼NW¼ of Section 16, T35N, R86W;
- Broad Mesa 2: NE¼NE¼ of Section 18, T35N, R86W;
- Notches 1: NE¼NW¼ of Section 17, T37N, R85W;
- Notches 3: SE¼NE¼ of Section 12, T37N, R86W; and
- Jackpot: NW¼NW¼ of Section 26, T38N, R87W.

Strutting activity at the Broad Mesa lek complex is unknown for nine of the past 10 years. The Broad Mesa 1 lek has not been inventoried for activity since 1994. The Broad Mesa 2 lek was discovered in 2000, was active that year, and apparently has not been inventoried since its initial discovery. The Notches lek complex has been active since 2001. The Jackpot lek was active in 1998-1999 and again in 2001-2003. None of the above leks are within 3 mi of the CGIDP area, and there are no other known greater sage-grouse leks within 3 mi of the CGIDP area; however, there is some evidence (droppings) that greater sage-grouse may occasionally utilize some portions of the CGIDP area (BLM 1997a). Potential greater sage-grouse nesting and early brood-rearing habitat (based upon observations of shrub height and densities) is known to exist within portions of the overall CGIDP area including areas south of U.S. Highway 20-26, west of Natrona County Road 104, and north of the BNSF railroad ROW. Portions of

Table 3.5 Wyoming BLM-sensitive Species and Habitat Preference, 2004.

Species			
Common Name	Scientific Name	Habitat	Likely to occur in the CGIDP area[1]
Mammals			
Long-eared Myotis	*Myotis evotis*	Conifer and deciduous forests, caves and mines	N
Fringed Myotis	*Myotis thysanodes*	Conifer forests, woodland-chaparral, caves and mine	N
Spotted Bat	*Euderma maculatum*	Cliffs over perennial water, basin-prairie shrub	Y
Townsend's Big-eared Bat	*Corynorhinus townsendii*	Forests, basin-prairie shrub, caves and mines	Y
Pygmy Rabbit	*Brachylagus idahoensis*	Basin-prairie and riparian shrub	Y
White-tailed Prairie Dog	*Cynomys leucurus*	Basin-prairie shrub, grasslands	N
Wyoming Pocket Gopher	*Thomomys clusius*	Meadows with loose soil	N
Idaho Pocket Gopher	*Thomomys idahoensis*	Shallow stony soils	N
Swift Fox	*Vulpes velox*	Grasslands	Y
Birds			
White-faced Ibis	*Plegadis chihi*	Marshes, wet meadows	N
Trumpeter Swan	*Cygnus buccinator*	Lakes, ponds, rivers	N
Northern Goshawk	*Accipter gentilis*	Conifer and deciduous forests	N
Ferruginous Hawk	*Buteo regalis*	Basin-prairie shrub, grassland, rock outcrops	Y
Greater Sage-grouse	*Centrocercus urophasianus*	Basin-prairie shrub, mountain-foothill shrub	Y
Long-billed Curlew	*Numenius americanus*	Grasslands, plains, foothills, wet meadows	N
Yellow-billed Cuckoo	*Coccyzus americanus*	Open woodlands, streamside willow and alder groves	N
Burrowing Owl	*Athene cunicularia*	Grasslands, basin-prairie shrub	Y
Sage Thrasher	*Oreoscoptes montanus*	Basin-prairie shrub, mountain-foothill shrub	Y
Loggerhead Shrike	*Lanius ludovicianus*	Basin-prairie shrub, mountain-foothill shrub	Y
Brewer's Sparrow	*Spizella breweri*	Basin-prairie shrub	N
Mountain Plover	*Charadrius montanus*	Shortgrass, great basin-foothills grassland, and sagebrush-grasslands	Y
Fish			
Roundtail Chub	*Gila robusta*	Colorado River drainage, mostly large rivers, also streams and lakes	N
Leatherside Chub	*Gila copei*	Bear, Snake and Green drainages, clear, cool streams and pools	N
Bluehead Sucker	*Catostomus discobolus*	Bear, Snake and Green drainages, all waters	N
Flannelmouth Sucker	*Catostomus latipinnis*	Colorado River drainage, large rivers, streams and lakes	N
Colorado River Cutthroat Trout	*Oncorhynchus clarki pleuriticus*	Colorado River drainage, clear mountain streams	N
Reptiles			
Midget Faded Rattlesnake	*Crotalus viridis concolor*	Mountain foothills shrub, rock outcrop	N

Table 3.5 (Continued).

Species		Habitat	Likely to occur in the CGIDP area[1]
Common Name	Scientific Name		
Amphibians			
Boreal (Northern Rocky Mountain population) Toad	*Bufo boreas boreas*	Pond margins, wet meadows, riparian areas	N
Spotted Frog	*Ranus pretiosa (lutieventris)*	Ponds, sloughs, small streams	N
Plants			
Meadow Pussytoes	*Antennaria arcuata*	Moist, hummocky meadows, seeps or springs surrounded by sage/grasslands 4,950-7,900 ft	N
Small Rock Cress	*Arabis pusilla*	Cracks/Crevices in sparsely vegetated granite/pegmatite outcrops w/in sage/grasslands 8,000-8,100 ft	N
Mystery Wormwood	*Artemisia biennis* var. *diffusa*	Clay flats and playas 6,500 ft	Y
Nelson's Milkvetch	*Astragalus nelsonianus* -or- *Astragalus pectinatus*var. *platyphyllus*	Alkaline clay flats, shale bluffs and gullies, pebbly slopes, and volcanic cinders in sparsely vegetated sagebrush, juniper, and cushion plant communities at 5,200-7,600 ft	Y
Precocious Milkvetch	*Astragalus proimanthus*	Cushion plant communities on rocky, clay soils mixed with shale on summits and slopes of white shale hills 6,800-7,200 ft	N
Cedar Rim Thistle	*Cirsium aridum*	Barren, chalky hills, gravelly slopes, and fine textured, sandy-shaley draws 6,700-7,200 ft	N
Ownbey's Thistle	*Cirsium ownbeyi*	Sparsely vegetated shaley slopes in sage and juniper communities 6,440-8,400 ft	N
Wyoming Tansymustard	*Descurainia torulosa*	Sparsely vegetated sandy slopes at base of cliffs of volcanic breccia or sandstone 8,300-10,000 ft	N
Large-fruited Bladderpod	*Lesquerella macrocarpa*	Gypsum-clay hills and benches, clay flats, and barren hills 7,200-7,700 ft	N
Stemless Beardtongue	*Penstemon acaulis* var. *acaulis*	Cushion plant or Black sage grassland communities on semi-barren rocky ridges, knolls, and slopes at 5,900-8,200 ft	N
Beaver Rim Phlox	*Phlox pungens*	Sparsely vegetated slopes on sandstone, siltstone, or limestone substrates 6,000-7,400 ft	N
Tufted Twinpod	*Physaria condensata*	Sparsely vegetated shale slopes and ridges 6,500-7,000 ft	N
Green River Greenthread	*Thelesperma caespitosum*	White shale slopes and ridges of Green River Formation 6,300 ft	N
Uinta Greenthread	*Thelesperma pubescens*	Sparsely vegetated benches and ridges on coarse, cobbly soils of Bishop Conglomerate 8,200-8,900 ft	N
Cedar Mountain Easter Daisy	*Townsendia microcephala*	Rocky slopes of Bishop Conglomerate 8,500 ft	N

[1] Y = likely to occur in or in the vicinity of the CGIDP area based on habitat and WNDD data (2004).
N = not likely to occur in or in the vicinity of the CGIDP area based on habitat and WNDD data (2004).

the CGIDP area south of the core area (Sections 29-32, T36N, R86W) and east of Natrona County Road 104 may also contain pockets of suitable nesting habitat for greater sage grouse.

Mountain Plover. Mountain plover inhabit the high dry short-grass plains east of the Rocky Mountains (Dinsmore 1983), as well as the sagebrush grasslands throughout Wyoming (WGFD 1999), and are documented to breed throughout Wyoming, especially in prairie dog colonies (WGFD 1999). Potential mountain plover habitat has been identified in the northeast corner of the CGIDP area (portions of Sections 19-21, T37N, R86N) and mountain plover observations have been documented in the Ralston Flats area north of the CGIDP area in 1997 (BLM 1997a) and again in 2003 and 2004. Successful mountain plover breeding and nesting activity was documented in Section 27, T36N, R87W, in 2004.

Ferruginous Hawk. Approximately 46 ferruginous hawk nests are widely distributed throughout the CGIDP area. Approximately 60% of the nest sites are found in the badlands in the northeastern portion of the area, whereas the remaining 40% are located in the open rolling plains. Monitoring conducted for 5 years between 1994 and 1998 documented that 11 (24%) of the 46 nest sites were active at some time, and one of these nest sites was documented as producing young in 1997 and 1998. The surveys determined that no more than one or two of these nests were ever active in any particular year (Hayden-Wing Associates 1998). A comprehensive examination of the history of raptor nesting within the original Cave Gulch EIS project area suggests that the status of raptor nests varies from year to year depending on prey availability and other factors (BLM 1997a).

3.5 HUMAN RESOURCES

3.5.1 Cultural Resources

The following information concerning cultural resources in the CGIDP area was taken from Section 3.10 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Cultural resource information has been updated where appropriate, and information for the 1,920-acre addition has been added.

Cultural resources are the nonrenewable physical remains of past human activity and are protected under Section 106 of the *National Historic Preservation Act of 1966*, as amended (16 U.S.C. §470 et seq) and the *Archaeological Resources Protection Action of 1979*, as amended (16 U.S.C. §470aa et seq). Archaeological investigations in the Powder River and Wind River basins indicate that human activity has

occurred across the landscape over the past 10,000 years, beginning during the Paleo-Indian period and continuing up to the present (Frison 1991; BLM 1997a).

The CGIDP area has "an exceptionally high site density with a potential for sites to be present in any or all of the topographic contexts in the study area" (BLM 1997a). An undetermined number of these sites may be eligible for nomination to the National Register of Historic Places (NRHP). Wyoming State Historic Preservation Office (SHPO) records indicate that approximately 300 cultural resource projects (block and linear inventories or data recovery projects) have been completed within the CGIDP area (including the three-section addition). The majority of these projects were Class III inventories conducted in association with oil and gas development, various product pipelines, telephone lines/cables, and transmission lines. Forty-nine prehistoric and historic sites have been determined to be potentially eligible for the NRHP, and numerous other unevaluated sites are present. Prehistoric sites include open camp sites, lithic scatters, stone circles, and rock art. Historic sites include historic ranches, homesteads, trash dumps, the Chicago & Northwestern Railroad Grade, the Bridger Trail, and the National Park-to-Park Highway/Yellowstone Highway (Rosenberg 2004) (Figure 3.4).

3.5.2 Native American Religious Concerns

In accordance with the *American Indian Religious Freedom Act* and BLM Manual 8160-1 Handbook (BLM 1979), numerous Native American groups including but not limited to Crow, Shoshone, Comanche, Arapaho, Cheyenne, and Sioux have utilized the CGIDP area. Native American tribes were consulted during the scoping period for this EA. Tribes and/or individuals were sent certified letters requesting their comments concerning any religious or cultural areas within or near the CGIDP area.

Most of the cultural resources previously identified within the CGIDP area do not appear to have significance as Native American sacred sites or to qualify as traditional cultural properties (TCPs). However, six stone circles have been identified that could be Native American sacred sites or TCPs. Only representatives of Native American tribes can determine the significance of Native American sacred sites or TCPs, and to date no such determinations have been made. This may indicate that the tribes may not view these stone circles as sacred sites or are unwilling to identify them as such.

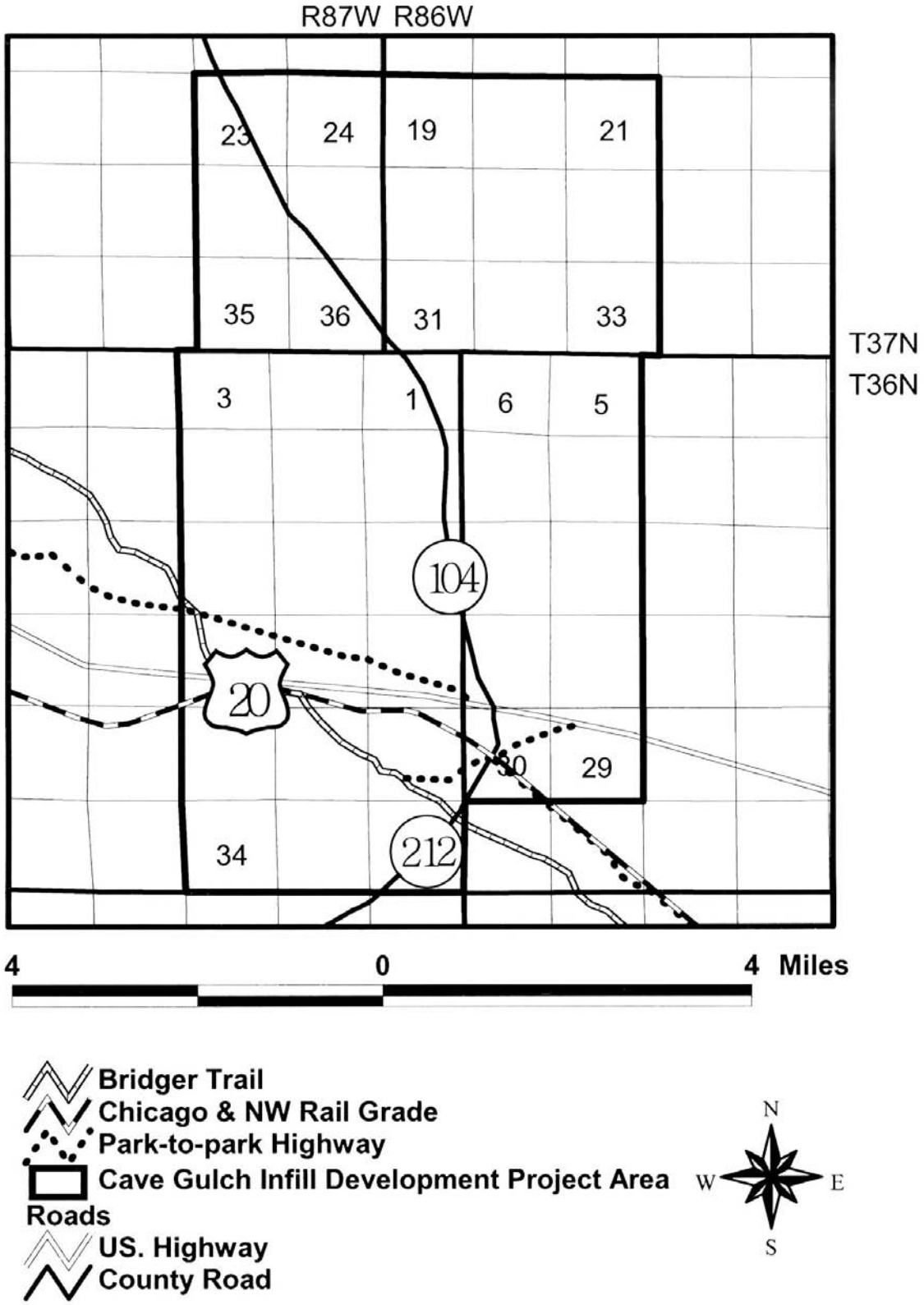

Figure 3.4 Location of Historical Trails, Roads, and Railroad Grades.

3.5.3 Land Use

Information concerning land use was taken from Sections 3.6 and 3.8 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Land use information for the 1,920-acre addition has been added.

3.5.3.1 Landownership and General Use

Approximately 66% of the surface within the CGIDP area is privately owned, approximately 27% is owned by the federal government (administered by BLM), and approximately 7% is owned by the state of Wyoming (see Table 1.1). Approximately 75% of the mineral estate is owned by the federal government (administered by the BLM), approximately 20% is privately owned, and approximately 5% is owned by the State of Wyoming (see Table 1.2). Major land uses within the CGIDP area include oil and gas development, livestock grazing, wildlife habitat, limited recreation, utility corridors (e.g., KN Pony Express pipeline, Western Power Administration Thermopolis-Alcove-Casper 230-kV transmission line, two PacifiCorp 230-kV transmission lines, and numerous distribution power lines), transportation corridors (e.g., U.S. Highway 20-26, County Roads 104 and 212, and the BNSF rail line), and human settlement (the unincorporated community of Waltman).

3.5.3.2 Livestock Grazing

The CGIDP area includes all or portions of seven public grazing allotments, one of which lies entirely within the CGIDP area (Table 3.6). The seven public allotments include approximately 25.2% of the CGIDP area and provide approximately 657 animal unit months (AUMs). Stocking rates range from 8 to 21 acres/AUM. The remaining portions of the CGIDP area are controlled by private landowners using similar stocking rates. Livestock grazing in the 1,920-acre addition is a continuation of the public and private grazing allotments discussed above.

3.5.3.3 Recreation

Recreational opportunities include hunting and scenic touring. No developed recreation sites occur, and the primary recreational use is hunting for antelope, mule deer, greater sage-grouse, and small game such as rabbits. Data on the extent of recreational use of the CGIDP area are not available; however, hunting

Table 3.6 Approximate Acreage and Number of Public AUMs on Grazing Allotments Within the CGIDP Area.

Allotment Number	Lessee(s)	Total Public Acres	Public Acres in Project Area	Percent of Project Area	Total Public AUMs	Public AUMs in Project Area	Acres per AUM
South Cave Gulch (10006)	Flying A Ranch c/o Bob Britain	5,130	4,050	15.0	395	314	13
Powder River Draw (10007)	Norman Preator	2,080	480	1.8	230	58	9
Sand Draw (20512)	Norman Preator	160	160	0.6	18	18	9
Waltman* (10008)	Carlson Ranch	1,280	880	3.2	139	103	9
	Brad Carlson	440	200	0.7	49	22	9
	Flying A Ranch	140	0	0.0	16	16	9
Keg Spring Draw (10029)	Deer Creek Ranch	579	74	0.3	45	4	21
South Hiland (10030)	Deer Creek Ranch	6,127	200	0.7	872	24	9
Miller (10130)	DEM Ranch Ltd Partnership	1,185	785	2.9	138	98	8
Total		17,121	6,829	25.2	1,902	657	

[1] The Waltman Allotment is an "in common" allotment, where each lessee can take their allocated AUMs throughout the allotment, not just on the legal locations assigned to them in the BLM grazing lease.

opportunities are limited because approximately two-thirds of the overall project area is privately owned, and hunters must have permission from the landowner for trespass. Scenic touring occurs on the Wyoming Department of Transportation/BLM-designated South Big Horn/Red Wall Scenic Byway (Byway). The Byway is approximately 100 mi long and departs to the north from U.S. Highway 20-26 on County Road 125 (approximately 34 mi east of the CGIDP area and 13 mi west of Casper) and connects with County Roads 110, 109, and 104 where it rejoins U.S. Highway 20-26 at Waltman. The Byway can be used to access the southern end of the Big Horn Mountains that is located approximately 10 mi north of the CGIDP area. Much of the Byway is not paved, and access with a passenger car would be virtually impossible under wet or snowy conditions. Approximately 7.75 mi of the southern portion of County Road 104 is located within the CGIDP area. Although portions of the road are designated as a Byway, numerous human developments (oil and gas wells, pipelines, access roads, and electric transmission and distribution lines) are visible to the casual observer as they drive north on County Road 104 from Waltman toward Arminto. There are no Wyoming Department of Transportation/BLM-designated byways located within the 1,920-acre addition.

3.5.4 Visual Resources

The following information concerning visual resources was taken from Section 3.9 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Information has been updated where appropriate, and information for the 1,920-acre addition has been added.

The BLM mapped the entire Platte River Resource Area for visual resource management (VRM), including lands under its management in the CGIDP area, with the overall objective of minimizing visual impacts due to human activities (BLM 1985a). The VRM inventory process considers the scenic quality of the landscape, viewer sensitivity, and the distance from the viewer to the landscape, and VRM values are indicated by one of four designations (Table 3.8).

Within the CGIDP area, there is a 6-mi wide VRM Class III corridor along U.S. Highway 20-26 (3 mi on either side of the highway) that includes approximately 15,000 acres (56%) of the CGIDP area (Figure 3.5). The remaining approximately 12,000 acres (44%) is classified as VRM Class IV. All lands within the three-section addition are designated as VRM Class III.

The natural landscape in this 3-mi VRM Class III corridor along either side of U.S. Highway 20-26 has been subjected to some extensive cultural modifications, all of which contribute to the degradation of the scenic values in the southern end of the CGIDP area. These cultural modifications include, but are not limited to, the following facilities visible from both a foreground and/or middle ground perspective:

- aboveground power transmission lines traversing the overall project area and extending to the north across U.S. Highway 20-26 directly to the west of the community of Waltman;
- an existing KN Energy compressor station located in the SE¼NE¼NE¼ of Section 36, T36N, R87W, approximately 1 mi south of the community of Waltman (east side of Natrona County Road 212);
- an existing rural store and extensive junkyard located in the S½SW¼ of Section 19, T36N, R86W, at the community of Waltman (north side of U.S. Highway 20-26);
- ranch outbuildings and commercial facilities including an industrial water well, man camp for the water haulers, and a drilling rig stack yard located approximately 0.5 mi south of the community of Waltman in the NE¼SW¼ of Section 30, T36N, R86W;

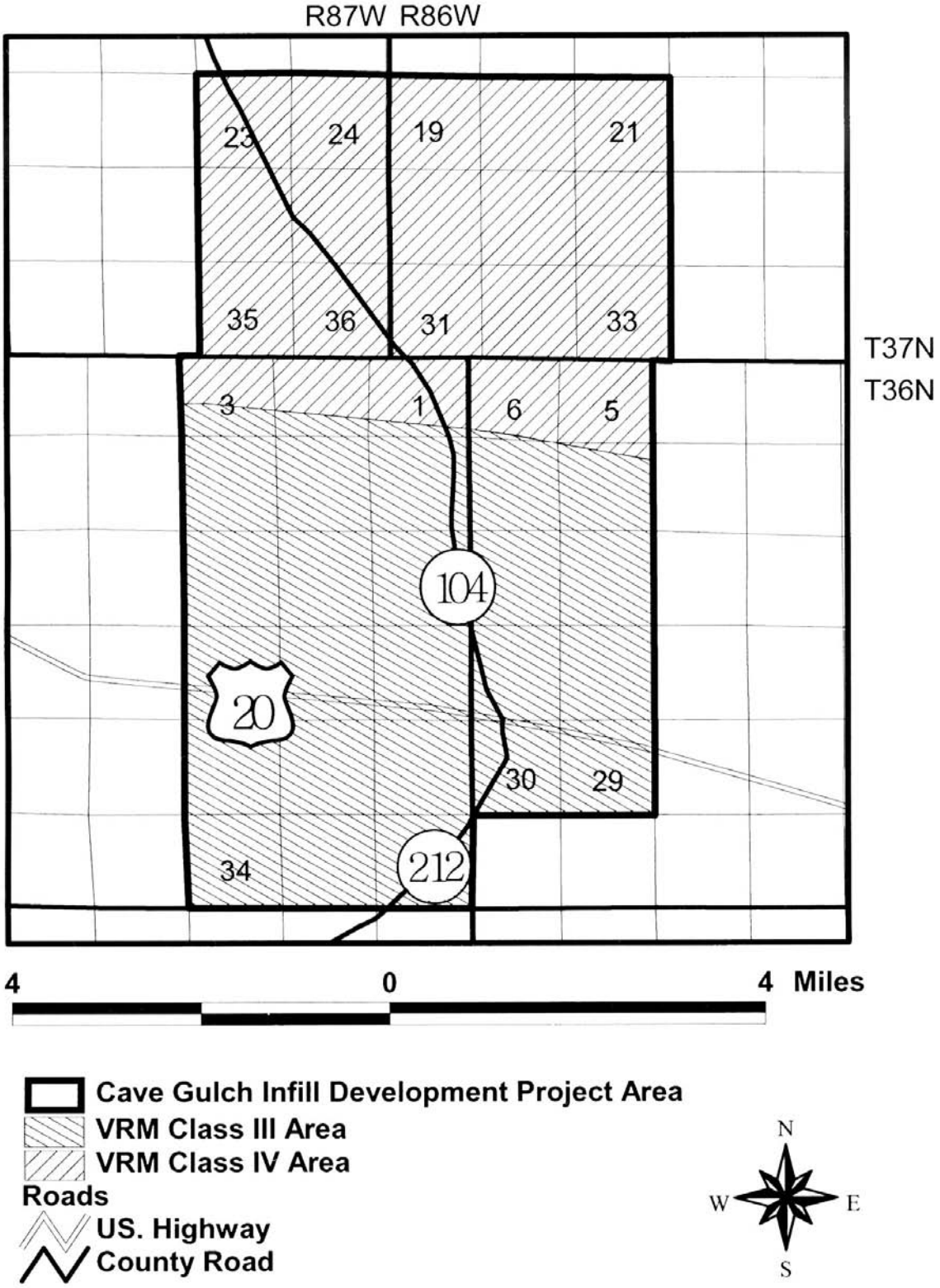

Figure 3.5 Visual Resource Management Classifications in the CGIDP Area.

Table 3.7 BLM Visual Resource Management Class Objectives.[1]

Class	Description
I	Preserve the existing character of the landscape. Although this class provides mainly for natural ecological change, limited development activity may be allowed in some areas, if the level of change to the characteristic landscape is very low and nearly unnoticeable. This class includes primitive (wilderness) areas, some nature areas, wild sections of national wild and scenic rivers, and other congressionally and administratively designated area where decisions have been made to preserve a natural landscape.
II	Retain the existing character of the landscape. Management activities may be seen but should not attract the attention of the casual observer. Change to the characteristic landscape should be low, and change must repeat the basic elements (i.e., form, line, color, texture) found in the predominant natural features of the existing landscape.
III	Partially retain the existing character of the landscape. Moderate changes to the existing landscape are allowed, although management activities associated with these changes should not dominate the view of the casual observer. As in Class II, change should repeat the basic elements of the characteristic landscape.
IV	Provide for management activities that require major modification of the existing character of the landscape. Although management activities may dominate the view and be the major focus of viewer attention, every attempt should be made to minimize the impact of these activities through careful location selection, minimal disturbance, and repetition of the basic elements of the characteristic landscape. The relative change to the characteristic landscape can be high.

[1] Source: BLM (1986).

- an industrial water well with associated water storage tanks, office trailer, and a truck parking/turn around facility located in the NE¼NE¼ of Section 30, T36N, R86W, approximately 0.75 mi east of the community of Waltman (north side of U.S. Highway 20-26);
- approximately nine producing oil/gas well facilities within 1 mi of U.S. Highway 20-26 that are visible from the highway;
- landscape modifications resulting from dryland farming activities being conducted by Powder River Agri-Organics, Inc. to the south of U.S. Highway 20/26 and east of Natrona County Road #212; and
- existing exploration and development activities in the Cooper Reservoir Field to the south of U.S. Highway 20-26.

3.5.5 Socioeconomics

Information concerning socioeconomics was updated from the data presented in Section 3.11 of the Cave Gulch EIS.

Waltman, an unincorporated community, is the only identified community in the CGIDP area, and according to census records no one lives in Waltman (U.S. Department of Commerce [USDOC] 2000).

Based on the 2000 census, Natrona County's population is estimated at 66,533, a 3.1% decrease in population from 1990. Total full-time and part-time employment in Natrona County was 35,081 in 2000 (USDOC 2000). In December 2003, state-wide oil and gas extraction accounted for approximately 3,200 jobs, compared with approximately 30,200 workers employed in retail trade, 65,300 workers employed by government and government enterprises, and 203,100 workers employed in the service industry (Wyoming Department of Employment 2004).

Annual per capita personal income in 2000 in Natrona County was $18,913 (USDOC 2000), and the adjusted unemployment rate in March 2004 was 5.0% (Wyoming Department of Employment 2004). The cost of living index was 97 during the last quarter of 2003, compared to a Wyoming statewide average of 100 (Wyoming Division of Economic Analysis 2004). According to the 2000 census, 8.7% of Natrona County residents lived below the poverty level. There were 3,063 vacant housing units, or 10.3% of all housing units in Natrona County in 2000, compared to the statewide average vacant housing rate of 13.5% (USDOC 2000). In 1999, the average annual direct wage (not including benefits) for workers in the oil and gas extraction industry in Wyoming was approximately $41,887 (Foulke et al. 2001).

There are no multi- or single-family units available for rent or purchase within the CGIDP area, and most of the workforce would likely reside in Casper or Shoshoni, thereby benefiting the local economy and Natrona County.

3.5.6 Health, Safety, and Transportation

Information concerning health, safety, and transportation was taken from Sections 3.12 and 3.13 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Additional information for the 1,920-acre addition has been added.

Current activities and conditions potentially contributing to the health and safety of individuals working or recreating in the CGIDP area include the following:

- occupational hazards associated with oil and gas drilling and field operations,
- risks associated with vehicle operation on improved and unimproved roads,
- potential vehicular collisions with big game or livestock,

- hunting-related firearm-related accidents, and
- natural hazards such as flash floods and range fires.

Transportation systems serving the CGIDP area include U.S. Highway 20-26, Natrona County Roads 104 and 212, numerous unpaved access roads and two-track roads, and the BNSF rail line (Figure 3.6). U.S. Highway 20-26 runs in an east/west direction through the southern quarter of the area. County Road 104 begins at the intersection of U.S. Highway 20-26 and runs north approximately 5.75 mi, where it exits the CGIDP area. County Road 212 also begins at the intersection of U.S. Highway 20-26 and runs south approximately 2.5 mi, where it exits the CGIDP area. Numerous unpaved access roads and two-track roads also occur. Many of these roads support livestock grazing operations; however, most have been constructed within the past several years to support natural gas development. Roads are maintained by the appropriate state or county agencies (e.g., Wyoming Department of Transportation or Natrona County Roads, Bridges, and Parks Department) or private entities. There are approximately 99.7 mi total of all types of roads within the CGIDP area (including the 1,920-acre addition)--an average road density of 2.36 mi of road per mi^2--and approximately 4 mi of BNSF rail line in the northeast portion. There are no rail sidings or rail loading facilities within the CGIDP area.

3.5.7 Wastes (Hazardous and Solid)

The following information concerning hazardous and solid wastes was taken from Section 3.13 of the Cave Gulch EIS, and the reader is referred to that document for additional detail. Information has been updated where appropriate, and information for the 1,920-acre addition has been added.

There are no known hazardous or solid wastes present within the CGIDP area; however, limited quantities of hazardous and solid wastes may be produced. Areas or activities that could possibly produce hazardous or solid waste include the auto salvage yard located near Waltman and on-going natural gas exploration, development, and production areas located throughout the CGIDP area. In accordance with regulations promulgated under the *Resources Conservation and Recovery Act* (RCRA), most wastes associated with exploration, development, and /or production of crude oil or natural gas are not classified as hazardous wastes; rather, they are considered nonhazardous solid waste. However, it is possible that natural gas operators could generate some nonexcluded hazardous wastes that are subject to RCRA regulations. The Operators are designated as small-quantity generators under RCRA regulations (meaning that they generate between 100 to 1,000 kg per month of hazardous waste). All hazardous and

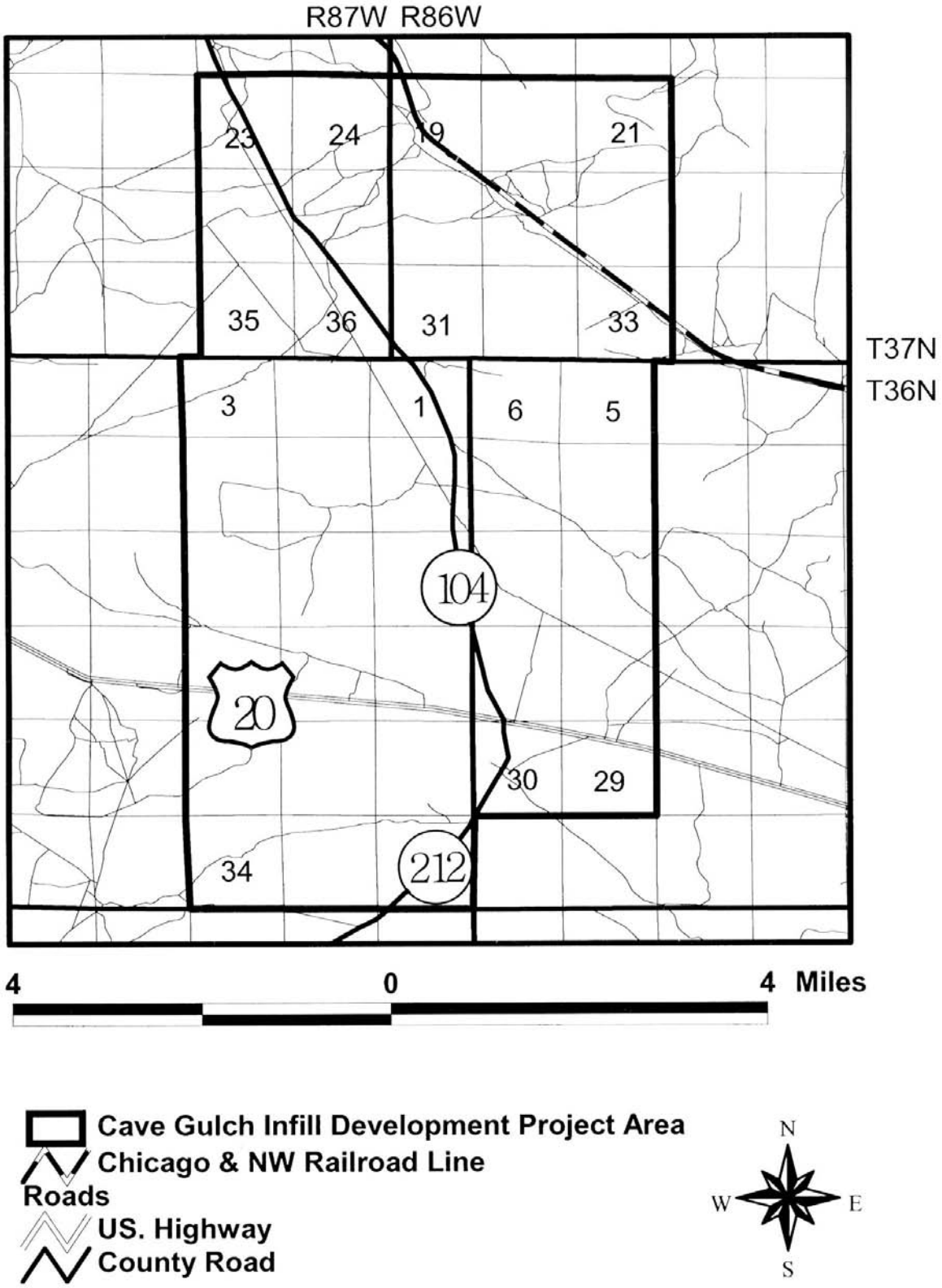

Figure 3.6 Location of Major Transportation Systems Within the CGIDP Area.

solid wastes generated by the oil and gas industry within the CGIDP area are disposed of in accordance with applicable regulations. In addition, there are no known hazardous or solid waste disposal sites within the CGIDP area (Wyoming Department of Environmental Quality, Solid and Hazardous Waste Department [WDEQ/SHWD] 2004).