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Environmental Assessment Seminoe-Kortes Transmission Line/ Substation Consolidation Project, Carbon County, Wyoming

U.S. Department of Energy

DOE/EA-0325

SEMINOE-KORTES TRANSMISSION LINE/SUBSTATION CONSOLIDATION PROJECT

CARBON COUNTY, WYOMING

KORTES DAM AND THE NORTH PLATTE RIVER

ENVIRONMENTAL ASSESSMENT

U.S. DEPARTMENT OF ENERGY

WESTERN AREA POWER ADMINISTRATION

LOVELAND AREA OFFICE
LOVELAND, COLORADO

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SUMMARY

Purpose and Need

The existing switchyards at Western Area Power Administration's (WESTERN) Seminoe and Kortes facilities, located approximately 40 miles northeast of Rawlins, Carbon County, Wyoming, were constructed in 1939 and 1951, respectively. The circuit breakers at these facilities are beyond or approaching their service life and need to be replaced. In addition, the switchyards have poor access for maintenance and replacement of equipment, and their locations create potential for oil spills into the North Platte River. WESTERN is proposing to consolidate the switchyard facilities into one new substation to provide easier access, restore proper levels of system reliability, and decrease the potential for oil contamination of the river. This environmental assessment (EA) was prepared to evaluate the impacts of the proposed Seminoe-Kortes Consolidation Project.

Proposed Action and Alternatives

The proposed action would consolidate the individual switchyard facilities at Seminoe and Kortes dams into one new facility called the Miracle Mile Substation, which would be located on approximately 5 to 10 acres within the area shown in Figure S.1. The area of right-of-way (ROW) (Figure S.1) is provided to facilitate entrance of all transmission lines into the new substation. The project would require removal of several sections of existing transmission line, removal and rebuilding of other lines, and construction of new line along alternative A (Figure S.1). A temporary tieline between WESTERN's Sinclair Substation and Pacific Power and Light Company's Platte Substation, which are located immediately adjacent to each other approximately 30 miles south of the project area, would be necessary to provide uninterrupted power on a portion of the system for approximately two weeks during construction. The proposed project would involve upgrading approximately 10.3 miles of existing access road, development of approximately 1.1 miles of two-track trails, construction of 0.6 miles of graveled road, and use of approximately 11 miles of other unmaintained roads. Helicopter construction techniques will be used at locations not accessible via ground transportation. A passive microwave repeater would be built as part of the microwave switch control. Finally, the old breakers at

Seminoe and Kortes Switchyards would be drained and removed for salvage. Standard and special site-specific mitigation measures would be employed to minimize undesirable effects of the proposed project.

Alternatives to the proposed project include no action, rehabilitation of existing switchyards, consolidation of the station with 115-kV reconfiguration, an alternative substation site, and alternative routes for a portion of the new construction. The no action alternative was rejected because it does not meet the need for improved system reliability nor the elimination of operating and safety hazards. The switchyard rehabilitation alternative was rejected because limited access would continue to be a problem and the oil-filled breakers would remain at their currently undesirable location on the river. The 115-kV reconfiguration and alternative substation site alternatives were rejected due to the additional transmission line crossings of the North Platte River; and the high visual impacts of the alternative substation site. Routing alternative B was rejected due to increased adverse impacts over alternative A. These impacts are primarily associated with the need for additional new access roads, proximity to the North Platte River in the vicinity of the Miracle Mile trout fishery, and crossing of additional steep slopes.

Affected Environment

The climate of the Seminoe-Kortes Consolidation Project area is semiarid continental with an annual mean temperature in the low 40s (F) and significant seasonal variation. Precipitation ranges between 11-14 inches at the lower elevations and 15-19 inches at the higher elevations. Air quality in the project area is good.

The project area is located within the eastern portion of the Sweetwater Uplift, north of Hanna Basin, and west of Shirley Basin. The steep, rugged Seminoe Mountains on the south end of the project area are underlain by granites of Precambrian age. The gently rolling northern portion of the project area is primarily underlain by Tertiary Miocene and Oligocene sedimentary rocks. Surficial deposits of sand, gravel, and cobble alluvium occur along the North Platte River downstream of Kortes Reservoir. There are no significant paleontological resources in the project area; however, site-specific

paleontological investigations have not been conducted. The granites would not contain fossil remains; some isolated fossils have been located in Tertiary sediments similar to those in the northern portion of the area.

Mountain soils occur in the southern portion of the area while the northern portion has various arid, sandy loams of the intermountain basin. Soils in the project area exhibit generally good particle size distribution and have moderate strength. Soils in the mountainous terrain on the southern portion of the project area are more prone to erosion and slumping due to the steeper slopes than are soils in the northern part.

Water resources in the project area include Seminoe Reservoir, Kortes Reservoir, North Platte River, and several small tributary streams. The reservoirs were developed for irrigation, flood control, and power production; Seminoe Reservoir is also used for recreation. Surface water quality is good. The portion of the North Platte River below Kortes Dam is a Class 1 trout stream.

Grasslands and upland sagebrush dominate the northern portion of the area while the southern portion is covered by ponderosa pine and juniper woodlands. Narrowleaf cottonwood, willows, other deciduous shrubs, and grassy meadows occur along bottomlands and streams in the area. Vegetation on the project area is used for livestock grazing and wildlife habitat. No threatened or endangered plant species is known to exist in the area.

Numerous wildlife species, within a variety of habitats, are found in the project area. Primary big game species are bighorn sheep, elk, mule deer, and pronghorn. Crucial winter/yearlong range and lambing areas for bighorn sheep occur in the Seminoe Mountains, crucial winter/yearlong pronghorn range is present in the flatter topography in the northern portion of the area, crucial winter/yearlong mule deer range occurs in the mountains and foothills on both sides of the river, and a small amount of crucial winter/yearlong elk range occurs on the eastern boundary of the area. Mountain lions occur in the rugged terrain in the area.

Three raptor nests, all prairie falcons, have been reported in the area. Several other raptors, including golden eagle, red-tailed hawk, ferruginous hawk,

northern harrier, great horned owl, American kestrel, and turkey vulture, are present periodically in the summer; bald eagles and rough-legged hawks are winter visitors. Cottontails and red squirrels are the small game animals, and upland game birds are sage grouse and blue grouse. No known sage grouse lek occurs in the area. The reservoirs and streams provide habitat for a variety of waterfowl species. Numerous nongame birds, mammals, reptiles, and amphibians that typically occur in the variety of habitats provided in the study area comprise the remainder of the terrestrial vertebrate fauna.

The reservoirs and streams in the Seminoe-Kortes project area contain a variety of fish species, which support a substantial recreational fishery. Seminoe Reservoir provides a diverse and heavily utilized fishery consisting primarily of walleye and rainbow, brown, and cutthroat trout. Kortes Reservoir has a limited fishery of the same species but lower productivity and more restricted public access than Seminoe. The North Platte River downstream from Kortes Dam is known as the Miracle Mile, a blue ribbon trout fishery of national significance. The Miracle Mile is a heavily fished area; harvest consists primarily of rainbow and brown trout throughout the year and walleye during April and May. The smaller perennial tributaries to the North Platte also support fish.

Federally listed endangered species that occur or potentially occur in the Seminoe-Kortes area are the bald eagle, American peregrine falcon, and black-footed ferret. The bald eagle is a winter resident, particularly along the North Platte River. No bald eagle nest has been reported in the area. The closest bald eagle nocturnal roost is approximately eight miles north of the proposed substation site. Bald eagles perch in and near the area while hunting during the daytime. Peregrine falcons are not known to nest in the area; however, they may occasionally pass through during migration and winter periods. Potential black-footed ferret habitat is present in the 337-acre prairie dog colony in the vicinity of the proposed substation. A standard black-footed ferret survey conducted in winter 1988-1989 did not detect any ferret or potential ferret sign in the prairie dog colony.

Floodplains have not been officially designated in the area, probably due to the absence of potential urban development and control of floods by the

Seminoe and Kortes dams. The major floodplain in the Seminoe-Kortes area is associated with the North Platte River; smaller floodplains occur along the tributary streams. Riparian species dominate the floodplain vegetation. Wetlands are associated with the reservoirs, North Platte River, and tributary streams in the study area. The palustrine wetlands along the streams provide valuable wildlife habitat.

Land ownership in the study area is predominantly Federal with small parcels of State and private ownership. The principal land use is open rangeland for livestock grazing and wildlife habitat. Numerous ROWs for existing transmission lines, pipeline, and roads occur in the area. Outdoor recreation is a major use in the area; the Miracle Mile fishery, Seminoe State Park/Seminoe Reservoir, Morgan Creek Big Game Winter Range, and Bennett Mountains Wilderness Study Area are specific recreation and special use areas.

Cultural resource inventories conducted in a portion of the areas potentially affected by the proposed project revealed the presence of four prehistoric sites and seven isolated finds. One of the sites that contained hearths, flaked stone artifacts, debitage, and ground stone has been recommended as eligible to the National Register of Historic Places; the other sites and isolated finds are recommended as not eligible. Cultural resource inventories of the remaining areas to be disturbed will be completed prior to construction.

Population in the region has declined in conjunction with a slowdown in mining, petroleum, and related industries. The economic base of Carbon County has been primarily dependent on minerals and agricultural sectors, and current goals are to diversify the economic base by increasing growth in travel-tourism, manufacturing, and small business.

The canyons and forested ridges of the Seminoe Mountains produce a striking visual contrast with the rolling high desert grasslands to the north and south. Visual Resource Management (VRM) Class ratings for the project area are Class II for the mountains and Class III for the remaining portions. There are numerous man-made changes to the natural environment such as reservoirs, dams, roads, campsites, transmission lines, and substations that are visible in the project area.

Environmental Consequences and Mitigation Measures

Local climatological conditions would not be affected by construction or operation of the proposed project. A small amount of dust and vehicle/equipment exhaust would be present during construction; however, no measurable adverse effects are expected.

The proposed project would not adversely affect the geology of the area. The project crosses geologic formations that pose no particular problems for construction of towers or a substation. No known paleontological resources have been reported in the area; the scattered disturbances associated with tower construction and the relatively small area disturbed at the substation site would have low, if any, adverse impact on paleontological resources.

Project construction could result in physical disturbance to about 174 acres of native soils. WESTERN's standard mitigation practices of water bars, terracing, soil decompaction, scarification, and revegetation would limit potential erosion of soils. Alternative construction measures such as foot access/winching and helicopter techniques would be used as necessary to prevent major adverse impacts on steep slopes. Overall impacts to soils would be low.

Water resources could be adversely impacted due to disturbance of streambeds, additional erosion in runoff from disturbed areas adjacent to the streams, and accidental spills of petroleum products. The streams would be crossed in areas currently crossed by existing lines, and existing crossings would be used wherever possible. Streams are narrow enough to be easily spanned, and no structure would be placed in the streambed or floodplain. Erosion would be minor and of short duration as described above. Refueling would be conducted away from streams to prevent contamination of water. Potential adverse effects of removal of the oil in the old breakers would be offset by long-term beneficial aspects of removing the oil from proximity to the river. Impacts to water resources are expected to be low.

No significant or moderate impacts to vegetation are expected due to the proposed project. A maximum of 174 acres could be temporarily disturbed but would be reseeded after construction except for approximately five acres at the substation site, 1.6 acres at the gravel road, and the area under the footings of the structures. Existing crossings would be used for the North Platte River, and the other riparian habitats would be spanned to minimize disturbance of riparian vegetation. No threatened or endangered plant species occurs in the area, therefore eliminating any potential impact to those plants.

To alleviate potential adverse effects on big game, construction and other major human intrusions in crucial winter/yearlong ranges for several big game species and a crucial lambing area for bighorn sheep would be avoided during sensitive periods unless otherwise approved by the Wyoming Game and Fish Department (WGFD) and U.S. Bureau of Land Management (BLM). Project activities are more than 0.5 mile from known raptor nests so no adverse impacts are expected. If an active raptor nest is discovered within the area potentially impacted by construction, the U.S. Fish and Wildlife Service (USFWS), WGFD, and BLM would be consulted to determine appropriate measures to prevent adverse impact. Project construction would not result in a net increase in transmission lines over the North Platte River, and no additional impact is expected on raptors or waterfowl using the river corridor. The proposed project is not expected to adversely affect endangered species (bald eagle, peregrine falcon, or black-footed ferret) that occur or potentially occur in the area. Project construction would not be conducted during the bald eagle winter use period, and no large cottonwood trees that provide potential perch sites would be removed. Electrocution of raptors is unlikely due to the wide spacing of the conductors, which would prevent simultaneous contact with conductors and grounds. Collisions with rebuilt or new lines are not expected to significantly affect bald eagle or peregrine falcon populations. No black-footed ferret or sign was observed during surveys of the project area.

No adverse impacts to floodplains or wetlands are expected. All wetlands and floodplains would be spanned. Transmission lines along the river would be placed in existing ROWs.

Existing land use as rangeland and wildlife habitat would not be adversely affected by the proposed project. Conflicts with recreational uses are not expected, provided construction traffic is restricted during weekends and holidays during the summer recreation season.

Potential adverse impacts to significant cultural resources can be mitigated through a program of site avoidance, data recovery and site monitoring. Site evaluation and mitigation of potential impacts will be carried out in compliance with the provisions of 36 CFR 800.

The project would have beneficial effects on the local economy during the time that the workers spend wages for goods and services while in the area. No adverse impacts to socioeconomics or community resources are expected due to the relatively short term of the construction phase and readily available supply of facilities to serve workers. No significant impacts to transportation facilities are expected.

The proposed Seminoe-Kortes project would increase visual contrast to a minor to significant degree at specific sites in the project area. Most VRM class objectives would be achievable, however, and the increased contrast would not be considered significant overall.

Use of alternative route B for the Miracle Mile-Cheyenne lines would have more adverse impacts than route A. Route B would cross more steep slopes and big game crucial range; more of it is observable from sensitive viewpoints; and there are requirements for new access roads to the ROW. Overall, Alternative A is the better of the two and is the environmentally preferred as well as WESTERN's proposed route.

Environmental effects of the two-week temporary tieline between the Sinclair and Platte substations would be low and probably unmeasurable. The short distance between the substations, presence of existing facilities, and short duration involved with the temporary tieline limit any and all potential impacts to a low level.

No adverse electrical effects associated with ozone generation, radio and television interference, audible noise, electric and magnetic disturbance, and safety are expected for the Seminoe-Kortes Consolidation Project.

In summary, the construction, operation, and maintenance of the proposed consolidation project would not result in any significant adverse environmental impacts. Implementation of WESTERN's standard mitigation measures and special mitigation for crucial big game ranges, traffic during weekends and holidays during the summer recreation season, and avoiding disturbance of cultural resource sites would result in only low to moderate impacts. No significant unavoidable adverse impacts would occur.

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1.0 PURPOSE AND NEED

1.1 INTRODUCTION

The Western Area Power Administration (WESTERN) is one of five power marketing administrations within the U.S. Department of Energy (DOE) responsible for the transmission and marketing of hydroelectric power from Federal dams in the United States. WESTERN is responsible for the marketing and transmission functions in 15 central and western states.

This environmental assessment (EA) was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 to assess the impacts of consolidating the substation and transmission lines at WESTERN's Seminoe and Kortes facilities, located approximately 40 miles northeast of Rawlins, Wyoming (Figure 1.1). The EA follows the Council on Environmental Quality (CEQ) guidelines for implementing NEPA (40 CFR 150-1508) and DOE final guidelines (amended) for compliance with NEPA (52FR47662, December 15, 1987).

1.2 PURPOSE AND NEED

The existing switchyards at WESTERN's Seminoe and Kortes facilities were constructed in 1939 and 1951, respectively. The power circuit breakers at Seminoe are beyond their expected service life of 40 years and need to be replaced. The circuit breakers at Kortes are approaching the end of their service life. The switchyard at Seminoe is located on the roof of the powerplant building, and the switchyard at Kortes is located on top of Kortes Dam. Both of these locations have poor access for maintaining and replacing switchyard equipment.

Continuing deterioration of equipment and poor access at both locations require new construction to restore proper levels of system reliability. Also, the location of the existing switchyards, which contain oil-filled equipment, creates the potential for oil spills into the North Platte River. WESTERN is proposing to consolidate the switchyard facilities into one new substation, which would provide easier access, increase system reliability, and decrease the potential for oil contamination of the North Platte River.

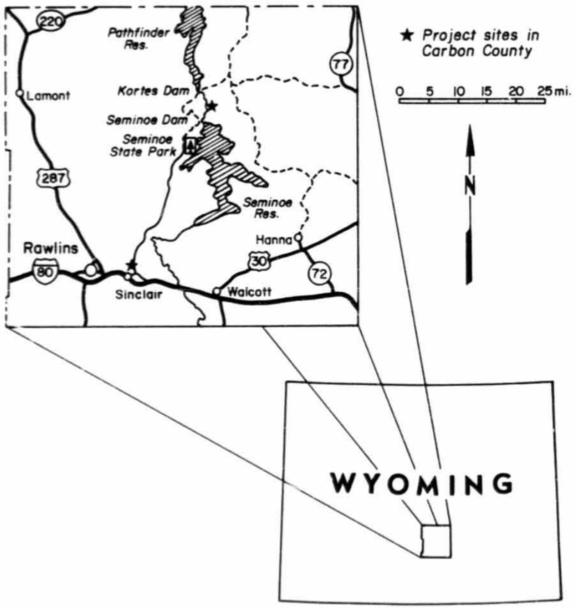

Figure 1.1 Location of Seminoe-Kortes Consolidation Project, Wyoming, 1990.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 DESCRIPTION OF THE PROPOSED ACTION

WESTERN plans to consolidate the switchyard facilities of the Seminoe and Kortes powerplants into one new substation to be called the *Miracle Mile Substation*, which would be located directly in the path of the existing Alcova-Kortes East and West 115-kV lines approximately 1.5 miles east of the North Platte River. Several sections of transmission line would be removed, removed and rebuilt, or newly constructed to provide the consolidation of facilities in the *Miracle Mile Substation*. The various transmission lines would be renamed to reflect their relationship with the new substation. The location of the new substation site and area of increased right-of-way (ROW), affected transmission line segments, access roads, and the new names for each line are shown on Figure 2.1.

The new *Miracle Mile Substation* would be located on approximately 5 to 10 acres near the existing Kortes Tap substation in the SE 1/4 Section 11, T26N, R84W. An area of widened ROW would be located south of the new substation to facilitate entrance of all transmission lines from the south. The general area within which the *Miracle Mile Substation* and widened ROWs would be located is shown on the project area map (Figure 2.1).

A total of 13.8 miles of new line would be built, 14.4 miles would be rebuilt, and 3.3 miles would be removed as described for each segment below.

The *Miracle Mile-Seminoe 115-kV Line* would connect the Seminoe Powerplant to the new substation. This rebuilt line would be comprised of 4.7 miles of the existing Alcova-Kortes 115-kV West Line south of the new substation connected to 2.5 miles of the existing Seminoe-Kortes 115-kV Line at a location west of Kortes Dam. The 0.5 miles of the old Seminoe-Kortes Line between the new connection point and Kortes Switchyard would be removed. A short tap between the Kortes Powerplant and the *Miracle Mile-Seminoe 115-kV Line* would be retained.

Approximately 4.7 miles of the existing Alcova-Kortes East 115-kV Line south of the new substation would be used to connect the Kortes Powerplant to the

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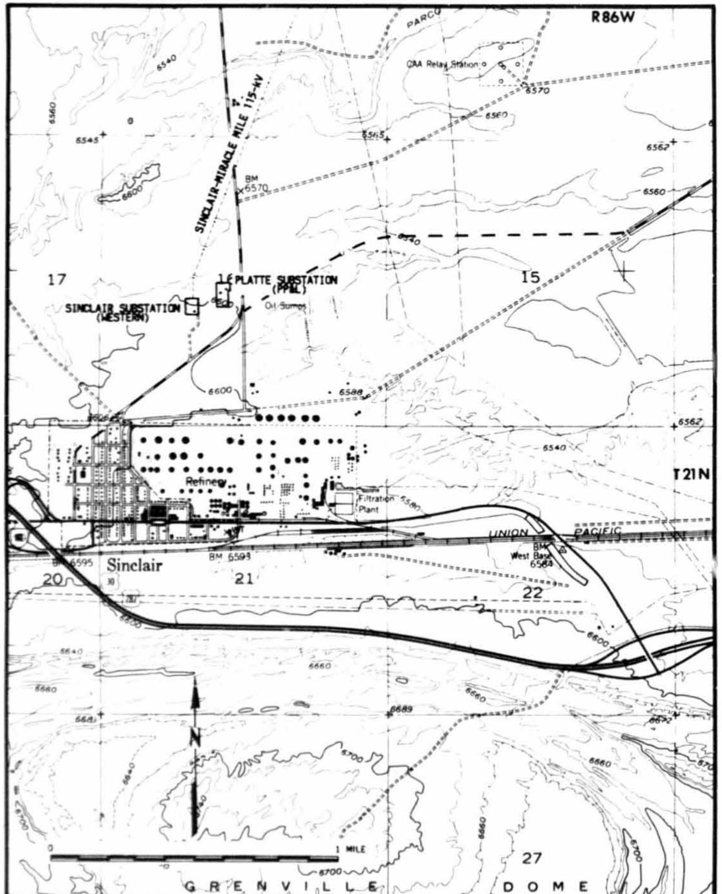
Miracle Mile Substation. This line would be retained as is, but renamed the *Miracle Mile-Kortes 115-kV Line*.

The existing Kortes-Cheyenne 115-kV Line would be rerouted to the new substation and renamed the *Cheyenne-Miracle Mile #1 115-kV Line*. Approximately 1.5 miles of the original line between Kortes Switchyard and the point of departure of the reroute would be removed. Likewise, the existing Seminoe-Cheyenne 115-kV Line would be rerouted to the new substation and renamed the *Cheyenne-Miracle Mile #2 115/230-kV Line*. The portion of the rerouted line to the substation would be built at 230 kV and operated at 115 kV until electrical demand requires upgrading to 230 kV. The 1.3-mile portion of line between the Seminoe Switchyard and point of departure of the reroute would be removed. The *Cheyenne-Miracle Mile #1 and #2* reroutes would be built parallel to each other in a combined ROW along alternative route A east of the North Platte River (Figure 2.1). Another route (alternative B) east of the North Platte River and west of alternative A was also evaluated in detail during preparation of the this EA.

The *Miracle Mile-Sinclair 115-kV Line* would be comprised of 7.2 miles of the existing Seminoe-Casper 69-kV Line south of the *Miracle Mile Substation* and the existing Seminoe-Sinclair 115-kV Line. This would be accomplished by rebuilding 7.2 miles of the Seminoe-Casper 69-kV Line to 115-kV south of the new substation and connecting to the Seminoe-Sinclair 115-kV Line at a location close to Seminoe Dam. The connection from the Seminoe-Sinclair Line to the Seminoe Powerplant would be retained.

During construction of the Seminoe-Kortes Consolidation Project, a two-week outage would be necessary on the existing Seminoe-Sinclair 115-kV Line (to be renamed *Miracle Mile-Sinclair 115-kV Line)*. The existing Seminoe-Sinclair Line is the only source of power for the Sinclair Substation, which is located approximately 30 miles south of the Seminoe-Kortes project area near the town of Sinclair, Wyoming (Figures 1.1 and 2.2). To provide uninterrupted power to customers, WESTERN is proposing to construct a temporary tieline from Pacific Power and Light's (PP&L) Platte Substation to WESTERN's Sinclair Substation. The Platte Substation is located immediately adjacent to the Sinclair Substation (Figure 2.2). The temporary 115-kV tieline would be approximately 540 feet long



SEMINOE-KORTES CONSOLIDATION PROJECT

PLATTE-SINCLAIR TEMPORARY 115-kV TIE

U.S. DEPARTMENT OF ENERGY
WESTERN AREA POWER ADMINISTRATION

Figure 2.2 Sinclair and Platte Substations, Seminoe-Kortes Consolidation Project, Wyoming, 1990.

and would be supported by three temporary wood-pole structures. The photograph in Figure 2.3 shows one possible configuration of the tieline between the two substations. When construction activities that require the two-week outage are completed, the tieline would be removed.

The segments of the existing Alcova-Kortes West 115-kV Line and the Alcova-Kortes East 115-kV Line north of the proposed substation would be terminated at the new substation and renamed *Alcova-Miracle Mile West 115-kV Line* and *Alcova-Miracle Mile East 115-kV Line*, respectively. The segment of the Casper-Seminoe 69-kV Line north of the substation would be removed as part of a separate project.

In areas where the lines would be removed and rebuilt, removal would be completed prior to rebuilding. Along the segments where lines would be removed and not rebuilt, WESTERN would either keep the ROW for future use or relinquish interest in the easement and return all rights to the owners of the underlying fee title.

A passive repeater would be placed in the NW 1/4 NE 1/4 Section 10, T25N, R84W (Figure 2.1) as part of the microwave switch control for the new *Miracle Mile Substation*. The repeater is a 10 by 12-foot structure similar to a bill board that would be used to relay microwave signals to the new substation from the control station at Seminoe.

Approximately 23 miles of access roads off of the maintained roads in the area would be used to travel to the ROWs during the construction, maintenance, and operation of the project (Figure 2.1). Approximately 11 miles of unmaintained access road would be used as is and would not require upgrading. Approximately 10.3 miles of road would be along existing access roads that require upgrading and approximately 1.7 miles of new access will be used. Upgrading of existing roads and 1.1 miles of new access trails would involve minor grading or blading in certain sites where necessary to widen or fill in cuts to facilitate access by equipment. The 0.6 mile access to the *Miracle-Mile Substation* (Figure 2.1) will have a 20-foot wide graveled surface with shallow drainage ditches on each side. The 0.6 mile substation road is the only access that will require major construction activity. Helicopter construction

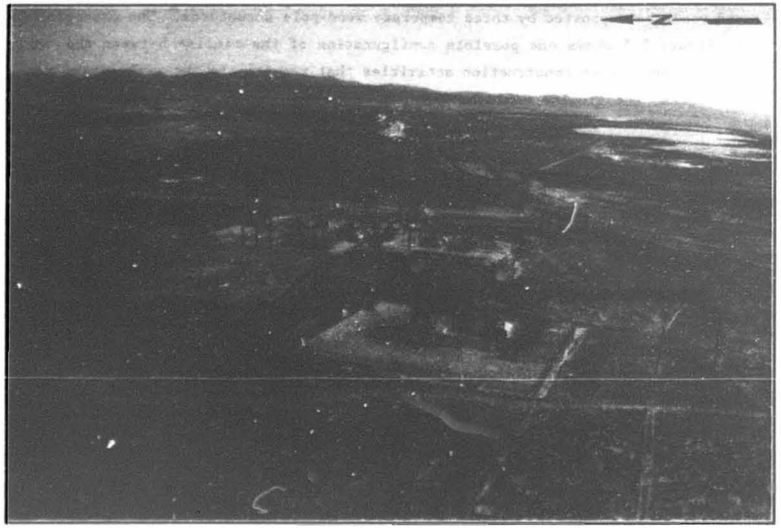


Figure 2.3 Probable Location of the Temporary Tieline Between Sinclair and Platte Substations, Seminoe-Kortes Consolidation Project, Wyoming, 1990.

techniques will be required at structure sites located in steep terrain that cannot be accessed by normal ground transportation.

The old breakers at the Seminoe and Kortes Switchyards would be removed. There are three 115-kV breakers at the Seminoe Switchyard, each containing 2,100 gallons of oil; the Kortes Switchyard has five 115-kV breakers, each containing 2,550 gallons of oil. The oil, which has been tested and found free of polychlorinated biphenols (PCB) would be drained from the breakers, transported through piping systems on the dam or power plant to tanker trucks, and hauled to an authorized disposal facility off-site. Each drained breaker, which weighs approximately 8.2 tons, would be hauled by truck to Casper or Rawlins for salvage.

WESTERN proposes to award the construction contract for the Seminoe-Kortes Consolidation Project in October, 1991. Construction would be conducted by a contractor supervised by WESTERN personnel. The project is expected to be completed by November, 1992.

2.1.1 Transmission Facilities

2.1.1.1 Design Characteristics

WESTERN designs, constructs, operates, and maintains transmission lines to meet or exceed the requirements of the National Electrical Safety Code (NESC), U.S. Department of Labor Occupational Safety and Health Standards, and WESTERN's Power System Safety Manual for maximum safety and protection of landowners, their property, and the public. All permanent structures, such as fences, metal gates, and metallic structures, would be grounded in accordance with existing codes.

The proposed transmission lines may be either steel lattice or wood-pole H-frame single-circuit structures. Near the top of each structure would be a horizontal member that would hold the line conductors above the ground and away from the structure. Insulators would be suspended from the horizontal member; conductors, which would provide the medium for the transfer of electrical energy, would be hung from the bottoms of the insulators. The conductor would consist of steel cable encased by aluminum strands. Insulators, conductors, and hardware, which are nonspectral (nonreflective), would be standard design and would provide nearly corona-free operation. Overhead ground wires would be installed at the top of the structure to provide protection to the conductors from direct lightning strikes. Oxidized, nonreflective material would be used for the steel lattice structures. The design characteristics of the proposed structure types are given in Table 2.1, and drawings of typical structures are shown in Figure 2.4. Angle or other special structures are generally similar in design and proportion to the standard ones, only more bulky, with heavier structural members and longer horizontal members. Angle structures may be guyed.

2.1.1.2 Right-of-Way Needs

A maximum of 200 feet of ROW would be needed for two parallel 115/230-kV single-circuit lines to meet the electrical clearance requirements of electrical safety codes, to provide working space for maintenance activities, and to protect buildings or other structures near the ROW from electrical hazards. ROW width for individual 115-kV Lines would be 75 feet for wood and 100 feet for steel lattice (Table 2.1).

Easements would be acquired for the new transmission line ROWs and for roads and trails required for off-ROW access to and from the line. All land rights would be acquired in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646) and other applicable laws and regulations governing Federal acquisition of property rights. Landowners would be paid fair market value for rights acquired to their property. Every effort would be made to acquire these rights by direct purchase; however, if the necessary rights could not be acquired by negotiated agreement, eminent domain proceedings would be instituted to obtain these rights. All transmission line easements acquired would provide for the payment of damages caused by the construction or maintenance of the line. Land for the substation site and transmission lines crossing Federal lands would be acquired from the BLM or U.S. Bureau of Reclamation (BuRec) in accordance with Title V, Public Law 94-579.

Table 2.1 Typical Transmission Line Design, Seminoe-Kortes Consolidation Project, Wyoming, 1990.[1]

	Structure Type	
Description	115 kV 1 circuit H-frame Wood Pole	115/230 kV 1 circuit Lattice Steel
Voltage: Initial Operation	115 kV	115/230 kV
ROW Width	75 feet	100/120[2] feet
Span Between Structures: Average	700 feet	1,000 feet
Span Between Structures: Typical Maximum	875 feet	1,375 feet
Number of Structures/Mile (avg. span)	8	4-5
Height of Structures: Average	52 feet	76/86[2] feet
Height of Structures: Typical Range	43-79 feet	77-127 feet
Structure Base Area (square feet)	45	700
Land Disturbed at Each Structure Base (maximum in square feet)	3,000	20,000
Miles of Line Per Conductor Stringing Site	2-3	2-3
Land Disturbed at Each Stringing Site	1 acre	1 acre
Minimum Ground Clearance Beneath Conductor @ 120°F	25 feet	29 feet
Maximum Height of Agricultural Machinery	15 feet	16 feet
Circuit Configuration	Horizontal	Horizontal
Conductor Size (circular mils)	477,000	477,000/ 1,272,000[2]

[1] All figures are approximate.

[2] The first number is for 115-kV configuration, and the second is for 230-kV configuration.

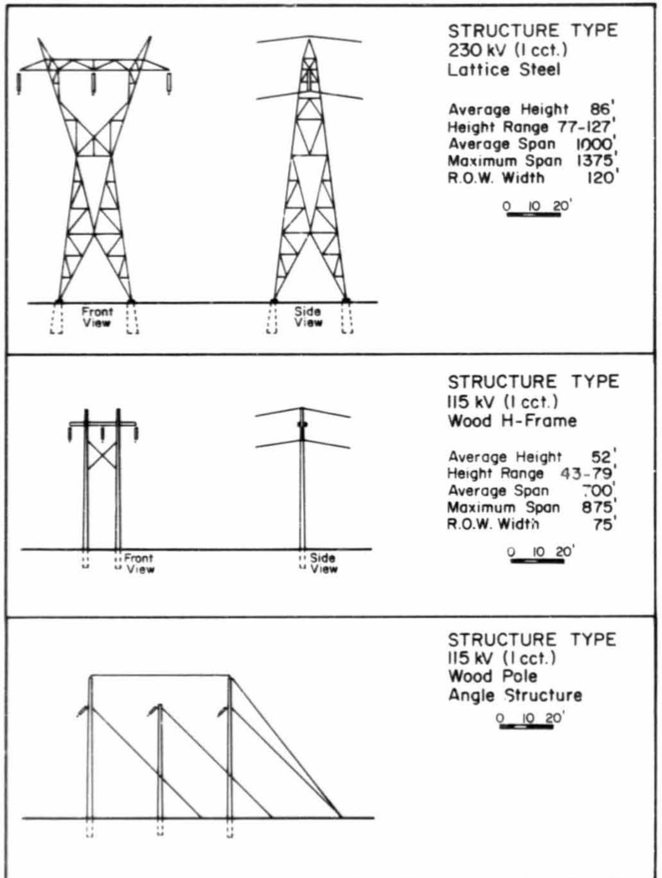


Figure 2.4 Typical Structures, Seminoe-Kortes Consolidation Project, Wyoming, 1990.

2.1.1.3 Construction

Construction of the proposed transmission line would include the following roughly sequential major activities performed by small crews progressing along a length of line:

- Surveying
- Access road upgrading
- Structure site clearing/grading
- Construction materials hauling
- Foundation construction
- Structure assembly/erection
- Ground wire and conductor stringing
- Cleanup
- Seeding

The estimated personnel and equipment requirements for construction of the Consolidation Project are shown in Table 2.2. The peak work force is estimated to be 25 workers. Construction of the line is scheduled to begin in the fall of October, 1991 and to be completed by November, 1992. The anticipated disturbance associated with the construction of the project is shown in Table 2.3 by project component.

Surveying

Survey work would locate and mark the transmission line centerline, determine accurate profiles along the centerline, locate structures, and determine the exact location and rough profiles of access roads.

Access

Access along the ROWs would be required for the construction, operation, and maintenance of the proposed transmission system. Access by heavy construction vehicles and equipment would be required to the site of the structures, but not necessarily along the entire length of the ROW between structures. Wherever possible, access to each structure and along the ROW would utilize existing roads and trails. Road or trail access already exists to almost all of the potential structure sites. Approximately 23 miles of access road would be used during the project (Figure 2.1). Sometimes these roads or trails

Table 2.2 Typical Personnel and Equipment for Transmission Line and Substation Construction, Seminoe-Kortes Consolidation Project, Wyoming, 1990.[1]

Activity	No. of Persons	Equipment
Surveying	4	Pickup trucks
Access road construction; structure and sub-station site grading	2	Dozer or blade, pickup trucks
Clearing of ROW, construction yard, wire handling site, and structure site	2	Dozer or blade, pickup trucks
Materials hauling	8-12	2 tractor trailers, 2 hydrocranes, 3 pickup trucks, 2 flatbed trucks
Foundation excavation	4-8	2-4 tractors with augers, 2-4 pickup trucks, 2 backhoes
Forming and placing of foundation concrete	4-6	Flatbed trucks with lifting device or hydraulic boom, concrete trucks
Assembly	6-12	1-3 hydrocranes, 4-6 pickup trucks, 1-3 flatbed trucks
Structure erection	4-6	1 crane (50- to 100-ton capacity), 2 pickup trucks, helicopter
Ground wire and conductor stringing	5-10	Reel trailer, tensioner, puller, digger, winch truck, pickup trucks, dozers, high reach (bucket) trucks
Cleanup	3-6	Flatbed and/or pickup trucks
Seeding	3	Disc plow with tractor hydroseeder, pickup truck, flatbed truck

1 Most of the listed activities are expected to progress sequentially, and the peak number of people in the area at any time for transmission line and substation construction is expected to be 25.

Table 2.3 Estimated Disturbance Associated with the Construction of the Seminoe-Kortes Consolidation Project, Wyoming, 1990.

Project Component	Miles[1]	Acres Disturbed
Travel Way on ROW[2]		
Line removed	3.3	5
Line removed and rebuilt	14.4	21
New construction[3]	6.9	10
Structure Sites[4]		
Line removed	NA	2
Line removed and rebuilt	NA	35
New construction	NA	33
Conductor Stringing Sites[5]		
Line removed	NA	2
Line removed and rebuilt	NA	6
New construction	NA	3
West-side Construction Yard.	NA	5
Helicopter Staging Area	NA	40
New Substation (and access road including east-side staging area)	0.6	12
TOTAL		174

1 NA = Not Applicable.

2 Travel way width is 12 feet for both new construction and removal of old line. Disturbance on ROWs with both removal and rebuilding has not been double counted. Access to ROWs would be primarily along existing roads and trails, some of which would require minor upgrading.

3 This 6.9-mile ROW will contain two parallel transmission lines.

4 Worst-case assumptions were used in calculating potential disturbance areas; i.e., steel lattice tower structures with average span of 1,000 feet and 20,000 square feet of land disturbed per structure.

5 Average length of line per conductor stringing site is 2.5 miles. Land disturbance at each conductor stringing site is 1.0 acre.

are within the existing ROW, and sometimes they detour from the ROW. In some locations, particularly where crossing steep slopes, broken terrain, and drainageways, the existing roads and trails would require slight improvement (grading, widening, and installing culverts at drainageway crossings) to allow passage of the required equipment. Approximately 11.4 miles of existing access road in the central part of the project area west of the North Platte River and along the Cheyenne-Miracle Mile #1 and #2 lines may require upgrading (Figure 2.1).

Where no roads or trails exist, and where the terrain is gentle enough (below 12 to 15 percent slope), access would be by overland travel, preferably along the ROW. Where this occurs, a two-track type of trail would develop without being deliberately constructed. Where the terrain along the ROW is steeper than 12 to 15 percent, access to structure sites would be wherever possible by overland travel on more gentle adjacent terrain outside the ROW. Where no such adjacent gentler terrain exists within reasonable proximity, new graded access trails would be constructed. In many cases, new access trails would be short spurs leading from existing roads to structure sites. In general, access trails would be routed to minimize damage to terrain and vegetation. These trails would not only be used for construction but would also be used throughout the life of the transmission lines for operation and maintenance activities. Access trails would be 10 to 12 feet wide. In very steep terrain that cannot be traversed by normal ground transportation, a helicopter will be used to gain access to the sites during construction.

Roads and trails would be arranged to cross streams and washes at right angles, wherever possible, and would normally cross without culverts, if this could be done without damage to the stream banks. If a stream is narrow with steep, high banks, then a culvert adequately sized to carry the heaviest construction equipment to be used and large enough to carry the highest practical projected runoff would be installed.

ROW Clearing

Clearing of trees is expected to be very limited. Clearing of other vegetation types would be performed where necessary to provide access for

construction equipment. As part of this task, gates would be installed wherever an access road ROW crosses an existing fence. Gates would be kept closed but not locked, unless locks were requested by landowners.

Construction Yards and Material Handling Sites

It is estimated that two temporary construction yards of not more than five acres each would be required for general construction activities. These staging areas would serve as reporting locations for workers, parking space for vehicles, and equipment and materials storage areas. It is anticipated that general construction yards would be located at the proposed substation location and at an unidentified location on the west side as needed by the construction contractor.

Helicopter Staging Area

WESTERN would also use one of two potential helicopter staging areas (Section 22 or 35, T26N, R84W, Figure 2.1) during the construction phase of the project. The helicopter staging area would be selected to provide the shortest trips to all of the roadless sites. Materials required for structure construction would first be delivered to the helicopter staging area where partial assembly of structures would take place. Partially assembled structures and other materials would then be airlifted to the structure sites for final assembly. The staging area, which would occupy 35 to 40 acres, would provide parking space for construction workers, storage space for equipment, lay down areas for structure components, unloading and parking areas for flatbed and container trucks, space for small cranes and other construction equipment, and a helicopter landing area. It is not anticipated that any vegetation removal or surface blading would be required at the helicopter staging area.

Structure Site Clearing and Grading

At each tower site, an area would be disturbed by the movement of vehicles, assembly of structure elements, and other operations. An area measuring 100 by

200 feet would be required for 115/230-kV steel lattice structures, and an area measuring 30 by 100 feet would be required for 115-kV wood structures.

Construction Materials Hauling

Construction materials would be hauled to the staging yards from the local highway network and then to structure sites using the access roads or helicopter as described above. Tractor-trailer and flatbed trucks would be used to haul materials to accessible locations while the helicopter will be used at the unaccessible sites.

Foundation Construction

In general, structures would be set directly into holes augured in the ground and backfilled with concrete, if required, or concrete footings incorporating tower attachment hardware would be constructed. Excess excavation material would be spread evenly around adjacent to the site or hauled away to a suitable site for proper disposal.

Structure Assembly/Erection

Erection crews would assemble the structures and, using a large crane or helicopter, position them in foundation excavations or on footings.

Ground Wire and Conductor Stringing

Reels of conductor and overhead ground wire would be delivered to wire-handling sites spaced about every two to three miles along the ROWs. Level locations would be selected so little or no earth moving would be required. These sites might have to be cleared of vegetation and would be disturbed by the movement of vehicles and by other activities. The conductors and ground wires would be pulled into place from these locations.

Cleanup and Seeding

All structure assembly, staging areas, and erection pads not needed for normal maintenance would be graded as necessary to blend with adjacent landforms. Waste construction materials and rubbish from all construction areas would be collected, hauled away, and disposed of at approved sites. All disturbed areas would be reseeded as necessary to minimize erosion. The intent would be to restore all construction areas as near as feasible to their original condition. Any damaged gates and fences would be repaired.

Safety Program

WESTERN would require the construction contractor to prepare and conduct a safety program (subject to WESTERN's approval) in compliance with all applicable Federal, State, and local safety standards and requirements, and WESTERN's general practices and policies. The safety program would include, but not be limited to, procedures for accident prevention, use of protective equipment, medical care of injured employees, safety education, fire protection, general health and safety of employees and the public, and information regarding regulations protecting cultural resources, use of offroad-vehicles (ORV), and wilderness study areas. WESTERN would also establish provisions for taking appropriate actions in the event the contractor failed to comply with the approved safety program.

2.1.1.4 Operation and Maintenance

Buildings are not allowed on the ROW; however, the ROW may be used by the landowner for any purpose that does not create a safety hazard or interfere with the rights of the United States. The day-to-day operation of the line would be directed by system dispatchers in power control centers. These dispatchers use WESTERN's communication facilities to operate circuit breakers that control the transfer of power through the line. These circuit breakers also operate automatically to ensure safety, e.g., in the event of a structure or conductor failure.

WESTERN's preventive maintenance program for transmission lines includes routine aerial and ground patrols. Aerial patrols would be conducted approximately six times per year, particularly after wind, ice, or lightning storms, when damage usually occurs. Ground patrols are usually conducted once a year to detect equipment needing repair or replacement. Routine maintenance includes repairing damaged conductors, inspecting and repairing poles or towers, and replacing damaged and broken insulators as necessary. In addition to maintaining the structures, conductors, and ROW, WESTERN would maintain gates on access roads and keep such roads in passable condition and properly maintained to minimize erosion.

Transmission lines are sometimes damaged by storms, floods, vandalism, or accidents and require immediate repair. Emergency maintenance would involve prompt movement of crews to repair damage and replace any equipment. If access roads were damaged as a result of the emergency maintenance activities, WESTERN would repair them as required.

Herbicides might be used at structure sites on the transmission line ROW to prevent undesirable weed growth. Herbicides used would be registered with the U.S. Environmental Protection Agency (EPA) in compliance with the Federal Pesticide Control Act of 1972 and other Federal pesticide acts, and would be in compliance with BLM practices. Because of the semiarid, sparsely vegetated nature of the project area, very minor and infrequent measures would be necessary to control vegetation.

<u>2.1.1.5 Abandonment</u>

At the end of the useful life to the proposed project, the transmission structures would be either replaced or removed. In the case of removal, the ground wires, conductors, insulators, and hardware would be dismantled and removed from the ROW. Structures embedded directly in the ground would be pulled out, and structures embedded in concrete foundations would be removed along with their foundations. Cranes, large trucks, pickup trucks, earthmoving equipment, and helicopters would be used for efficient removal of the transmission lines.

Following abandonment and removal of the transmission lines, any areas leveled for equipment required to dismantle the line would be regraded as near as feasible to their original condition. Similarly, areas disturbed and stripped of vegetation during the dismantling process would be regraded and reseeded to prevent erosion.

<u>2.1.2 Substations, Taps, and Transformers</u>

The new Miracle Mile Substation would be built in the SW1/4, Section 11, T26N, R84W, to accommodate connections with the existing lines to Alcova, Casper, Sinclair, and Cheyenne (see Figure 2.1). The substation would occupy 5 to 10 acres near the existing Kortes Tap substation; sufficient additional land would be acquired for potential future expansion of substation facilities. Structures within the proposed new substation would be approximately 70 feet maximum in height and include busses, transformers, switches, circuit breakers, and a control building. All equipment would be free of PCBs. The substation would be similar to those shown in Figure 2.3. A 0.6 mile long, 20-foot wide gravel surfaced road would be constructed to provide access to the new substation (Figure 2.1).

<u>2.1.2.1 Construction</u>

Construction work at the new substation would consist of the following steps:

- Access road construction
- Site grading
- Site fencing
- Foundation installation
- Building construction
- Equipment installation
- Cleanup

Construction would require grading and compaction equipment, concrete trucks, material-hauling vehicles, and cranes.

2.1.2.2 Operation and Maintenance

The Miracle Mile Substation would be unmanned and would be operated remotely. Electric equipment within the facilities would be remotely controlled from an operations center via microwave transmission bounced off the passive repeater and received at the substation. The equipment and facility layout would be designed to limit radio and television interference and audible noise. The new substation facilities would be fenced, locked, and secured with entry restricted to appropriate WESTERN personnel. Maintenance would include equipment testing and routine and emergency procedures.

Vegetation would be removed within the fenced area. Any disturbed sites outside the fenced area would be seeded to minimize or eliminate erosion. The area inside the fence would be treated with a herbicide following construction and at intervals thereafter as necessary to eliminate vegetation. Herbicides used would be registered with the EPA in compliance with the Federal Pesticide Control Act of 1972 and other Federal pesticide acts, and would be in compliance with BLM practices. Because of the semiarid, sparsely vegetated nature of the project area, very minor and infrequent measures would be necessary to control vegetation.

2.1.2.3 Abandonment

The substation facilities would be abandoned when no longer needed. Methods for dismantling and removing equipment would depend on future plans for the substation site. All equipment that would not be needed would be removed from the site.

2.1.3 Standard and Special Mitigation Measures

WESTERN's standard mitigation practices, which would apply to the proposed project, are presented in Appendix C. Additional special mitigation measures identified during the analysis of environmental impacts are described in Section 4.0.

2.2 NO ACTION ALTERNATIVE

Under the no action alternative, WESTERN would not build any new substations or transmission lines in the project area. The existing switchyards and associated transmission lines at Seminoe and Kortes dams would continue to be maintained and utilized.

Structures and hardware would be repaired and/or replaced during routine maintenance operations and in response to emergency outages. At the present time, the existing breakers are over 35 years old and are in need of extensive rehabilitation or rebuilding. Repairs would have to be made with increasing frequency as the equipment increases in age. Due to the difficult access and the potential for oil contamination of the river, it is not feasible to replace the breakers at Seminoe and Kortes switchyards.

Implementation of the no action alternative would preclude most of the short-term impacts to the environment that would be associated with construction of new substations and transmission lines. Increasingly frequent and extensive repair and maintenance activities, and associated impacts, would occur under the no action alternative.

The no action alternative would compound the local and regional transmission system's inability to meet reliability criteria. Possible failure due to the deteriorated condition of the existing structures and hardware makes the system susceptible to more frequent outages.

The no action alternative does not meet the needs for improved system reliability and the elimination of present operating and safety hazards. Therefore, the no action alternative is not considered further in this report.

2.3 OTHER ALTERNATIVES CONSIDERED

Several alternatives were examined to meet the need for improved system reliability and future growth in the project area. These alternatives and the reasons for eliminating them from further consideration are described below.

2.3.1 Switchyard Rehabilitation Alternative

This alternative would rehabilitate Seminoe and Kortes switchyards by replacing outdated power circuit breakers, transformers, and other deteriorated equipment and materials. This alternative would rebuild all the deteriorated 115-kV transmission lines from the Seminoe and Kortes switchyards except for the two Alcova lines which have already been rebuilt. WESTERN would not build any new transmission lines in the project area and would continue to maintain and utilize the existing system. System reliability would be increased to an acceptable level; however, maintenance would continue to be a problem because of the limited access to the two switchyards. There would continue to be the danger of an oil spill into the river.

While this alternative would correct the deteriorated conditions existing at both switchyards, the limited access caused by the physical size and location of the switchyards makes this alternative undesirable. Also, WESTERN has agreed to separate facilities from the BuRec facilities when and where feasible; rehabilitation, although a viable option, would conflict with this agreement. For these reasons this alternative was not considered further.

2.3.2 Consolidated Station - 115-kV Reconfiguration Alternative

This alternative would differ from the proposed project in that instead of rerouting the 115-kV Kortes-Cheyenne and Seminoe-Cheyenne Lines to the proposed Miracle Mile Substation, the Seminoe-Cheyenne Line would cross the Seminoe Canyon over Seminoe Dam, connect to the existing 115-kV Kortes-Seminoe Line, and connect to a segment of the 115-kV Alcova-Kortes West Line. The 115-kV Cheyenne-Kortes Line would cross Seminoe Canyon over Kortes Dam and connect to a segment of new 115-kV Line constructed from Kortes to the proposed substation.

Reconfiguration at 115 kV of the 69-kV and 115-kV transmission lines utilizing existing transmission corridors would require 115-kV lines to span the canyon locations of Seminoe and Kortes dams. These lines would require aerial markers and would be difficult to inspect and maintain. Therefore, the reconfiguration alternative was not considered further.

2.3.3 Alternative Substation Site

This alternative would be the same as the proposed action except that the new substation would be located on the west side of the North Platte River. This alternative would cause high visual impacts associated with the substation location. The substation site would be in an area within view of the river. Also additional river crossings would be necessary for connections with the two lines to Cheyenne. For these reasons, the alternative was not considered further.

2.3.4 Alternative Transmission Line Routes

An alternative route (Figure 2.1 alternative B) to the proposed route (alternative A) for a portion of the parallel Miracle Mile-Cheyenne Transmission Lines #1 and #2 was also examined in detail (see Section 4.0). Alternate route B was found to have greater environmental impact than route A, primarily due to steep slopes at Number One Gulch; visual impacts due to proximity to the North Platte River in the vicinity of the Miracle Mile trout fishery; and amount of new access road necessary.

A third route for the Cheyenne-Miracle Mile #1 and 2 Lines east of the Bennett Mountain Wilderness Study Area (WSA) was also considered. The route intersected the existing corridor in Section 2, T24N, R83W, followed the gently rolling terrain east of Bennett Mountain, and terminated at the Miracle Mile Substation in SE1/4 Section 11, T26N, R84W. Total length of this alternative is 14 miles, with an estimated construction cost of $4,500,000. The proposed route west of the WSA is 6.9 miles with an estimated cost of $2,400,000. The eastern route was dropped from further consideration due to the considerable additional cost.

Routes for rebuilding of existing transmission lines to connect the Miracle Mile Substation to the Seminoe Powerplant, Kortes Powerplant, and Sinclair transmission lines use the existing ROWs due to the lack of alternatives that differ significantly from the existing ROWs. The existing ROWs are the most direct route feasible. The presence of the access road system servicing the existing transmission lines would not be present along new ROW. The steep slopes, particularly in the southern portion of the area, limit potential alternative ROWs without extensive building of new access roads.

2.3.5 Alternatives Outside WESTERN's Authority

The transmission and switchyard facilities are owned, maintained, and operated by WESTERN. The dams and powerplants are owned, maintained, and operated by BuRec. BuRec is proposing to increase the capacity of Seminoe Reservoir by raising the height of the dam. This could require the removal and replacement of the Seminoe Switchyard if the face of the dam requires modifications as a result of increasing the dam height. Increasing the height of Seminoe Dam would enhance the need for a new consolidated substation since the powerplant and switchyard could be out of service for an extended period during dam construction.

3.0 AFFECTED ENVIRONMENT

This section provides a description of the environment that would be affected by the construction, operation, and maintenance of the proposed Seminoe-Kortes Consolidation Project. The existing environment is described under the following 11 environmental disciplines covering the natural and human resources:

- Climate and Air Quality
- Geology and Paleontology
- Soils
- Water Resources
- Vegetation
- Wildlife and Fisheries
- Floodplains and Wetlands
- Land Use and Recreation
- Cultural Resources
- Socioeconomic and Community Resources
- Visual Resources

3.1 CLIMATE AND AIR QUALITY

The climate of the study area is semiarid continental. The mean annual temperature at Pathfinder Dam (which is approximately 16 miles north of the project area) is 43° F. Significant seasonal variations exist; the mean winter temperature is 21° F, and the mean temperature during the summer is 64° F. The maximum temperature recorded at Pathfinder Dam was 100° F; the minimum was -41° F.

Precipitation in Wyoming is primarily a result of maritime Pacific air and orographic (i.e., mountain) influences. The Pacific Ocean is the major source of moisture for precipitation in the state. However, the Gulf Coast moisture is also an important influence in eastern Wyoming. Maximum precipitation occurs during the spring, with minimum precipitation levels during the winter. The project area may be divided into two precipitation zones, which are influenced by elevation. The higher elevations of the Seminoe Mountains receive 15 to 19 inches of precipitation per year while the lower elevations in the northern portion of the project area receive 11 to 14 inches (BLM 1987, University of Wyoming 1977).

Air quality in the project is good (BLM, 1984, 1987, 1988). The Wyoming total suspended particulate standards are 60 micrograms per cubic meter (ug/m³) as an annual geometric mean, and 150 ug/m³ as a 24-hour average, with one 24-hour exceedance allowed per year (Wyoming Department of Environmental Quality 1980, 1981, 1982, 1983, 1984). Unstable meteorological conditions are common in Wyoming and are good for dispersing pollution. High winds, on the other hand, are also a major contributor to increases in particulates due to erosion of unprotected soil on roads and areas disturbed by construction and agricultural (BLM 1988).

3.2 GEOLOGY AND PALEONTOLOGY

The Seminoe-Kortes project area is located within the eastern portion of the Sweetwater Uplift, north of the Hanna Basin, and west of the Shirley Basin. Surficial geology in the area is dominated by two primary basement lithologies. The Seminoe Mountains in the south portion of the project area are underlain by granites of Precambrian age. The relatively flat terrain in northern portion of the project area is primarily underlain by Tertiary Miocene and Oligocene sedimentary rocks (Love and Christiansen 1985).

In addition to the dominant granitic rocks in the core of the mountains themselves, the southern flanks of the Seminoe Mountains, expose a sequence of marine siltstones, sandstones, and limestones of Paleozoic age dipping south towards Seminoe Reservoir. North of the mountains, the Tertiary sediments are composed of a white, soft, tuffaceous sandstone underlain by blocky claystones and lenticular arkosic conglomerates. Precambrian granites occur as isolated outcrops in the Tertiary sediments at various locations. Surficial deposits of sand, gravel, and cobble alluvium occur along the North Platte River downstream of Kortes Reservoir (Weitz and Love 1952).

There are no significant paleontological resources known to occur in the Seminoe-Kortes project area; however, no-site specific paleontological studies have been conducted. The granites in the Seminoe Mountains and cropping out to the north would not contain fossil remains. Some isolated fossils have been located in Tertiary sediments similar to those in the northern portion of the study area, within three miles of the proposed substation site (Garrett 1987

personal communication). There have been no coal beds identified in the immediate area; the Hanna Coal Field is southeast of Seminoe Reservoir, and the Green River Coal Region is to the west of the project (Glass et al. 1975).

3.3 SOILS

Soils information for the project area was available from the BLM Rawlins District, Medicine Bow Resource Area. The Soil Conservation Service (SCS) does not have any detailed information for the project site and has not published a soil survey for Carbon County (Suhr 1987 personal communication). The BLM has conducted soils mapping and completed soils inventories for an area which includes the Seminoe-Kortes Consolidation Project.

Soils of the project area can be very generally divided into two major groups based on the source of the geologic parent material and the amount of precipitation that they receive. In the southern portion, the granites of the Seminoe Mountains and the residual sandstone and shale, together with the increased precipitation at higher elevations, have resulted in the formation of various mountain soils. In the north, the predominantly sedimentary rocks, lower elevations, and lower precipitation have resulted in various brown, arid, sandy loams of the intermountain basin soils.

The proposed new Miracle Mile-Cheyenne transmission lines cross five mountain soil mapping units. These soils are divided primarily by the steepness of slope, aspect, and depth to which the soils have developed. The mountain soils occupy slopes that range from a gentle 3-30 percent for soils on the relatively level or rolling areas on top to slopes of up to 100 percent for soils on the north and south flanks of the Seminoe Mountains. Areas of rock outcrop can be as steep as vertical. Elevations range from about 6500 to 7600 feet. Mountain soils typically have moderate permeability and are well-drained. These soils tend to be predominantly skeletal and/or shallow, which limits productivity; the deeper alluvial, non-skeletal soils, which are much less extensive, are more productive than the majority of the other mountain soils. The relatively high amount of precipitation (15 to 19 inches per year) of the mountain area (BLM 1987, University of Wyoming 1977) allows these soils to be more productive than similar soils in areas with less precipitation. Textures of the mountain soils are typically loamy.

Soils in the northern portion of the project area occupy relatively gentle slopes of 2-10 percent on flat to undulating alluvial fans, terraces, and residual uplands at elevations of 6000 to 6500 feet. Areas of steeper slopes and shallower soils also occur throughout the northern area. The average annual precipitation in this area is about 10 to 14 inches per year (BLM 1987, University of Wyoming 1977). These soils are typically deep, loamy texture, and well-drained with moderate permeability. They commonly have a diagnostic calcic horizon near the surface, which limits productivity.

Natural factors such as wind, water, slope, soil type, and lack of vegetation contribute to soil erosion. The primary management factors that influence soil erosion include intensive grazing by livestock and wildlife and disturbance by construction of roads and other facilities. In the project area, soil types that are most susceptible to erosion are found along the southern half of the proposed transmission lines on the east side of the river and along the southern third of the two lines to be rebuilt on the west side of the river. The majority of the Seminoe Mountains area is considered to have a high erosion potential.

Slopes in excess of 25 percent can present problems when the surface is disturbed. Construction on steeper slopes increases the likelihood that erosion and reclamation problems will be encountered. Areas with slopes greater than 25 percent occur on both the north and south sides of Seminoe Mountains, at Seminoe Dam, and along the sides of Kortes Reservoir.

Soil strength and stability have important implications for the construction and maintenance of facilities. Soils with predominantly one particle size exhibit low strength and are subject to deformation. Soils in the project area exhibit generally good particle size distribution and have moderate strength; particularly low-strength soils have not been identified within the project area (BLM 1987).

Areas susceptible to slumping, sliding, and soil creep may pose hazards to roads and facilities. Soil stability problems have been noted for some of the mountain soils in the project area. These soils receive the most precipitation, mainly in the form of snow, which tends to drift on the steep, leeward slopes. When the snow melts, it can saturate the soil, increase soil weight, and result in mass wasting (BLM 1987). Soils on the steep slopes of the Seminoe Mountains may be prone to slumping (Strenger 1987, personal communication). Rocky soils and numerous rock outcrops can also pose problems during siting and construction of facilities and structures.

3.4 WATER RESOURCES

The project area is located within the North Platte River basin and is bisected by the North Platte River. Two reservoirs, Seminoe and Kortes, are on the North Platte River in the vicinity of the project area, and a third, Pathfinder, is a few miles north of the area. Seminoe Reservoir, an irrigation, flood control, and power production project formed by a concrete-arch dam, has a drainage area of 7230 square miles and a capacity of 1,017,279 acre-feet at an elevation of 6357 feet, the top of the spillway gates (U.S. Geological Survey 1985). Reservoir storage data for water year 1984 indicate a maximum storage volume of 989,000 acre-feet (August 1984) and a minimum storage volume of 616,000 acre-feet (April 1984). Kortes Reservoir is a 4,765 acre-feet capacity regulating and power-producing reservoir, located below the tailwaters of Seminoe Reservoir. No storage data are available for this reservoir. Pathfinder Reservoir, formed by a masonry dam, has a capacity of 1,016,000 acre-feet and is used for irrigation and power production (U.S. Geological Survey 1985). Reservoir storage data for water year 1984 show a maximum storage volume of 1,080,000 acre-feet (June 1984) and a minimum of 842,000 acre-feet (October 1983) in Pathfinder.

Discharge and water quality data for the North Platte River in the immediate area of the project are collected at a BuRec gaging station 1,800 feet downstream of Kortes Dam. Data for water year 1982 and November of water year 1983 indicate the following ranges of values for measured parameters (U.S. Geological Survey 1983):

Discharge (cubic feet/second)	580 - 2,700
Conductivity (umhos/centimeter)	360 - 650
pH (units)	7.2 - 8.7
Temperature (°C)	2.0 - 16.0
Turbidity (ftu)	3.0 - 17.0
Dissolved Oxygen (milligrams/liter)	7.8 - 11.6

Several small perennial and intermittent tributary streams to the North Platte River occur within the project area (Figure 2.1). Lost Creek is the primary tributary stream on the east side of the North Platte. This perennial stream drains most of the north slope of the Seminoe Mountains east of the North Platte River. Number One and Number Two Gulches are tributaries of Lost Creek to the south. Sage Creek is located just north, out of the study area. Dry Creek is a small, intermittent stream also on the east side of the river. Morgan and Hamilton Creeks are the primary tributary streams on the west side of the river. These two streams arise out of the Seminoe Mountains with headwaters located approximately three miles west of the project area. There are no perennial waters in the immediate vicinity of the Sinclair-Platte substations tieline site.

The dissolved solids concentrations of Carbon County groundwater samples range from 375 to 57,700 milligrams/liter (mg/l) (Larson 1984). The median concentration of 662 mg/l is less than the state wide median concentration of 725 mg/l. Groundwater quality in the alluvium of the North Platte River and its mountain tributaries is generally good, reflecting the quality of surface waters in those streams.

3.5 VEGETATION

Two precipitation zones influenced by elevation occur in the Seminoe-Kortes project area; the higher elevations of the Seminoe Mountains receive 15 to 19 inches of precipitation per year while the northern portion of the project area at lower elevations receives 11 to 14 inches (BLM 1987, University of Wyoming 1977). This difference in precipitation and elevation, and influences of associated differences in slope, aspect, and soil, result in two primary vegetation communities in the area: grasslands and conifer woodlands. In addition to these two primary types, well-developed riparian communities occur in narrow bands adjacent to the North Platte River and some of the tributary

streams. Scattered areas of the juniper vegetation type occur at lower elevations and south-facing slopes within the mountains.

Grasslands occupy most of the northern portion of the study area including the proposed substation site. The dominant grass species are needle-and-thread, threeawn, junegrass, and bluegrass. Threadleaf sedge, a grass-like species, is also typically a major cover component in this type. Black sagebrush is the dominant shrub species; other common shrubs, subshrubs, and succulents include rabbitbrush, winterfat, and prickly pear cactus. Shrub canopy cover in the grasslands averages 10 to 15 percent (BLM 1987). The grasslands are used for livestock grazing and provide forage for wildlife; production is 500 to 1,500 pounds per acre (Luce 1987, personal communication). At slightly higher elevations in the northern foothills of the Seminoe Mountains, grassland species composition shifts to favor bluebunch wheatgrass, bluegrass, and big sagebrush.

Conifer woodlands occupy the majority of Seminoe Mountains in the southern portion of the project area with ponderosa pine and limber pine as the most common tree species. Conifer densities vary with slope, aspect, and the moisture-holding capacity of the soil. North-facing slopes typically support higher densities and may include limited numbers of other conifer species such as Douglas fir. The steep, northwest-facing slope above Kortes Reservoir contains the highest density conifer woodlands in the study area. Understory species include big sagebrush and antelope bitterbrush. Mountain brome, bluebunch wheatgrass, and bluegrass are the dominant grasses in this vegetation type. Within the conifers there are many open, park-like areas with very few trees. An extensive open area of grasses and sagebrush occurs on the relatively flat top of the Seminoe Mountains to the east of Seminoe Dam, through which the proposed Miracle Mile-Cheyenne transmission lines pass. Forage production in the conifer type is about 750 pounds per acre (Luce 1987, personal communication).

The drier south-facing slopes of the Seminoe Mountains support the juniper vegetation type. This type is characterized by low densities of Utah juniper, sagebrush, and bluebunch wheatgrass. The steep slopes limit livestock use, but the type supports many wildlife species.

Water, wetlands, and riparian habitat occur in the study area associated with the reservoirs, the North Platte River, Lost Creek, and some of the smaller tributaries including Morgan Creek, Hamilton Creek, and Number One Gulch. These areas provide important habitats for many wildlife species. Limited areas of narrowleaf cottonwood riparian woodlands occur along the river floodplain from Kortes Dam to Pathfinder Reservoir. There are also scattered patches of shrubs, primarily willow, and productive grassy meadows in the river bottomlands. The narrow riparian zones associated with some of the tributary streams support additional species such as waterbirch, common chokecherry, and snowberry. Lost Creek contains well-developed subirrigated meadows that are used to produce hay. Although riparian vegetation occurs on only a very small portion of the study area, it is very productive and contributes significantly to the overall diversity of the Seminoe-Kortes project area. Forage production in riparian areas averages about 3,000 pounds per acre and can contribute a large portion of the forage for livestock grazing. In addition, riparian vegetation is generally the area of heaviest livestock use because of the quality of its forage and proximity to water (BLM 1987).

There are no plant species currently listed as threatened or endangered known to exist in the Seminoe-Kortes project area. Persistent sepal yellowcress, a Category 2 candidate species for Federal listing (U.S. Fish and Wildlife Service [USFWS] 1985), occurs along littoral beaches and playas in the region. Category 2 candidate species are those for which the USFWS is seeking additional information in order to determine their status. Fifteen populations of persistent sepal yellowcress have been located along the margin of Seminoe Reservoir and the shoreline of the Medicine Bow River south and southeast of the project area.

Undisturbed areas around the Sinclair-Platte Substation tieline are dominated by grasslands and sagebrush. Portions of the immediate vicinity have been disturbed by roads, the substations, transmission lines, and oil sumps associated with the Sinclair refinery.

3.6 WILDLIFE AND FISHERIES

3.6.1 Wildlife

The mountains, basins, reservoirs, and riparian environments in the Seminoe-Kortes project area provide diverse wildlife habitats. The project area supports populations of big game, small and upland game, waterfowl, and nongame wildlife. It is also used by the endangered bald eagle and provides potential habitat for the endangered black-footed ferret. The river and reservoirs form a natural boundary for some wildlife groups.

3.6.1.1 Big Game

Primary big game species in the project area are bighorn sheep, elk, mule deer, and pronghorn; some white-tailed deer may also be present. The North Platte River and associated reservoirs form the Wyoming Game and Fish Department (WGFD) Herd Unit boundaries for big game.

The Ferris Bighorn Sheep Herd, about 175 animals, uses the study area west of the river on a year-round basis; a portion of that herd concentrates in the Seminoe Mountains near Seminoe Dam during crucial wintering periods and for the lambing season (Figure 3.1) (Hiatt 1986, 1987, and 1988, personal communication, Rinkes 1987, personal communication). Habitat requirements for the sheep are keyed to good foraging sites, such as open grassy ridge tops or benches near steep slopes, and rocky outcrops for escape cover. The Morgan Creek Big Game Winter Range, a cooperative effort of BuRec and WGFD, is important habitat managed primarily for the bighorn herd.

Elk of the Shirley Mountain Herd Unit occupy habitats on the east side of the river with the mountain vegetation used as summer range and the lower elevations to the north used as winter/yearlong range. Elk crucial winter/yearlong range is found in the vicinity of Deadman, Cottonwood, and Lost Creeks approximately 0.5 mile east of the Miracle Mile-Cheyenne lines (Figure 3.1), (Rinkes 1987, personal communication; Rudd 1986, 1988, personal communication; WGFD 1988a).

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Two mule deer herds inhabit the Seminoe-Kortes project area: The Ferris Mule Deer Herd on the west side of the river and the Shirley Mountain Mule Deer Herd on the east side. The entire area is used as various seasonal ranges by mule deer, and a large portion of the project area is designated a crucial range (Figure 3.2). Crucial winter/yearlong range of the Ferris Herd occurs in the mountains and foothills near Seminoe Dam and along Kortes Reservoir and the North Platte River. Crucial winter/yearlong range of the Shirley Mountain Herd occurs north of the mountains at the lower elevations along the river and on the slopes along the Dry Creek drainage (Rinkes 1987, personal communication; Hiatt 1987 and 1988, personal communication; Rudd 1986 and 1988, personal communication; WGFD 1988a). White-tailed deer of the Laramie River Herd Unit may also occur in the area. White-tailed deer usually occur along the riparian and bottomland habitats adjacent to streams in the area.

Pronghorn may be found throughout the project area but tend to be more common in the less rugged topography of the northern portions on both sides of the river. Pronghorn of the Medicine Bow Herd Unit use habitats on the east side of the river. The northeast portion of the project area, including the proposed substation site, is designated crucial winter/yearlong range for this herd (Figure 3.1). Winter/yearlong range of the North Ferris Herd Unit is located in the northwest portion of the project area, and winter/yearlong range of the South Ferris Herd Unit is situated in the southwest portion of the project area at lower elevations adjacent to Seminoe Reservoir (WGFD 1988a). No crucial pronghorn range occurs within the portion of the project area on the west side of the river (WGFD 1988a).

Mountain lions occur in the rugged topography in the study area. The lions prey on other big game, smaller mammals, and birds. They may utilize cavities in rock outcrops or cliffs for dens.

3.6.1.2 Raptors

Raptors in the project area include eagles, falcons, hawks, and owls. Common species during the summer include the golden eagle, prairie falcon, red-tailed hawk, ferruginous hawk, Swainson's hawk, northern harrier, great horned owl, and American kestrel. Three raptor nests, all prairie falcons, have been

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mapped on or adjacent to the project area; two sites are in the Seminoe Mountains, and one is on a rocky escarpment west of the North Platte River crossing (Figure 3.2). In addition, turkey vultures roost in Seminoe Canyon (Hiatt 1986, personal communication). Bald eagles and rough-legged hawks occur in the study area during winter.

3.6.1.3 Small Game, Upland Game, Waterfowl

Small game mammals include cottontails and red squirrels. Cottontails would be expected throughout the area; red squirrels are associated with the conifer woodland habitat type. Sage grouse and blue grouse are upland game birds that use project area habitats. There are no known active or historical sage grouse leks (strutting grounds) in the project area. The nearest known sage grouse lek is approximately four miles east of Kortes Dam Camp (BLM 1987; Rinkes 1987, personal communication; Rudd 1988, personal communication). Scattered populations of blue grouse are found within the conifer woodland habitat type of the Seminoe Mountains. The reservoirs and river provide habitat for a variety of waterfowl species. Canada geese, mallards, green-winged teal, American coots, and common mergansers are the predominant waterfowl species.

3.6.1.4 Non-Game Animals

The varied wildlife habitats, especially the riparian habitat and the presence of open water, support many non-game wildlife species. Birds occur in the study area throughout the year but are most abundant during migration and breeding seasons. Species that commonly nest in the grasslands include the horned lark and western meadowlark. The diversity of the mountain habitats supports a variety of songbirds, and the riparian areas provide habitat for shorebirds as well as numerous passerines. Double-crested cormorants have been observed at the headwaters of Pathfinder Reservoir and the Miracle Mile. In addition, a large colony of white pelicans (at least 1138 pairs in 1989) nests each year on Bird Island in Pathfinder Reservoir. This is one of about eight colonies in the West (BLM 1987a). Many other species use Pathfinder National Wildlife Refuge, the southern edge of which is approximately two miles north of the Seminoe-Kortes project area. Shorebirds would also be expected near the reservoirs and along the North Platte River. Small mammals include shrews, mice, and voles while medium-sized mammals include lagomorphs such as the white-tailed jackrabbit, omnivores such as the striped skunk, and predators such as the coyote, red fox, and badger. The prairie rattlesnake, gopher snake, and short-horned lizard would be some of the reptiles expected in the grassland communities; and amphibians such as chorus frogs and toads would be associated with riparian habitats.

3.6.1.5 Threatened and Endangered Species

Federally listed threatened or endangered wildlife species that may be found in the Seminoe-Kortes project area are the bald eagle, peregrine falcon, and black-footed ferret (U.S. Fish and Wildlife Service letter dated December 10, 1986 in Appendix D, Addendum A). These species are addressed in detail in the biological assessment (Addendum D). The following is a summary of pertinent information on the threatened-endangered wildlife in the project area.

The bald eagle is a winter resident in the Seminoe-Kortes area, particularly along the North Platte River. January surveys by the BLM have identified two to four bald eagles perched along this segment of the river. A frequently used diurnal perch in the area (Rinkes 1987, personal communication) is shown on Figure 3.2. Bald eagle surveys conducted by WGFD during winter, 1987 identified one to two bald eagles along the Miracle Mile. Up to seven bald eagles were seen at the upper end of Pathfinder Reservoir (Guenzel 1987, personal communication). This is consistent with earlier information from a study conducted by BuRec (1985a) which showed the upper portion of Pathfinder Reservoir as a winter concentration area. A traditional nocturnal bald eagle winter roost site is located out of the project area in the Pedro Mountains about eight miles north of the proposed substation site. No bald eagle nesting has been reported in or near the project area.

Peregrine falcons are not known to nest in the area; however, they may pass through during migration and winter periods. Potential peregrine nesting habitat exists in the Ferris Mountains about 12 miles to the west of the project area.

The black-footed ferret is not presently known to exist in or near the project area. There are numerous historical black-footed ferret records in Carbon County; one confirmed 1972 record is of a ferret found only about three

miles east of the proposed substation site (Jobman and Anderson 1981, Jobman 1987, WGFD 1988b). There have been several unconfirmed sightings of the black-footed ferret reported during the last five years including one in May 1988 about 0.25 mile south of the study area (WGFD 1988b). Ferrets rely on prairie dog towns as their primary habitat; therefore, all prairie dog colonies are considered potential habitat for ferrets. The Seminoe-Kortes project area contains a scattered, low density, prairie dog colony in the vicinity of the proposed substation (Figure 3.2). A survey for black-footed ferrets was conducted on that colony during winter 1988-1989 using standard techniques as coordinated with the USFWS; no black-footed ferret or potential black-footed ferret sign was observed (Mariah Associates, Inc. 1989).

In addition to these listed species, there is a potential for ferruginous hawk and Swainson's hawk use of the area during the summer or migration; these are Federal Category 2 candidate species. There are no documented nest sites for these species in the immediate vicinity of the project area (Rinkes 1987 and 1988, personal communication). The long-billed curlew, also a Category 2 species, may use habitats near the reservoirs or in the grasslands during summer or migratory periods. Long-billed curlews are thought to nest in meadows along Long Creek, northwest of the project area (BLM 1989, personal communication). No concentration area used by long-billed curlews has been identified in the project area; however, no specific study for long-billed curlew has been conducted.

3.6.1.6 Wildlife at Sinclair-Platte Substations Tieline Site

The Sinclair-Platte Substations tieline is located in habitat similar to the grassland types of the Seminoe-Kortes area. This area is just off the southern edge of pronghorn crucial winter range. The closest sage grouse lek is approximately three miles northwest. No prairie dog colony is present within 0.5 mile of the Sinclair-Platte Substation tieline.

3.6.2 Fisheries

Aquatic habitats in the Seminoe-Kortes project area include the northern end of Seminoe Reservoir, Kortes Reservoir, the North Platte River, and several perennial and intermittent tributaries to the river system.

Seminoe Reservoir is a large, weakly stratified, mesotrophic (medium productivity), water body. Overall, good zooplankton levels and varied benthic invertebrates, combined with an abundance of shallow littoral habitat, support a diverse fishery (BuRec 1985a). WGFD manages the fishery under its basic yield concept which involves stocking fingerlings of rainbow and cutthroat trout, which grow to catchable size in the wild. Stocked trout are supplemented by natural reproduction of rainbow, brown, and some brook trout. Walleye were accidentally introduced to Seminoe in 1961 and have become a major species in the lake. Since 1978, gizzard shad and emerald shiners have been stocked to provide a food base for the walleye and buffer heavy walleye predation on young trout (BuRec 1985a).

Biological productivity in Kortes Reservoir is low to moderate, and the limited fishery consists of rainbow and brown trout, and walleye. The fishery resource is not actively managed because of limited public access to the reservoir.

Downstream of Kortes Dam, the North Platte River flows for five miles until it reaches Pathfinder Reservoir. The upstream reservoirs provide nutrient-rich water, which encourages the rapid growth of aquatic organisms upon which trout feed. Reservoir releases also provide warmer temperatures and higher productivity during the winter months than would be present on natural streams. This segment of the river between Kortes Dam and Pathfinder Reservoir is called the Miracle Mile (Figure 3.3), a well-known blue ribbon trout fishery of national significance. WGFD (1977) has classified the Miracle Mile as a Class 1 (premium trout) stream fishery. A minimum flow of 500 cubic feet per second is required in this reach. Brown, cutthroat, and rainbow trout, as well as walleye, migrate into the Miracle Mile from Pathfinder Reservoir to feed on the abundant forage and to spawn. Rainbow are stocked annually to provide increased quantities of

catchable fish in this high-demand area. Harvest consists primarily of rainbow and brown trout (BuRec 1985a).

Lost Creek flows into the North Platte River from the east side of the project area. It is designated as a Class 4 (low production) stream by WGFD (1977) and supports rainbow, brown, and brook trout (Petera 1987, personal communication). Morgan Creek enters Kortes Reservoir from the west just downstream from Seminoe Dam. It is designated a Class 4 stream by WGFD (1978) and supports brook trout (Stone 1987, personal communication). There are no streams in the immediate vicinity of the Sinclair-Platte Substations tie line.

3.7 FLOODPLAINS AND WETLANDS

Floodplains and wetlands in the Seminoe-Kortes project area are addressed in the Floodplains and Wetlands Assessment (Appendix E).

The major floodplain in the Seminoe-Kortes study area is associated with the North Platte River; smaller floodplains also occur along the tributary streams. Floodplains in the study area have not been officially delineated or designated by the Federal Emergency Management Agency (FEMA) (Motoyama 1989, personal communication) or Carbon County Planning and Development Office (Grafton 1989, personal communication). The absence of potential urban development and the control of floods by Seminoe and Kortes Dams are probably the main reasons that no floodplain has been officially designated in the area.

A large portion of the North Platte River floodplain in the project area has been inundated by Seminoe and Kortes Reservoirs. Approximately one mile of the floodplain below Kortes Dam is very narrow and confined by the steep sides of Seminoe Canyon (Figure 2.1). The remaining two miles of the North Platte River after it exits Seminoe Canyon exhibit a wider (approximately 50 to 300 hundred yards) floodplain that has developed in the north end of the study area. This wider floodplain supports a variety of riparian vegetation including grassy meadows, willows, and narrow-leaf cottonwood. Existing transmission lines originating on the west side of the river at the Seminoe and Kortes powerplants cross the North Platte River and associated floodplains approximately 1.25 miles north of Seminoe Canyon (Figure 2.1). A petroleum pipeline and the paved highway also cross the floodplain in the vicinity of the transmission lines. Campgrounds and campsites are located within the North Platte River floodplain in the project area.

Floodplains of most of the tributary streams in the study area are relatively narrow because these streams flow through steep, narrow valleys. Lost Creek, the major tributary on the east side of the study area, meanders through relatively flat, broad, meadow-type floodplain approximately 0.5 mile east of the North Platte River.

Wetlands are restricted to the reservoirs, North Platte River, and tributary streams in the study area. The USFWS and BLM (Rawlins District) will be delineating and classifying wetlands in the Seminoe-Kortes study during 1989 as part of the National Wetlands Inventory. However, records of this standardized wetlands inventory were not available in time for inclusion in this EA.

Riverine, lacustrine, and palustrine type wetlands (Cowardin et al. 1979) occur in the study area. Wetlands associated with the reservoirs are included in the lacustrine system because they are greater than 20 acres in size and have less than 30 percent coverage of trees, shrubs, or persistent emergents. Those wetlands that are less than 20 acres in size and are dominated by trees, shrubs, and persistent emergents are classified as palustrine. Palustrine wetlands occur on the edges of reservoirs but are more common along the streams in the study area. Riparian areas along the North Platte River and the tributary streams are palustrine wetlands that are valuable wildlife habitats. Most of the wetlands associated with the North Platte River area are considered riverine, which includes those contained within a channel that are not dominated by trees, shrubs, or persistent emergent type vegetation. The unvegetated portion of the channels of the tributary steams are also included in the riverine classification.

No floodplain or wetland occurs in the immediate vicinity of the Sinclair-Platte Substations.

3.8 LAND USE AND RECREATION

The project area is located in Carbon County along Seminoe and Kortes reservoirs and the North Platte River. Land ownership and special use areas in the project area are shown on Figure 3.3. Ownership of land crossed by the transmission lines and access roads is predominantly Federal with small parcels of State and private lands (Table 3.1). The principal land use in the project area is open rangeland for livestock grazing. The hilly, semiarid terrain consists of large expanses of grassland sagebrush with areas of ponderosa pine on hillsides and in canyons (see Section 3.5). The study area provides a variety of wildlife and aquatic habitats which support hunting and fishing (see Section 3.6). Extensive coal mining occurs south of the project area east of Seminoe Reservoir, but no mines exist within the project area.

The Seminoe-Kortes project area contains numerous electrical transmission lines (Figure 2.1). The proposed transmission line rebuilds are within existing transmission line ROWs, which traverse rural land. The corridor for the proposed new transmission lines (alternative A) east of the North Platte River crosses rural BLM and private lands (Figure 3.3). A gas pipeline also crosses the western portion of the project area adjacent to the existing lines. Numerous roads and trails throughout the project area provide access to these utilities, recreation sites, and the general area.

Approximately 35 permanent structures are located within the project area. Most are permanent residences in the Federal housing area west of Seminoe Dam. One residence is west of Seminoe Road, one mile before Kortes Bridge. The other residences are clustered at Kortes Ranch east of Kortes Dam Camp.

As stated in the BLM Draft Resource Management Plan, no major changes in land use or management are expected on BLM or BuRec lands in the project area (Husband 1987, personal communication). Some minor changes emphasizing recreation activities along the North Platte River are planned, but no large facilities are required by these changes. The BuRec is considering raising the water level of Seminoe Reservoir in the future (Husband 1987, personal communication).

Table 3.1 Ownership Of Lands Crossed by the Proposed Facilities, Seminoe-Kortes Consolidation Project, Wyoming, 1990.

Proposed Action	Ownership					
	BLM	BuRec	State Park (owned by BuRec)	State	Private	Total
Transmission Lines						
Removed:						
Miles	1.2	0.8	1.3	0.0	0.0	3.3
Percent	36	24	40	--	--	100
Rebuilt:						
Miles	8.2	4.5	0.2	1.1	0.4	14.4
Percent	57	31	1	8	3	100
New[1]:						
Alternative A						
Miles	4.8	0.2	0.2	0.0	1.7	6.9
Percent	69	3	3	--	25	100
Alternative B						
Miles	4.7	2.0	0.2	0.0	0.0	6.9
Percent	68	29	3	--	--	100
Access Roads:						
Upgraded:						
Miles	6.5	2.9	0.2	0.2	2.2	12
Percent	54	24	2	2	18	100
Used as is:						
Miles	3.6	2.6	1.7	0.8	2.3	11.0
Percent	33	24	15	7	21	100

[1] Two parallel lines share this corridor.

Outdoor recreation resources and special use areas in the project area include portions of Seminoe State Park/Seminoe Reservoir, Bennett Mountains Wilderness Study Area (WSA), Morgan Creek Big Game Winter Range, and the Miracle Mile prime trout fishery on the North Platte River (Figure 3.3). Seminoe State Park receives more visitors each year (25,558) than any other recreation site in Carbon County except the Medicine Bow National Forest (Wyoming Recreation Commission [WRC] 1985b, 1986). There has been a 230 percent increase in visitation at the Seminoe State Park since 1981 (WRC 1984, 1985a, and 1986). Primary activities are fishing, hunting, camping, power boating, and picnicking. Existing facilities include picnic grounds, campgrounds, boat ramps, and docks, most of which are outside the project area.

The proposed action is adjacent to, but does not cross, the Bennett Mountains WSA and crosses the eastern portion of the Morgan Creek Big Game Winter Range (Figure 3.3). The Bennett Mountains WSA provides outstanding opportunities for primitive camping, hiking, sightseeing, wildlife observation, and rock climbing (BLM n.d). Although the WSA has the characteristics needed for Wilderness Status, it does not exemplify those characteristics to the extent of other WSA's nearby (e.g. Ferris Mountains WSA). Consequently the BLM is recommending that the Bennett Mountains WSA not be designated as wilderness (Bye-Jech 1990, personal communication). Congress will act on the BLM recommendations at a future date. The Morgan Creek Big Game Winter Range is managed primarily for bighorn sheep and other big game. It is closed to the public during the winter but open the remainder of the year for daytime use.

The five-mile segment of the North Platte River between Kortes Dam and Pathfinder Reservoir is known as the Miracle Mile. This segment has a nationwide reputation as one of Wyoming's best trout fisheries (U.S. Department of Interior 1980) Primary activities along the 10 miles of shoreline include fishing, hunting, and camping. A total of 65,405 visitors and 417,433 visitor-hours was recorded in 1985 (BOR 1985a). Approximately three miles of the Miracle Mile occur within the Seminoe-Kortes study area (Figure 3.3).

Public campsites available in or adjacent to the project area include 47 in Seminoe State Park (three campgrounds) and 88 along the Miracle Mile (eight campgrounds). Travel trailers are allowed in public campsites. Dispersed

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camping is allowed on all BLM and BuRec lands except within the Morgan Creek Big Game Winter Range. The two private trailer parks, Kortes Ranch and Richner, provide an additional 40 sites for trailer camping (Blanchard 1987, personal communication; WRC 1986).

The 1985 State Comprehensive Outdoor Recreation Plan produced by WRC (1985b), provides recreation use trends for the state. Between 1984 and 1990, the demand for outdoor activities such as fishing, hunting, and camping is expected to increase 25 percent in Carbon County compared to an 18 percent increase statewide.

The tieline between Sinclair and Platte Substations would be constructed on lands owned in fee by WESTERN and PP&L. The substations are fenced, but access to the small amount of land between the substations by wildlife and livestock is not restricted; this area could be used by animals grazing in the surrounding area. In addition to the land used for substations and transmission lines, other developed land uses in the vicinity include oil sumps for the Sinclair Refinery and roads (Figure 2.2). Seminoe State Park is approximately 15 miles north of the tieline site, and the Sinclair Golf Club is approximately two miles east of the site. The town of Sinclair, Wyoming and the Sinclair Oil Company are located 0.25 mile to the south.

3.9 CULTURAL RESOURCES

The Seminoe-Kortes project area is situated in south-central Wyoming along the northern margin of the Hanna Basin within the drainage basin of the North Platte River. For this portion of the Northwestern Plains, five major prehistoric periods have been defined extending back 11,500 to 12,000 years from the present. These periods are the Paleoindian, dated from 11,500/12,000 to 7,500 years ago; the Early Plains Archaic, 8,000 to 5,000 years before present (B.P.); the Middle Plains Archaic from 5,000 to 3,000 years B.P.; the Late Plains Archaic dating 3,000 to 1,500 years B.P.; and the Late Prehistoric from 1,500 to 300 years B.P. (Frison 1978).

Historic development in the area is documented from the 1740s, although major incursions in the area through the valley of the North Platte River probably did not begin until around 1800. Themes that dominated historic development in the region include exploration and the fur trade, Anglo-American immigration, U.S. Army exploration and Army-Indian conflict, ranching and settlement, and oil and coal exploration and production.

Prehistoric site types known to occur in the region include flaked and stone artifact scatters, hearths (often in large numbers), and stone alignments such as stone circles and cairns. Common historic site types include homesteads, isolated cairns, remains associated with early transportation corridors (roads, trails), sites relating to early mining and mining exploration, and miscellaneous refuse scatters.

A class I inventory (literature review) of the Seminoe-Kortes Consolidation Project area found that three previous cultural resource surveys conducted by the Wyoming Recreation Commission (WRC) included portions of the project area. In 1982 and 1983, WRC surveyed two transmission line ROWs that included portions of Sections 22, 27 and 28 of T26N, R84W. One prehistoric site, 48CR3730, was recorded in Sections 22, 27 and 32 of T26N, R84W. One prehistoric site, 48CR4296 was recorded in Section 27. Both 48CR3730 and 48CR4296 are located outside of the areas that would be impacted by the Seminoe-Kortes Consolidation Project. A BLM cultural resource survey of the Kortes Ditch in Section 11 of T26N, R84W in 1982 recorded no sites.

Seminoe Dam (48CR1200) is a historic site that is within the project area but should not be impacted by the consolidation project. Prehistoric site 48CR1 was originally recorded by the Smithsonian Institution-River Surveys in Section 33, T26N, R84W. However, the BuRec in Billings, Montana and the Wyoming State Historic Preservation Officer (SHPO) believe that 48CR1 is actually in Section 22 and is not within this project area.

WESTERN conducted intensive (Class III) cultural resource surveys of the project area as originally defined (Grant and Zier 1987) and as revised (Reust et al. 1989). Additions to the project area have since been identified and will

also be surveyed for cultural resources. To date, four prehistoric sites have been recorded within the project area, one of which may be eligible for inclusion on the NRHP.

3.10 SOCIOECONOMICS AND COMMUNITY RESOURCES

3.10.1 Demography

Wyoming's population increased rapidly between 1970 and 1980 due to people coming into the state seeking work in mining, petroleum, and related industries. Continued rapid growth was expected, but falling mineral prices in the early 1980s slowed the influx of people seeking jobs. State population increased slightly between 1980 and 1985 and was expected to remain stable or decrease slightly for the next five years before resuming a slow growth (Wyoming Department of Administration and Fiscal Control 1986).

Population in Carbon County and the town of Rawlins exhibited similar growth because of the energy boom between 1970 and 1981. The subsequent slump in national and local energy production between 1981 and 1987 substantially increased unemployment resulting in a decline in population in both Rawlins and Carbon County (Table 3.2). Currently, approximately 52.8 percent of Carbon County residents are classified as urban (living in cities or towns of 2,500 or more), and 47.2 percent are rural (Grafton and Brown 1988).

3.10.2 Economic Base

Wyoming and Carbon County have serious economic problems due to losses in employment, population, and personal income. Earnings by industry in Carbon County for 1980 and 1986 are presented in Table 3.3. Overall earnings in farm and nonfarm sections have declined 64 and 28 percent, respectively, from 1980 to 1986. Major reductions in mining and construction sectors are responsible for most of the decline in the non-farm industries. The small to modest increases in services, transportation-utilities, manufacturing, and government sectors were not able to offset the large decline in mining and construction.

Table 3.2 Population of Carbon County and Rawlins 1960-1987, Seminoe-Kortes Consolidation Project, Wyoming, 1990.

	1960[1]	1970[1]	1980[1]	1987[2]
Carbon County	14,937	13,354	21,8[illegible]6	16,902
Rawlins	8,968	7,855	11,547	10,137

1 U.S. Census Bureau (1985).

2 Grafton and Brown (1988).

Table 3.3 Earnings by Industry in Carbon County, Wyoming, 1980 and 1986, Seminoe-Kortes Consolidation Project, 1990.[1]

	1980	**1986**
Farm	9,989[2]	3,579
Nonfarm	258,547	186,555
Private	229,111	141,712
Agriculture, Forestry, Fish, Other Services	626	978
Mining	11,190	31,983
Construction	28,652	12,084
Manufacturing	12,001	13,181
Nondurable Goods	9,530	9,317
Durable Goods	2,471	3,864
Transportation, Public Utilities	27,504	34,644
Wholesale Trade	4,521	5,581
Retail Trade	19,355	17,411
Finance, Insurance, Real Estate	5,577	4,904
Services	19,685	21,036
Government and Government Enterprises	29,436	44,843
Federal, Civilian	5,513	6,557
Military	346	511
State and Local	23,577	37,775

1 Grafton and Brown (1988).

2 Figures in thousands of dollars.

The economic base of Carbon County has been primarily dependent on the minerals and agricultural sectors in the past, however, the goal now is to diversify the economic base and promote growth in each industry (Grafton and Brown 1988). Municipalities in Carbon County are trying to reverse the declining trend by expanding infrastructure and by advertising to attract new industry to the area (Carbon County Board of Commissioners et al. 1986, Grafton and Brown 1988). Key industry sectors targeted for growth are travel-tourism, manufacturing, and small business.

3.10.3 Employment and Income

The Carbon County labor force in May 1988 was 7,789 with an unemployment rate of 7.4 percent (Grafton and Brown 1988). The distribution of labor by all nonagricultural industries in Carbon County for the fourth quarter of 1986 is shown in Table 3.4 (Grafton and Brown 1988). There are approximately 300 working farmers and ranchers in Carbon County. Overall employment fluctuates because of the seasonality of the forestry and tourism segments; income and employment increase in April or May and decline in September (Carbon County Board of Commissioners et al. 1986). The average weekly wage ranges from a low of $183.42 in retail trade to a high of $582.62 for mining (Table 3.4).

3.10.4 Housing

In 1988, year-round housing in Carbon County numbered 7,641 total units, 88 percent of which were single-family structures (Grafton and Brown 1988); Rawlins has 3,308 single-family and 686 multifamily units while Sinclair has 211 single family units. The county vacancy rate is 10 to 13 percent for single family homes (Grafton and Brown 1988). The vacancy rate for owner-occupied housing in Rawlins is high, but rental vacancy rates are lower. Vacancy rates for mobile home parks are also high (Alguire 1987, personal communication). The vacancy rate is expected to remain high until population expands when the present economic slump ends.

Table 3.4 Distribution of Labor by Nonagricultural Industries During Fourth Quarter 1986, Carbon County, Wyoming, Seminoe-Kortes Consolidation Project, 1990.[1]

Industry	Average Employing Units	Total Number of Employees in Carbon County	Average Weekly Wage
Mining	37	501	$582.62
Construction	54	374	$413.15
Manufacturing	22	472	$412,58
Transportation, Communications and Utilities	42	366	$556,96
Wholesale Trade	35	186	$464.48
Retail Trade	141	1,276	$183.42
Finance, Insurance, and Real Estate	39	212	$349.24
Services to Agriculture, Forestry, and Fisheries	158	2,063	$295.56
Public Administration	32	735	$338.41

[1] Grafton and Brown (1988).

3.10.5 Public Facilities and Services

Rawlins has water, sewer, and schools to serve a much larger population than currently resides there (Grafton and Brown 1988). Public schools in Rawlins had an enrollment of 2,417 students in 1987 (elementary through high school) (Grafton and Brown 1988), which is more than 1,000 students under capacity (Carbon County School District 1 1987, personal communication). Sinclair had 75 students in kindergarten through grade 6 in 1987; middle school and high school students from Sinclair go to Rawlins Schools (Grafton and Brown 1988). Law enforcement services for the area are provided by the Carbon County Sheriff's Department. Officers are stationed in Rawlins, approximately 40 miles from the Seminoe-Kortes project area. Fire protection is provided by the Carbon County Fire Department; medical services and ambulances are available from the Memorial Hospital of Carbon County in Rawlins.

3.10.6 Transportation and Communication

Surface transportation in Carbon County is provided by a network of primary, secondary, and local roads. Interstate Highway 80 (I-80) is the principal roadway linking Rawlins with the rest of southern Wyoming. Average daily traffic on I-80 at the Seminoe Road (Carbon County Road 351) interchange was 7,920 in 1985 (Wyoming Highway Department 1985). Other major arteries in the area are U.S. Highway 287/30 connecting Medicine Bow with Laramie and Wyoming Highways 220 and 487 connecting Medicine Bow with Shirley Basin and Casper.

A network of roads provide access to Seminoe and Kortes Dams. Seminoe Road (Carbon County Road 351) runs north from I-80 at Sinclair, past Sinclair and Platte Substations, to the Seminoe-Kortes project area. The road is paved from I-80 at Sinclair through Seminoe State Park to within 1.5 miles of Seminoe Dam. The unpaved road from that point on is a BuRec road, which winds 8.5 miles north through the Seminoe Mountains to Kortes Bridge. Kortes Bridge is currently being rebuilt by BuRec. The two lane bridge with a four foot walkway on the downstream side will be completed in late Spring, 1990 (Fauss 1990, personal communication). Load limits for the new bridge will allow semi-tractor-trailer traffic up to approximately 36 tons. Seminoe Road provides access between Seminoe and Kortes Dams. The Seminoe Dam Road branches off Seminoe Road, crosses the dam, and

continues east along the southern edge of the Seminoe Mountains to Carbon County Road 291. Public access is not permitted across the dam, however, and the road is not maintained east of the dam. Wyoming Highways 220 and 487 provide access to Carbon County Road 291 and Kortes Road. Major roads east of Kortes Bridge are paved. Major roads in the Seminoe-Kortes project area are generally well-maintained, and a good snow removal system keeps most roads passable year-round (Carbon County Board of Commissioners et al. 1986). Numerous small roads, two-tracks, and trails provide access off the main roads throughout the project area.

An unpaved airstrip is located on the east side of the river 0.25 mile northwest of the existing Seminoe-Casper line. The airstrip was built on BLM land for use during construction of Kortes Dam. The airstrip is used for one or two flights per year (Beaver 1987, personal communication).

The North Platte River Valley is an important energy transmission corridor accommodating electrical transmission lines and a petroleum pipeline. Major existing transmission lines in the project area include 115-kV and 69-kV lines from Sinclair to Casper and two 115-kV lines from Kortes Dam to Alcova. Two 115-kV lines south of the Seminoe Mountains carry power from the Seminoe Dam and Kortes Dam power plants east to Cheyenne. See Section 2.0 for a more complete description of transmission line facilities related to the proposed project.

An 8-inch petroleum pipeline, owned by the Continental Pipeline Company of Denver, parallels segments of the transmission line ROW's in the study area (Figure 2.1). There are two radio and microwave repeater stations west of Seminoe Dam. The stations are operated by WESTERN and the BuRec.

3.11 VISUAL RESOURCES

The project area exhibits striking visual contrasts between the canyons and forested ridges of the Seminoe Mountains and the rolling high desert grasslands to the north and south, which are typical of the Wyoming Basin physiographic province. The mountainous area, where the southern portion of proposed project activity would occur, is quite rugged. The south slope of the Seminoe Mountains forms a distinct edge to the flatter, more rolling terrain to the south and to the large, flat surface of the main body of Seminoe Reservoir. This edge is characterized not only by a sudden topographic change but also by a distinct change in vegetation that causes striking color and texture differences. The area south of the mountains is predominantly rolling terrain although cut by several sharply defined east-west ridges. The vegetation in the area is almost exclusively grassland with interspersed low-growing shrubs. Colors are monochromatic grey-greens in spring and early summer, changing to tans from late summer through winter. Texture is generally fine to medium. The reservoir is a notable water feature. Its man-made origins are identifiable by the lack of shoreline riparian vegetation. In contrast, the south slope of the mountains is sparsely but consistently vegetated with coniferous trees and shrubs, predominantly pines and junipers. The visual result (Figure 3.4) is a coarse-textured mottled-appearing face with dark olive green trees contrasted against the lighter grey-green (spring-summer) or tan (fall-winter) grassy ground cover.

The interior sections of the mountainous area are generally more densely vegetated with trees. There are some grassy meadows interspersed in the forest. Numerous rock outcroppings occur in the steeper main canyon of the North Platte River and in several of the smaller gulches. The north face of the mountains slopes more gradually than the south face to a smaller grassland basin ringed by low ridges. Though noticeable, neither the topographic change nor the vegetation change is as abrupt on the north slope as on the south face.

There are numerous man-made changes (cultural modifications) to the natural environment in the project area. Seminoe Reservoir is the most visible modification. Though clearly not a natural lake, it adds an element of visual interest to the common grassland landscape. It also provides a substantial recreational attraction and consequently draws many more viewers to the area than would otherwise be expected. During peak seasons human activity associated with recreation and developed campsites introduce high visual contrast to the natural landscape. Contrast in off-peak periods is low except at the camping area on the east side of the Miracle Mile, north of the mountains, which contrasts moderately year-around. The industrial character of Seminoe and Kortes Dams and associated facilities contrasts sharply with the natural landscape, but the facilities are located such that they are largely not in view unless they are sought out.

Visual effects of the existing transmission lines in the project area range from very low to high contrast with the natural landscape, depending on location and structure design. The existing Seminoe-Cheyenne and Kortes-Cheyenne 115-kV transmission lines along the south face of the mountains exemplify low contrast lines (Figure 3.4) because the structures are weathered wood pole H-frames that blend well with the forest; line siting minimized road construction, silhouetting of structures, and clear-cutting of ROW; and the line is not in a foreground viewshed location for most viewers. The 69-kV line along the west side of the reservoir in places exemplifies the opposite extreme of high visual contrast in places. There are several points along the line within three miles of Seminoe Dam where northbound travelers on Seminoe Road encounter direct, long-term silhouetted views of structures at very close range (Figure 3.5). Most of the lines in the area, however, introduce low to moderate visual contrast, and several are well hidden from recreationists and travelers.

Scenic quality in the project area is high in the mountainous area and moderate to low in the lowlands to the north and south. The BLM Visual Resource Management (VRM) system inventory procedures (BLM 1986b) apply A, B, or C ratings (A - highest quality to C - lowest quality) using seven key evaluative factors: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. Results of visual resource inventory on the study area are scenic quality A for the mountains and scenic quality B for the flatter areas to the north and south.

Visual sensitivity of the area is considered to be medium to high based on the numbers of people that visit the area and the preponderance of recreationists in the viewing public. Much of the area is also in the foreground-middleground of the viewshed for recreationists based on key observation points (KOPs) selected for the impact analysis (see Figure 3.6). The proximity of the Bennett Mountains WSA on the east side of the North Platte River (Figure 3.3) also contributes to the visual sensitivity of the mountainous area.

VRM Class ratings for the project area are Class II for the mountains and Class III for the remaining portions (Figure 3.6) based on the quality, cultural modifications, sensitivity, and distance zones of the landscape as noted above. BLM VRM objectives for Class II areas indicate that changes to the visual

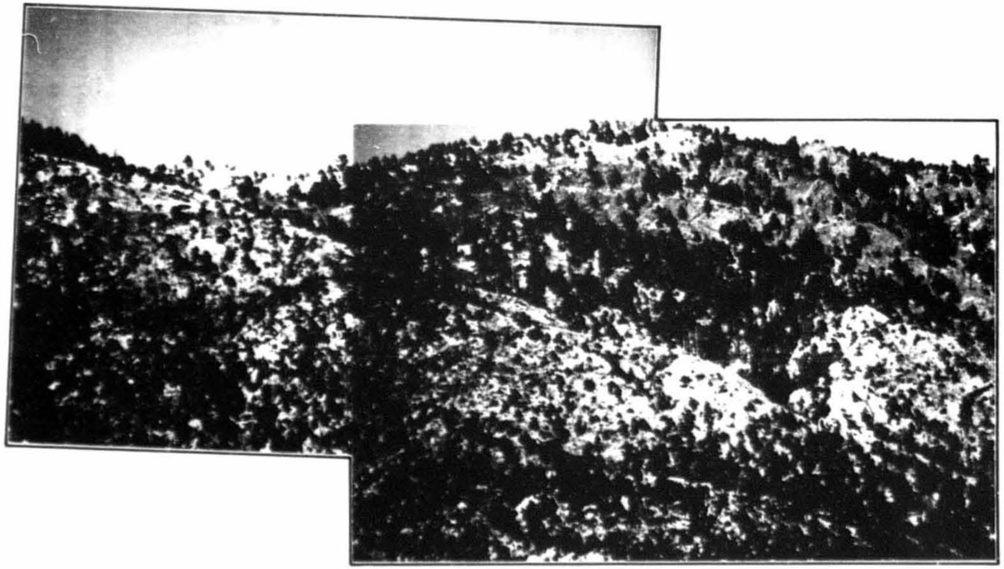

Figure 3.4 South Face of Seminoe Mountains, Seminoe-Kortes Consolidation Project, Wyoming, 1990.

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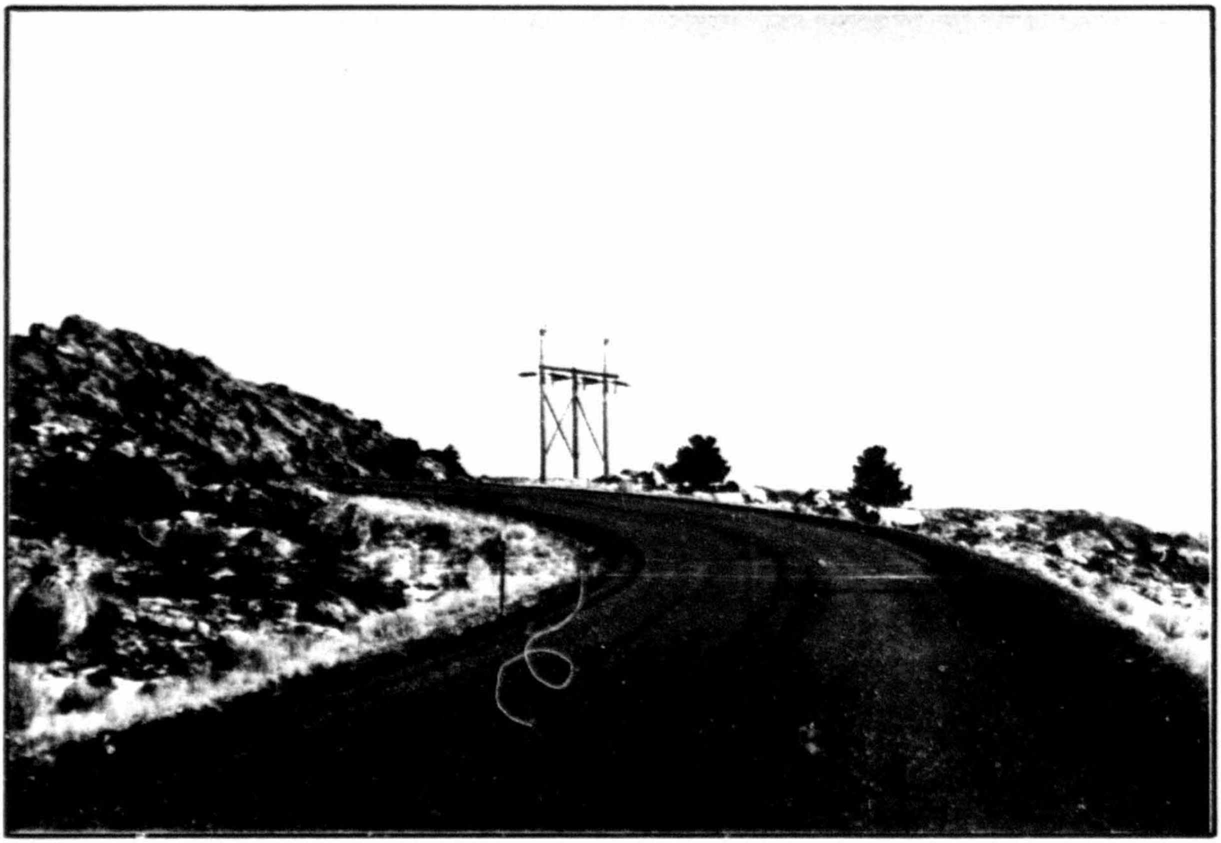

Figure 3.5 Seminoe Road Northbound Approaching Seminoe Dam, Seminoe-Kortes Consolidation Project, Wyoming, 1990.

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landscape "may be seen but should not attract the attention of the casual observer ...The objective of this class is to retain the existing character of the landscape" (BLM 1980). The objective of Class III areas "is to partially retain the existing character of the landscape". Visual changes "may attract attention but should not dominate the view of the casual observer" (BLM 1980).

4.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

Environmental impacts of the proposed Seminoe-Kortes Consolidation Project and mitigation measures to reduce potential impacts are presented in this section. Methods used to assess impacts are presented in Appendix C. Impact levels for each environmental resource/condition were determined by considering the type of action, spatial relationship to the action, duration, size and form, relative sensitivity, and mitigation measures to ameliorate adverse project effects. Residual impact levels, assuming effectiveness of mitigation measures, were classified as significant, moderate, or low-none (criteria used to define each are provided in Appendix C). Information in the impact assessment appendix, particularly standard mitigation that is considered part of the action, is necessary to understand the environmental consequences.

4.1 PROPOSED ACTION

4.1.1 Climate and Air Quality

Local climatological conditions would not be affected by construction or operation of the proposed project. Impacts to air quality would be considered significant if emissions from construction would violate any state or federal air quality standards. A small amount of dust would be produced by construction activities during dry periods, but this would not exceed the dust generated by normal road traffic. No state or federal air quality standards would be violated during construction or operation of the proposed project.

4.1.2 Geology and Paleontology

There are no known significant geological or paleontological resources in the Seminoe-Kortes project area. Impacts to geology and paleontology would be significant if access to important mineral resources were restricted or important paleontological resources were disturbed. The majority of the proposed project crosses geologic formations of granite, sandstone, limestone, and alluvium that should pose no particular problems for tower or substation construction. No area of important mineral resources or known important paleontological resources would be disturbed. Fossils have been recovered from sedimentary rock types similar

to those of the project area; however, the removal and installation of the facilities, and small area to be graded for construction of the substation would not be expected to result in significant impact. Impacts to geologic and paleontologic resources are expected to be low-none.

4.1.3 Soils

Project construction could result in physical disturbance to a total of about 174 acres of native soils, using the worst-case assumptions shown in Table 2.3. Impact to soils would be considered significant if highly erosive soils were disturbed and not restabilized, soils prone to slumping were disturbed without proper engineering constructions, or soil productivity was reduced due to compaction during construction.

No prime farmland soils occur in the Seminoe-Kortes project area, so none would be affected by the proposed project. The majority of the disturbance, including the substation site, would occur in relatively stable soils on gentle slopes. The steep slope areas along the southern half of the Miracle Mile-Cheyenne lines and along the southern third of the Miracle Mile-Sinclair and Miracle Mile-Seminoe lines to be rebuilt on the west side of the river are most susceptible to erosion. Segments of these areas contain soils that may be prone to slumping, sliding, and creep.

WESTERN's standard mitigation practices to be applied to the proposed project are presented in Appendix C. Use of these measures, including water bars, terracing, soil decompaction, scarification, and revegetation, would control erosion to an acceptable level. Existing roadways or two-track trails occur over much of the construction corridors, and additional vehicle traffic should not significantly increase compaction to the point of lowering soil productivity to an unacceptable level. Particularly steep slopes would require alternative construction methods such as foot access and winching, or use of helicopters for setting or removing structures. During detailed design, WESTERN would take into consideration the areas of steep slope with soils that are highly erosive or have slumping potential. Significant impacts to soils are not expected.

4.1.4 Water Resources

Transmission line construction has the potential to increase turbidity and sedimentation of surface water due to runoff from disturbed areas. Streambanks and beds could be damaged during crossing by equipment, and contamination could occur due to accidental spills of fuel or waste during construction. Impacts to these factors would be considered significant if quantity and quality of water were modified to the extend that fish populations were reduced, water quality criteria were exceeded, or downstream established uses were measurably reduced.

The North Platte River, Morgan Creek, and Hamilton Creek would be crossed by the Miracle-Mile-Sinclair and Miracle Mile-Seminoe lines in the same locations as the lines to be replaced. The new Miracle Mile-Cheyenne lines would cross Lost Creek. No structure would be placed in a stream. Construction of transmission lines across the North Platte River would be accomplished with minimal erosion of soils into the river because the floodplain is vegetated and has gentle slopes. Erosion potential at the other stream and tributary crossings would also be low since the transmission line could easily span these narrow streams. Water pollution from runoff of sediments resulting from soil disturbance would be minor and of short duration. Some new temporary disturbance would occur at the substation, structure locations, ROW travel way, and staging yards; the potential for wind and water erosion on disturbed areas exists but prompt revegetation and other measures presented in Section 4.1.3 will limit soil erosion. Existing roads and trails, some of which will be upgraded, will be the primary access to the ROWs. Potential increased sedimentation due to use of the roads will likely be offset by reductions in erosion on the upgraded portions. The potential for surface water contamination from accidental oil or fuel spills is unlikely since refueling trucks would not be operated near river or stream crossings.

Potential for accidental spills into the North Platte River during removal of oil from the breakers at the old Seminoe and Kortes Switchyards is present; however, the likelihood of a spill is low. Potential adverse impacts during removal of the oil would be offset by long-term beneficial aspects of removing the oil, thereby eliminating the potential of subsequent spills into the North Platte River.

Impacts to water resources due to the proposed project are expected to be short-term and low-none.

4.1.5 Vegetation

Using the worst-case scenario developed in Section 2.0, a maximum of 174 acres would be disturbed as a result of the proposed project (Table 2.3). Approximately 3.0 miles of the proposed new transmission lines on the east side of the river, 10.0 miles of the line to be rebuilt on the west side of the river, the 10-acre substation site, and the 40-acre helicopter staging area would be in the grassland vegetation type. Approximately 0.4 mile of the new line crosses hay meadow vegetation types along Lost Creek. About 3.0 miles of the new lines, 2.5 miles of line to be rebuilt, and 1.9 miles of the line to be removed are in the conifer woodlands vegetation type. The remaining 0.5 mile of the new line and 2.0 miles of the line to be removed are in the juniper vegetation type.

Project construction would affect at most about 174 acres of native vegetation for the short term. Most of the ROW travelway areas are existing trails, and little additional disturbance would occur. The areas that would be disturbed at the tower structure sites and conductor stringing sites would be revegetated, and no long-term impacts would be expected. Existing access roads and trails would be used for most of the access to the ROWs. Only a minor amount of improvements is expected to be necessary on approximately 11.4 miles of road; 0.6 miles of gravel-surfaced road will be constructed. A maximum of 55 acres would be required for the new substation site and construction staging areas. The west-side staging area (five acres) and helicopter staging area (35 to 40 acres) would be reclaimed following construction. The east-side staging area and substation (ten acres) would be partially reclaimed, but about five acres under the substation and 1.6 acres under the gravel access road would be lost for the long term. This loss would be in grassland vegetation.

The project would cross riparian areas at the North Platte River, Lost Creek, and some of the smaller tributaries such as Morgan Creek and Hamilton Creek. Only minor amounts of vegetation disturbance are expected during crossing of riparian or wetland areas. Bands or strips of riparian vegetation at all stream crossings will be spanned. The North Platte River crossings would be in the same ROW as the existing lines to be rebuilt, thereby further limiting potential new impacts to riparian vegetation. Vegetation in the ROW and at the substation will be controlled only to the extent necessary for safe operation and no major or long-term reduction in these important vegetation types would occur. Only those herbicides registered with the EPA and applied in compliance with all laws and regulations and BLM practices will be used.

There are no classified threatened or endangered plant species known to exist in the Seminoe-Kortes project area. One plant, persistent sepal yellowcress, a Category 2 candidate species for Federal listing occurs in the region. Fifteen populations of this plant have been located along the margin of Seminoe Reservoir and the shoreline of the Medicine Bow River; all are outside of the project area, and none would be disturbed by the proposed project.

No significant or moderate impacts to vegetation due to the proposed Seminoe-Kortes consolidation project are expected.

4.1.6 Wildlife and Fisheries

4.1.6.1 Wildlife

Wildlife occurs in all habitat/vegetation types in the project area with overall diversity and abundance highest in the riparian zone. Short-term, low level impacts are expected on most species due to increased disturbance associated with human presence and disturbance of vegetation. Disturbance of certain areas has the potential for more serious impact as discussed below.

The proposed Seminoe-Kortes project could affect crucial winter/yearlong range for mule deer, pronghorn, and bighorn sheep. In addition, a portion of the project would be located in a bighorn sheep lambing area. Crucial winter range for mule deer is located on both sides of the North Platte River for two separate mule deer herd units (see Section 3.6.1). The new transmission line east of the river would cross about 3.3 miles of crucial winter range for the Shirley Mountain mule deer herd (Figure 3.2). The passive repeater is also located within this crucial range. Removal and rebuilding of the existing lines west of

the river would affect about 10 miles of crucial winter/ yearlong range for the Ferris Mule Deer Herd. In all cases, the areal extent of disturbance would be minimal, but impacts would be considered significant if construction were to take place during the November 15 to April 30 winter period without prior approval of WGFD and BLM.

Pronghorn crucial winter/yearlong range occurs in the northern portion of the project area (Figure 3.1). The new lines would cross about 1.4 miles of this range, and the lines to be rebuilt would affect about 1.9 miles. In addition, the proposed substation is located within pronghorn crucial winter range. As for mule deer, the total acreage lost is small, but impacts would be considered significant if construction were to take place during the November 15 to April 30 winter period without prior approval of WGFD and BLM.

Bighorn sheep of the Ferris Herd Unit concentrate in the Seminoe Mountains west of Seminoe Dam during the crucial wintering period and the lambing season (Figure 3.1). Project activities in this area would be the removal and rebuilding of lines in the existing ROWs. Relatively little additional acreage would be affected by the planned project in this area, but the timing of construction activities is very important. In addition to the November 15 to April 30 winter restriction, WGFD recommended that no activities occur in the lambing area during the month of June. Special mitigation conducted as part of the proposed project includes curtailment of construction activities within the crucial wintering areas and the lambing areas during these times, unless otherwise approved by WGFD and the land management agency. Bighorn sheep are particularly susceptible to stress and dust-related pneumonia. Traffic increases as a result of the project are not expected to be excessive (see Section 4.1.10); however, it is possible that increased dust may be a problem on the unpaved portion of the BuRec Road near Seminoe Dam during the summer months. Dust suppression may be necessary.

There are three known raptor nests in or near the project area (Figure 3.2). Significant impact could occur if these or other raptor nests were disturbed during the breeding season. All three nests were used by prairie falcons in the past. There have been no recent activity checks of these nests (Rinkes 1987 and 1988, personal communication); however, no nest is within 0.5

mile of proposed project facilities. No impacts to these nests are expected. There is no other known raptor nesting in the project area; however, detailed surveys have not been conducted. If construction activities are scheduled to take place during the breeding season (February-July), a raptor nest search should be conducted to assure that no previously unreported nest is disturbed. The proposed project includes a special mitigating measure to search for raptor nests if construction is conducted during the breeding season.

The project would not result in a net increase in transmission lines over the North Platte River. Planned changes in tower design and conductor size for the line to be rebuilt would not cause increased impacts to raptors or waterfowl using the river corridor.

Impacts of the proposed project would also be considered significant if any listed threatened or endangered wildlife species was adversely affected. Bald eagle, peregrine falcon, and black-footed ferret are the listed species that occur or potentially occur in the area.

Potential black-footed ferret habitat is present in a 337-acre prairie dog colony on the project area. No ferret or ferret sign was observed on the colony during standard clearance surveys conducted during winter 1988-1989.

A traditional winter bald eagle roost is located out of the project area about eight miles north of the proposed substation site, and bald eagles use the Miracle Mile area of the North Platte River for winter feeding. Project construction would not occur during the winter use period, and no large cottonwood trees used as hunting perches would be removed.

A biological assessment (Appendix D) was prepared for the Seminoe-Kortes Consolidation Project for submittal to the USFWS. The biological assessment concluded that the proposed project would not jeopardize the continued existence of the bald eagle, peregrine falcon, or black-footed ferret. The USFWS concurred with WESTERN'S determination of "no effect" to threatened or endangered species (reference concurrence letter in Appendix D).

4.1.6.2 Fisheries

Important fisheries present in Seminoe Reservoir and the North Platte River could be adversely impacted through increased sediment or contamination of water due to accidental spills. These impacts would be considered significant if habitat were altered to the extent that fish reproduction and growth were reduced or if fish were killed as a result of a catastrophic spill of contaminants.

The proposed project would entail the removal and reconstruction of two lines across the North Platte River. In addition, the new transmission lines on the east side of the river would cross Lost Creek, a Class 4 stream. Significant impacts of stream siltation, bank disturbance, or bank cover loss are not expected. The North Platte River and tributary streams would be easily spanned by transmission line structures without disruption of bank habitats. There may be a slight increase in siltation associated with access roads or stream crossings via existing trails, but this is expected to be minor and of short duration.

The probability of accidental oil or gasoline spills during construction would be minimal since refueling trucks would not be operated near river or stream crossings. Additionally, WESTERN's standard mitigation practices would reduce this and other potential aquatic impacts. The old switchyard components of the Seminoe Powerplant and Kortes Dam to be removed by the project include oil-filled breakers. The oil was checked for PCBs and other toxic substances and found to be uncontaminated. All activities for removal of the oil and decommissioning of the equipment would be carried out in an environmentally acceptable manner, and the likelihood of a spill to the river is believed to be low. If an oil spill were to occur into the North Platte, impacts would be significant. A long-term beneficial impact would be realized with removal of the oil from the current location, thereby eliminating potential spills in the future.

The measures used to limit soil erosion and maintain water quality will also limit impact to fisheries. Impacts to fisheries due to the proposed project are expected to be low-none.

4.1.7 Floodplains and Wetlands

Impacts to floodplains and wetlands would be considered significant if structures in floodplains caught debris and increased the area subject to flooding or if wetland vegetation were lost.

A separate floodplains wetlands assessment has been prepared for the Seminoe-Kortes Consolidation Project (Appendix E). Flooding is not likely to be a problem because flow of the North Platte River is controlled by Seminoe and Kortes Reservoirs. New transmission line structures would not be located in the present floodplain of the North Platte River. Structures will be located nine feet above floodplain at maximum spillway capacity for Kortes Dam (approximately 50,000 CFS). Historic flows, recorded since 1900, indicate no flows greater than approximately 22,000 CFS. The proposed transmission lines across the North Platte are replacements for existing lines, which have not exhibited problems associated with current location relative to the floodplain.

Potential impacts to wetlands include disruption of riparian areas during line construction, physical alteration of wetlands by construction equipment, and removal of wetland vegetation. Most wetlands crossed by the proposed project are small enough to be spanned, thereby eliminating the need for placement of structures in wetland area. (See also discussion of wetland and riparian vegetation in Section 4.1.5).

Impacts to floodplains and wetlands due to the proposed project are expected to be low-none.

4.1.8 Land Use and Recreation

4.1.8.1 Land Use

Impacts to land use would be considered significant if the proposed project was not compatible with land use plans or regulations adopted by local, State, or Federal agencies. Significant impacts would also occur if residences were within the ROW.

Potential land use impacts associated with the proposed Seminoe-Kortes Consolidation Project were assessed by determining the compatibility of the proposed action with existing and proposed land uses and its consistency with land use policies and regulations. Compatibility impacts would be associated with interference from the substation or transmission line structures and with limitations to future use from the ROW restrictions.

The tower sites are relatively accessible except in certain locations where the lines cross the Seminoe Mountains. Access over the mountains require helicopter construction techniques that limit the amount of disturbance to the terrain. Construction of the new transmission lines east of the river would require a maximum 200-ft ROW just west of the edge of the Bennett Mountains WSA. Existing transmission line corridors would provide access for removal and rebuilding of existing lines on the west side of the river.

Most of the proposed transmission line changes and additions are located on Federal land except approximately 1.5 miles of the lines west of the river that cross private and State lands and 1.7 miles of the new lines east of the river that cross private land. The BLM (1987) Resource Management Plan specified open rangelands and recreation as primary land uses for the project area. All of the rebuilt lines would be located on land currently used as ROW. Approximately 6.9 miles of new ROW would be used for new lines while approximately 3.3 miles of line would be removed and not replaced, resulting in a net increase of approximately 3.6 miles of ROW used for transmission lines. There are currently no other developments planned for the existing or proposed transmission line corridors on BLM or BuRec lands. No significant adverse land use impacts are expected from construction of the proposed transmission lines.

The proposed line additions and changes traverse rural land. Few residences exist in the area, and none are located within the proposed ROWs. No significant noise or disturbance impacts to existing residences are expected.

4.1.8.2 Recreation

Impacts to recreation would be considered significant if areas designated as park or recreation were crossed by new ROW, recreationists were displaced from campsites by construction workers, or if traffic was delayed on roads used for access to recreation areas.

The proposed Miracle Mile-Cheyenne transmission lines would traverse a 0.25-mile section of the northeastern boundary of Seminoe State Park and are adjacent to, but not within, the northwestern corner of the Bennett Mountains WSA. The new lines would be constructed approximately one mile east of the Miracle Mile Fishery on the North Platte River. Approximately 1.5 miles of the existing Seminoe-Cheyenne transmission line that would be removed traverses Seminoe State Park. Removal of this line and the Seminoe-Kortes and Kortes-Cheyenne lines from Kortes Dam would be a positive impact because existing visual conflicts with recreation would be removed (see Visual Resources Section 4.1.11). No significant conflicts with recreational facilities are expected.

There are designated camping areas in Seminoe State Park and along the North Platte River, and dispersed camping outside designated areas is allowed on public land except the Morgan Creek Big Game Range. The housing requirements of construction workers could place increased demands on recreational camping facilities if workers camp in designated areas. The peak number of workers in the project area at any given time would be 25 with most workers expected to live in travel trailers. Two privately owned areas within five miles of Kortes Dam (Kortes Ranch and Richner Trailer Park) are available for workers to park trailers. Workers with tents or trailers could also camp at Seminoe State Park (14-day limit) or along the Miracle Mile (five-day limit). Peak visitor use of recreation facilities occurs May through August. No significant impacts to camping facilities are expected since the peak work force would be small and the capacity of existing camping facilities has never been exceeded.

Construction and removal of transmission lines are not expected to cause major traffic delays or road closures. Recreation traffic through Seminoe State Park on Carbon County Road 351 could be slowed by large trucks operating on Seminoe Road. The trucks would have to climb the steep grade and negotiate the sharp curves on 1.5 miles of the unpaved portion of Seminoe Road. This road is the main recreation access road between Seminoe Dam and the Miracle Mile. These traffic delays could be an inconvenience to recreationists if they occur frequently or during periods of high recreation use, such as weekends and

holidays in May through August. In response to this concern, the project includes a special mitigation measure to minimize construction traffic on weekends and holidays during that period.

4.1.9 Cultural Resources

The significance of individual cultural resources is evaluated based on the criteria given in 36 CFR 60.4. These criteria are the basis for determining the eligibility of a site for inclusion in the NRHP. All sites recorded within the project area that may be impacted by construction, operation, or maintenance of the proposed facilities will be evaluated for their eligibility for inclusion in the NRHP. Sites that are evaluated as not eligible for the NRHP are not significant and will not be considered further in the planning and mitigation process.

Criterion (d) of 34 CFR 60.4 states that a site is eligible if it has or is likely to yield important scientific information. This is the criterion most frequently appropriate for evaluating prehistoric sites whose value lies in the data that can be collected from the sites. It is anticipated that at least one of the sites recorded within the Seminoe-Kortes project area will be eligible under criterion (d).

Impacts to each eligible site will be evaluated to assess the cumulative effect of the project on cultural resources. Construction activities such as road blading, ground clearing and leveling, and tower construction can destroy some or all of the important attributes of a site. Increased vehicle traffic through or adjacent to a site may accelerate natural erosion and vandalism. Transmission lines and associated facilities situated close to cultural resources can be a visual intrusion to sites where the setting and viewshed are important to the integrity of the site.

The preferable alternative for mitigating impacts to eligible sites is to avoid the sites or at least sensitive portions of a site by relocating proposed roads and facilities to the extent possible. Unavoidable impacts to sites eligible under criterion (d) of 36 CFR 60.4 can usually be mitigated through a data recovery program, which may include collection of surface artifacts, excavation, and/or site mapping. Monitoring of construction activities by an archaeologist may be used in conjunction with avoidance or data recovery to prevent inadvertent impacts.

WESTERN will coordinate the process of identifying and evaluating cultural resources and implementing mitigation activities with the Wyoming SHPO, BLM, BuRec, and the Advisory Council on Historic Preservation.

Of the four prehistoric sites and seven IFs recorded during the intensive Class III cultural resource inventories, Site 48CR4498 is possibly eligible for the NRHP. The site is crossed by two transmission line ROWs (Miracle Mile-Seminoe 115-kV and Miracle Mile-Sinclair 115-kV). Avoidance by construction activities or, if avoidance is not possible, data recovery excavations are recommended. If necessary, it is recommended that the first stage in a data recovery plan for Site 48CR4498 be a testing program involving the systematic excavation of 1 by 1 meter test units along the ROWs to assess the nature of cultural deposits. If the ROWs lack significant cultural remains, then further mitigative excavations would not be necessary.

The Seminoe-Kortes Consolidation Project would not impact significant cultural resources if the standard mitigation measures 1, 4, and 20, and special measure 4 are met. They are detailed below.

1) All disturbance should be restricted to areas within the inventoried ROW and access roads.

2) Ground disturbing activities and vehicle traffic within the boundaries of Site 48CR4498 should be avoided. If Site 48CR4498 cannot be avoided, then an approved data recovery plan which includes a testing phase should be implemented before disturbance.

3) Boundaries of Site 48CR4498 should be clearly flagged prior to construction, and all construction crews should be given explicit instructions to avoid the site.

4) If evidence of additional prehistoric or historic sites is discovered during construction, all activities within a 50-foot radius of the site should cease immediately, and appropriate personnel within WESTERN should be notified immediately to assure proper handling of the discovery by qualified archaeological personnel.

5) All construction and maintenance personnel should be instructed of the confidentiality of site locational information and that the collection of cultural material is prohibited by Federal laws.

4.1.10 Socioeconomic and Community Resources

4.1.10.1 Socioeconomics

Population changes in Carbon County due to construction of the proposed transmission lines are expected to be minimal and of short duration. Construction is proposed to commence in October 1991 and be completed in November 1992. The peak number of workers in the area would be 25. Most of the work force is expected to be residents of the state from which the contractor is hired. Most of the work force is expected to bring travel trailers for housing, which could be parked at two privately-owned trailer parks (see Section 4.1.8.2). It is unlikely that any out-of-region workers would relocate their families for the relatively brief construction period. An insignificant amount of secondary employment or population growth is expected because of the low number of workers and the shortness of the construction period. The Rawlins housing market currently has a surplus of both rental units and houses for sale; therefore, no significant impacts to housing are projected because of the availability of housing and the number of workers who are expected to provide their own housing. Public facilities and services would not be significantly affected by the proposed construction.

There would be short-term beneficial effects on the local economy associated with expenditures by workers during the construction phase. There would be no major tax base impacts associated with the project because Federal facilities are tax-exempt.

4.1.10.2 Transportation and Communication

Carbon County Road 351 from Rawlins provides access to Seminoe Dam from the south. The road is paved through Seminoe State Park, then unpaved the last 1.5 miles to Seminoe Dam. Some recreation traffic delays would be expected on this road because of its use for access to Seminoe State Park and the Miracle Mile.

The road is also used by residents of the Federal housing area. Traffic could be slowed by large trucks as they climb the steep grade and navigate the sharp curves on Carbon County Road 351 between Seminoe State Park and Seminoe Dam. If these traffic delays occur frequently or during periods of high recreation use, they could be considered highly inconvenient by recreationists (refer to Section 4.1.8.2). Carbon County Road 291 and Kortes Road provide access to Kortes Dam. Traffic delays are not expected on these roads because the roads are paved and the grades are moderate.

Load limits on unpaved county roads are determined by present road conditions and permits are required from the Carbon County Board of Commissioners for the use of unpaved county roads. Dry road conditions allow load limits of 10,000 pounds per axle, while frost in winter may allow up to 80,000 pounds gross vehicle weight (GVW). During wet periods, load limits could be set below 10,000 pounds per axle. All load limits on paved roads are 80,000 GVW. The new Kortes Bridge will accommodate semi-tractor-trailers up to a total weight of approximately 72,000 lbs. Significant transportation impacts could occur from loads above these weight limits. Trucks and steering trailers used for transporting poles weigh 80,000 pounds loaded and 30,000 unloaded. Concrete and tanker trucks weight 50,000 to 80,000 pounds loaded and 30,000 pounds unloaded. Permits would be acquired before delivery or removal schedules for new or old equipment are finalized. Transportation schedules must incorporate load limits authorized by permits. No significant impacts on transportation are expected.

Preliminary investigation of all transmission line corridors suggests that the lines would not violate Federal Aviation Administration (FAA) height requirements in relation to the ground surface or interfere with operations at the airstrip northeast of Kortes Bridge. The airstrip would not be affected by construction or operation of the proposed transmission lines because of its infrequent use and its position parallel to the lines.

The Continental Pipeline Company in Denver owns the 8-inch petroleum pipeline located within the corridors proposed for line rebuild. Before construction begins, the pipeline company would be contacted to determine exact pipeline location and necessary precautions for construction in the vicinity of the pipeline.

Local radio and microwave interference is not expected from new or rebuilt transmission lines. The new lines would cause less corona and radio interference than the existing older lines.

4.1.11 Visual Resources

Visual effects of the proposed Seminoe-Kortes Project were evaluated using the BLM VRM system contrast rating procedures (BLM 1980).

The mountainous portion of the study area is designated VRM Class II, and the remainder of the area is VRM Class III (see Section 3.11 and Figure 3.6). The proposed substation and approximately one-half of both the new and rebuilt lines would be in the Class III area. The other half of the new and rebuilt lines and all of the lines to be removed would be in the Class II area. Significant impacts could occur if the proposed project caused visual contrasts to exceed the requirements of the established VRM classes.

Five KOPs were selected for the contrast rating analysis (see Figure 3.6). Other views of the proposed project activities would be possible, but the KOPs selected represent the most sensitive views and those that would be seen by the most people. The first KOP was located in the North Red Hills campground to represent long-term viewers at the campground, boaters on Seminoe Reservoir, and travelers on Seminoe Road. The second KOP was located within the Bennett Mountains WSA because of the sensitivity of views from this potential wilderness area. No developed trails are present in the WSA. The third KOP was located on the Kortes Dam Road, just north of the Kortes Dam Camp site. This location represents the large number of people that fish on the Miracle Mile, including those that camp in the area. Viewsheds to both the east and the west were analyzed from the third KOP to evaluate the new lines and the lines to be rebuilt, respectively. KOP number four was located on the Alcova Road southeast of the proposed substation site primarily to evaluate the potential effects of the substation on viewsheds of travelers approaching from the northeast.

The fifth KOP was established to evaluate the visual effects of new powerline adjacent to the western boundary of the Bennett Mountains WSA. Specifically, the KOP is located where a new segment of line and an existing two-track road crest a high point of the Seminoe Mountains. A unique viewshed to the north is afforded from this KOP; the two-track road is roughly the westerly boundary of the WSA. According to the BLM (Rawlins District), this two-track represents the only publicly controlled access to the WSA, and if the area should receive Wilderness designation, would be formally designated and upgraded as needed to afford public access.

Several assumptions about project design features and construction methods were made for the visual contrast rating. It was also assumed for the purposes of visual contrast analysis that construction and maintenance access to the various components of the proposed project would be obtained as follows:

- Most construction and removal activities would be accomplished from existing roads and trails. Surface disturbance would be minimal, limited to minor maintenance level grading as required.
- Line construction west of Kortes Reservoir would be accessed from existing trails.
- New construction on most of the Miracle Mile-Cheyenne lines would be accomplished from existing access routes or with methods that do not require surface disturbance for access, such as helicopters.
- Structures would be nonreflective, oxidized steel lattice; insulators and conductors would be nonspectral (nonreflective). Steel lattice is necessary due to maintenance considerations in some of the remote areas.
- Construction would be accomplished without major clearing of trees. This would be possible because tree cover is relatively sparse and only individual trees necessary for safe operation of the line would be cut.
- The passive repeater would be a dull, nonreflective color to blend in with the surrounding landscape.

Visual contrasts introduced by construction of the proposed project are discussed below for each of the KOPs. In general, the analysis concentrates on potential contrast from structures and conductors. Landform alterations would be minimal because much of the required access would be accomplished from existing roads and trails, minimizing the need for additional earthwork.

Views of the project from within the North Red Hills campground KOP would be limited to activities on the south face of the Seminoe Mountains. Visual

contrast resulting from existing transmission lines is very minor when viewed from this point, because the weathered wood poles blend well with the sparse trees. Silhouetted structures at the top of the ridge are more than one mile from most viewers and are not visually dominant because they do not tower above surrounding topography and trees (see Figure 3.4). The existing lines readily satisfy the objectives from VRM Class II areas. Removal of the existing line along the base of the mountains would reduce existing contrast visible from the campground slightly. Construction of the proposed new line up the face of the mountains parallel to the existing line would increase visual contrast somewhat but should satisfy the Class II objective that it "not attract the attention of the casual observer". Potential visual contrast would be reduced if towers were not placed on top of the knolls along the ridge. With careful siting, it would be possible to meet the Class II objectives with nonreflective, dark, earth-tone colored steel structures.

Views of the proposed new lines from the Bennett Mountains WSA (KOP 2) would vary considerably from location to location because of dramatic topographic variation and the erratic pattern of the forest. Only a very small segment of the western edge of the WSA, northeast of Dry Lake, would have unimpeded views of the proposed new transmission lines. This area currently has a largely unimpeded view of the existing line (a portion of which would be removed) at a range of approximately one mile. The proposed lines would be obscured from view by terrain at many locations farther east in the WSA. Views would be erratic from other points in the WSA at distances of 0.25 mile to 3.0 miles because of sparse forest cover. The passive repeater would be out of sight behind a knoll from KOP 2. Visual contrast in the KOP 2 area would be increased because the two new parallel 115-kV lines would be more visually prominent than the single existing line to be replaced. The proposed lines would achieve the VRM Class II objectives, if built with nonreflective, dark earth-tone colored, steel structures. Oxidized, steel lattice structures blend into the landscape as well as or better than wood H-frame due to the amount of background that shows through the lattice and the requirement for fewer structures.

Views from KOP 3 on Kortes Dam Road are "busy" in the foreground with cultural modifications including three existing transmission lines, an intersection of two roads, and a bridge across the North Platte River plus, in season, a notable amount of traffic from fishermen and campers. Vistas of the Seminoe Mountains to the south and Pathfinder Basin to the north draw the casual observer's eye away from the busyness, however, and prevent it from dominating the view. Reconstruction of the lines to 115-kV using steel lattice structures that are taller than the existing lines would not necessarily increase the visual evidence of human intrusion in this area or the busyness of the foreground views. Oxidized steel lattice structures would blend into the landscape as well as or better than wood H-frames as described above. Use of steel structures would increase scale contrast somewhat but would reduce the total number of structures and, therefore, the visual congestion. The new Miracle Mile-Cheyenne lines would not be visible from KOP 3. The objectives of VRM Class III would be satisfied in the KOP 3 area.

Views of the proposed substation site from Alcova Road (KOP 4) currently include a small substation in a broad rangelands basin ringed by foothills and low mountain ranges. The viewer is elevated above the substation site by from 40 feet to as much as 180 feet for most of the three miles of road with unimpeded views of the site. This viewer-superior topographic position coupled with the mountainous backdrop would prevent the proposed substation from being silhouetted above the horizon, even though it would be notably larger than the small existing facility. The partial transparency of substation facilities allows natural background colors to show through, which is also visually advantageous when the facility is not seen in silhouette. Also, nonreflective surfaces and compatible earth-tone colors will be used for the substation structure. For these reasons, the proposed substation site would readily achieve the Class III VRM objectives.

The new Cheyenne-Miracle Mile lines south of the road would be screened from view from KOP 4 due to their location in the valley. The lines would be in view at the road crossing, which would be approximately 0.25 mile east of the crossing of the existing lines. The new line would add to the visual congestion in that area; however, visual contrast would not exceed that allowable for a Class III VRM objective. Contrast would be reduced by use of nonreflective steel lattice structures and conductors and with a reduction in the numbers of structures used in rebuilding the other lines.

KOP 5 represents an extremely sensitive visual area. Two new powerlines, a 115-kV and a 115/230 kV, will be built immediately adjacent to a two-track access road at this KOP as part of the proposed action. The view in a northerly direction from the KOP is outstanding, as depicted by the photo-panorama in Figure 4.1.

Except for the two-track road, the only non-natural feature visible from the KOP is a small stretch of powerline to the west, that will be removed as part of the proposed action. The two-track originates approximately one-half mile south of the Kortes Dam Camp, runs easterly along the base of the mountain approximately one mile to Number One Gulch, and then climbs along a ridge approximately two miles to KOP 5. The proposed lines roughly parallel this access road at a distance of no more than 500 ft. for about two miles.

KOP 5 and the access road are situated entirely within a Class II visual management area. Obviously, the powerlines associated with the proposed action in this area would dominate the existing scenic resources as a foreground feature and thereby be contrary to the tenets of this management objective. Currently, the two-track road is suitable only for four-wheel drive vehicles and is most likely used on very infrequent basis by hunters and ORV enthusiasts (no specific use data available). On the other hand, if the WSA was designated as a Wilderness, the user base on the road and in the vicinity of the KOP would likely increase somewhat in size and be extremely sensitive to man-induced intrusions in an essentially unaltered, natural setting. Given its ruggedness, relative isolation, and lack of established trails, the number of people visiting the area would most likely be low. However, the few visitors would assuredly be keenly aware of and looking forward to a uniquely natural visual experience.

There will be some visual offset resulting from the removal of approximately one mile of powerline visible when looking west from KOP 5. However, this line is a distant foreground feature located 0.75 miles to the west of the KOP. The offset would therefore be minimal.

In summary, for all but the area near KOP 5, the proposed Seminoe-Kortes project would not increase visual contrast to a significant degree in the project area. VRM class objectives would be achievable. The areal extent of man-made

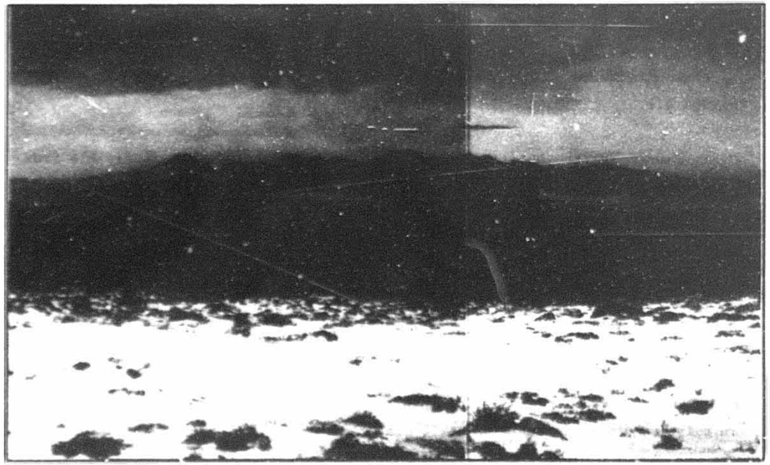

Figure 4.1 View looking North from KOP5, Seminoe-Kortes Consolidation Project, Wyoming, 1990. (Proposed Action would place powerlines in foreground.)

visual intrusions would change but would not be substantially increased. In addition, proposed removal of the Seminoe-Cheyenne 115-kV line across the base of Seminoe Mountains north of Seminoe Reservoir and a portion of the existing Kortes-Cheyenne 115-kV line would beneficially reduce visual contrast. The main benefit would result from the removal of any ridgetop structures that are currently silhouetted above the ridge lines from certain viewpoints.

For the KOP 5 area, changes in contrast induced by the proposed action would exceed that allowable by Class II management objectives; i.e., the existing landscape would be dominated by two powerlines proposed for construction in the area. However, in discussions held with the Recreation Planner for the Rawlins District of the BLM (Rick Colvin 1990, personal communication), it was concluded that those changes would not significantly affect the visual environment for the following reasons:

- The user base in the area is extremely small, and if the WSA achieves Wilderness status (which appears unlikely given that the BLM has recommended that it not be designated as Wilderness), this base would not increase noticeably in size. Consequently, the proposed action would be of negative impact to very few users.
- From all other KOPs, the visual objectives are met. In particular, the view from KOP 2, within the Bennett Peak WAS, will be enhanced because the only powerline visible from the KOP will be removed under the proposed action.
- The project area has a history of powerlines within its confines. Management of public lands in the area must continue to consider this use.

In suggesting that the visual intrusions produced by the proposed action near KOP 5 would be insignificant, the BLM assumed that non-reflective conductors and non-specular towers would be used. Finally, through additional planning, WESTERN may be able to further reduce contrast by refining their placement of structures in the area. If engineering design would permit, natural features/topography in the area may shield some of the structures from view.

4.2 ALTERNATIVE ROUTE B

Many of the environmental consequences discussed above would be the same regardless of whether alternative route A or B was used for the Miracle Mile-Cheyenne transmission lines. Differences between alternative routes are primarily due to the differences in linear miles of resources/conditions crossed. A summary of the differences and comparisons of the potential impacts between routes A and B is presented in Table 4.1. Only those resources that exhibit a difference between the alternatives are listed.

Alternative B crosses more steep slopes and crucial big game winter range, more of it is observable from key observation points, and more new access roads to the ROW would be necessary compared to alternative A (Table 4.1). Impacts to these resources would be the same as discussed under the proposed action; however, they would be increased along alternative B. Overall, Alternative A is the environmentally preferred route as well as WESTERN's proposed route.

4.3 SINCLAIR-PLATTE SUBSTATION TEMPORARY TIELINE

The environmental effects of the two-week temporary tieline between the Sinclair and Platte Substations would be low and probably unmeasurable. The short distance between the substations, presence of existing facilities, and short duration involved limit any and all potential impacts to a low-none level.

4.4 ELECTRICAL EFFECTS

Potential electrical effects associated with transmission lines include ozone generation, radio and television interference, audible noise, electric and magnetic field interference, and safety concerns. The first three of these potential effects are caused by corona, which is the electrical breakdown of air into charged particles created by the electrical field at the surface of the conductors.

Corona effects are generally associated with transmission lines operating at voltages of 345-kV or above. For the proposed action (built to 115-kV), corona effects would be negligible; ozone generation would be undetectable; and

Table 4.1 Comparison of Environmental Resources/Condition and Potential Impacts Between Alternative Routes A and B for Miracle Mile-Cheyenne Lines, Seminoe-Kortes Consolidation Project, Wyoming, 1990.[1]

Environmental Resource/Condition	Miles in Each Alternative A	Miles in Each Alternative B	Alternative
Steep Slopes	0.8	1.3	A
Crucial Big Game Ranges	3.2	3.6	A
Land Use			
Adjacent to Existing ROW	0.0	1.0	B
Hay Meadows	0.4	0.0	B
New Access Road	0.0	5.0	A
Visual			
Observable from KOP's	0.7	2.2	A
Within VRM Class II	1.2	0.9	B
Within VRM Class III	3.2	3.5	A

[1] Includes only those resources that exhibited a difference between the alternative.

radio and television interference is not expected to be a problem. However, mitigative techniques do exist, and, if any problem occurred, WESTERN would take corrective action. Noise may be noticeable directly under a line during foul weather. However, line noise would remain very low and would probably be masked by background storm noise during inclement weather. Audible noise is not expected to be an annoyance.

Electric and magnetic field strengths are low for 115-kV lines. The proposed lines would be designed and constructed to meet or exceed all applicable requirements of the NESC. However, persons working near the lines should exercise caution not to contact the conductors with long, metallic objects (e.g. irrigation pipe). Such contact would produce a lethal electric shock.

For more detail regarding electrical effects, refer to Appendix F.

4.5 SPECIAL MITIGATION MEASURES

The following special mitigation measures, identified in the specific sections of the preceding discussion of environmental consequences, are actions that have been developed to mitigate potentially significant impacts. In addition, WESTERN's standard mitigation measures (Appendix C) are considered to be part of the proposal.

4.5.1 Measure 1

In order to avoid disturbance of big game, construction activities would be curtailed (unless otherwise approved by WGFD and BLM) in the following areas and time periods:

1) within the mule deer and pronghorn crucial winter ranges from November 15 to April 30; and

2) within the Ferris Herd Unit bighorn crucial wintering areas from November 15 to April 15, and during the month of June in the lambing areas.

Restriction of construction activities would alleviate potential disturbance to mule deer, pronghorn, and bighorn sheep in these crucial areas.

4.5.2 Measure 2

If construction activities are scheduled for the raptor nesting season, a raptor nest search would be conducted to determine if any unidentified nests are located in the area disturbed by the project. If an active nest is found, appropriate mitigation would be designed to ensure that reproduction is not adversely impacted.

4.5.3 Measure 3

All construction traffic on Carbon County Road 351 and the BuRec Road through the Seminoe Mountains would be kept to a minimum on weekends and holidays during the summer recreation season. Transportation restrictions during these peak use periods would reduce or eliminate recreation conflicts.

4.5.4 Measure 4

All disturbance to Site 48CR4498, including ground disturbing activities and vehicle traffic, would be avoided by spanning the site; if spanning were not feasible, a data recovery program which would include a testing phase would be implemented before disturbance. This action would minimize loss of data resulting from direct impact to the cultural site by project activities. If Site 48CR4498 can be avoided, then the site boundaries would be clearly flagged prior to construction, and all construction crews would be given explicit instructions to avoid the site.

4.6 UNAVOIDABLE ADVERSE IMPACTS

Implementation of WESTERN's standard mitigation measures and the additional measures identified in Section 4.5 would result in low to moderate impacts for the proposed project. There are no significant unavoidable adverse impacts associated with the proposed project.

5.0 LIST OF PREPARERS

Name	Education/Experience	EA Responsibility
WESTERN AREA POWER ADMINISTRATION		
Keith Woods	B.S. (Electrical Engineering) 24 Years Professional Experience	Engineering Coordination
Matt Stoltz	B.S. (Electrical Engineering) 3 Years Professional Experience	Engineering Coordination
William C. Melander	B.S. (Wildlife Management) 28 Years Professional Experience	Environmental Coordinator
J.F. SATO AND ASSOCIATES		
Ben Phillips	M.A. (Public Administration) B.S. (Archaeology) 13 Years Professional Experience	Cultural Resources Review
Rodney Jones	M.S.E. (Environmental Engineering) B.A. (Biology) 19 Years Professional Experience	Project Manager; Review and Coordination
John Bridges	M.S. (Zoology) B.S. (Zoology) 15 Years Professional Experience	Review
ERT		
Andrew Ludwig	M.S. (Resource Planning & Conservation) M.S. (Zoology) B.S. (Zoology) 13 Years Professional Experience	Project Management; Coordination of Technical Studies, EA Preparation, Quality Review
Sophie Sawyer	M.Ed. (Science Education) East Carolina B.A. (Biology) 13 Years Professional Experience	Project Coordination and Editing of EA Sections and Graphics
Bernhard Strom	M.C.R.P. (City and Regional Planning) B.S. (Urban Planning) 13 Years' Professional Experience	Visual Resources
Robert Sanz	B.S. (Zoology) 13 Years Professional Experience	Wildlife, Vegetation, Soils, Geology, Paleontology
Karen Watkins	M.S. (Resource Economics) B.S. (Outdoor Resource Management) 2 Years Professional Experience	Land use, Recreation, Transportation, and Socioeconomics
Pat Athey	M.S. (Botany) 3 Years Professional Experience	Water Resources and Aquatic Ecology

5.0 (continued)

Name	Education/Experience	EA Responsibility
MARIAH ASSOCIATES, INC.		
Craig Kling	M.S. (Wildlife Biology) B.A. (Zoology/Wildlife) 16 Years Professional Experience	Project Management, EA Preparation, Biological and Physical Resources
David Marvin	M.S. (Business Administration) B.S. (Zoology) 14 Years Professional Experience	Visual Resources, Quality Assurance
Craig Smith	M.A. (Anthropology) B.A. (Anthropology) 15 Years Professional Experience	Cultural Resources
Tom Reust	B.S. (Social Sciences) 11 Years Professional Experience	Cultural Resources

6.0 CONSULTATION AND COORDINATION

During preparation of the EA, the following agencies and private organizations were contacted to obtain data:

Federal

Bureau of Land Management - Rawlins, WY
Bureau of Reclamation - Casper, WY and Billings, MT
Federal Emergency Management Agency - Denver, CO
National Register of Historic Places - SHPO Cultural Records, Laramie, WY
Soil Conservation Service - Douglas, WY
U.S. Fish and Wildlife Service - Helena, MT; Denver, CO; and Cheyenne, WY
U.S. Geological Survey - Cheyenne, WY

State

Wyoming Game & Fish Department - Cheyenne, Sinclair, and Saratoga, WY
Wyoming Recreation Commission, Cheyenne, WY
Wyoming State Highway Department, Cheyenne, WY
Wyoming State Historic Preservation Office, Cultural Records - Wyoming Recreation Commission, University of Wyoming, Laramie, WY
Wyoming Water Research Center, Laramie, WY

County and Local

Carbon County Road and Bridge Department, Rawlins, WY
Carbon County Planning and Development Office, Rawlins, WY
Carbon County School System, Rawlins, WY
Carbon County Sheriff's Department, Rawlins, WY
Rawlins Fire Department

Private and Other

Lower Brules Sioux Tribal Council, Lower Brules, SD
Ogalala Sioux Tribal Council, Pine Ridge, SD
Crow Tribal Council, Crow Agency, MT
Comanche Tribal Office, Lawton, OK
Cheyenne/Arapaho Tribal Office, Concho, OK
Native American Tribal Council, Shoshone and Arapaho Tribes, Fort Washakie, WY
Rocky Mountain Heritage Task Force, Denver, CO
Friends of Wild Wyoming Deserts, Atlantic City, WY
The Wilderness Society, Washington, DC
National Audubon Society, Washington, DC
National Wildlife Federation, Washington, DC
Wyoming Chapter of the Sierra Club, Laramie, WY
Northern Great Plains Region Sierra Club, Sheridan, WY
Sierra Club, Washington, DC
American Wilderness Alliance, Englewood, CO
Northern Rockies Office of The Wilderness Society, Bozeman, MT

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APPENDIX A:

Common and Scientific Names

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COMMON AND SCIENTIFIC NAMES

Common Name	Scientific Name
ANIMALS	
MAMMALS	
Badger	*Taxidea taxus*
Bighorn sheep	*Ovis canadensis*
Black-footed ferret	*Mustela nigripes*
Cottontail	*Sylvilagus* spp.
Coyote	*Canis latrans*
Elk	*Cervus elaphus*
Mountain lion	*Felis concolor*
Mule deer	*Odocoileus hemionus*
Prairie dog	*Cynomys* spp.
Pronghorn	*Antilocapra americana*
Red Fox	*Vulpes vulpes*
Red squirrel	*Tamiasciurus husonicus*
Striped skunk	*Mephitis mephitis*
White-tailed deer	*Odocoileus virginianus*
White-tailed jackrabbit	*Lepus townsendii*
BIRDS	
American kestrel	*Falco sparverius*
American peregrine falcon	*Falco peregrinus*
American coot	*Fulica americana*
Bald eagle	*Haliaeetus leucophalus*
Blue grouse	*Dendragapus obscurus*
Canada goose	*Branta canadensis*
Double-crested cormorant	*Palacrocorax auritus*
Ferruginous hawk	*Buteo regalis*
Golden eagle	*Aquila chrysaetos*
Great horned owl	*Bubo virginianus*
Green-winged teal	*Anas crecca*
Horned lark	*Eremophila alpestris*
Long-billed curlew	*Numenius americanus*
Mallard	*Anas platyrhynchos*
Northern harrier	*Circus cyaneus*
Prairie falcon	*Falco mexicanus*
Red-tailed hawk	*Buteo jamaicensis*
Rough-legged hawk	*Buteo lagopus*
Sage grouse	*Centrocercus urophasianus*
Swainson's hawk	*Buteo swainsoni*
Turkey vulture	*Cathartes aura*
Western meadowlark	*Sturnella neglecta*
White pelecan	*Pelecanus erythrorhynchos*

Common Name	Scientific Name
FISHES	
Brook trout	*Salvelinus fontinalis*
Brown trout	*Salmo trutta*
Cutthroat trout	*Salmo clarki*
Rainbow trout	*Salmo gairdneri*
Walleye	*Stizostedian vitreum*
Gizzard shad	*Dorosoma cepedianum*
Emerald shiner	*Notropis* spp.
HERPTILES	
Chorus frog	*Pseudacris triseriata*
Gopher snake	*Pituophis melanoleucus*
Prairie rattlesnake	*Crotalis viridus*
Shorthorned lizard	*Phrynosoma douglassi*
Toads	*Bufo* spp.
PLANTS	
FORBS	
Persistent sepal yellowcress	*Rorippa calycina*
GRASSES AND GRASSLIKE	
Blue bunch wheatgrass	*Agropyron spicatum*
Bluegrass	*Poa* spp.
Gramma	*Bouteloua gracilis*
Mountain brome	*Bromus carinatus*
Needle-and-thread	*Stipa comata*
Prairie june grass	*Koeleria cristata*
Rush	*Juncus* spp.
Threeawn	*Aristida longiseta*
Threadleaf sedge	*Carex filifolia*
SHRUBS, SUBSHRUBS, AND SUCCULANTS	
Antelope bitterbrush	*Purshia tridentata*
Big sagebrush	*Artemisia tridentata*
Black sagebrush	*Artemisia nova*
Chokecherry	*Prunus virginiana*
Prickly pear cactus	*Opuntia polycantha*
Snowberry	*Symphoricarpos* spp.
Water birch	*Betula occidentalis*
Winterfat	*Ceratoides lanata*

Common Name	Scientific Name
TREES	
Douglas fir	*Pseudotsuga menziesii*
Narrow-leaf cottonwood	*Populus angustifolia*
Ponderosa pine	*Pinus ponderosa*
Limber pine	*Pinus flexilis*
Utah juniper	*Juniperus osteosperma*
Willows	*Salix* spp.

APPENDIX B:

Sensitivity/Constraint Criteria
For Seminoe-Kortes Consolidation Project

B.1.0 INTRODUCTION

The project study area was defined to include all facilities that would be rebuilt, removed, or newly constructed for the Seminoe-Kortes Consolidation Project plus a buffer of approximately 1/2 mile around the facilities. The study area is shown on Figures 2.1 and 2.2 of the preceding environmental assessment.

B.2.0 DATA COLLECTION

Data for the study area were collected from several sources, including field observation, existing literature, agency files, and personal interviews. These data were mapped onto topographic base maps (scale: 1"=2,000') of the project area and were subsequently reduced to produce the resource maps presented in the preceding environmental assessment.

B.3.0 SENSITIVITY CRITERIA FOR SEMINOE-KORTES CONSOLIDATION PROJECT

Sensitive conditions relative to transmission line and substation construction, operation, and maintenance were identified by evaluating all study area data for each environmental resource. The sensitivity of these conditions/resources was ranked as to the constraint each would pose to transmission line or substation siting. Four constraint levels were used:

- Very High: Areas that contain extremely sensitive environmental conditions/resources protected by legislation or administrative policy, or that present a severe physical constraint to transmission line construction and operation. Mitigation of impacts to very highly sensitive conditions/resources would be impractical, either because of the high cost of mitigation or because surface disturbance in the area would be prohibited. Consequently, these sensitive areas were avoided. Examples of very high constraints are cultural resource sites on the National Register of Historic Places (NRHP), critical habitat for threatened or endangered species, wilderness study areas, and scenic preservation areas.

- High: Areas that contain sensitive environmental conditions/resources protected by legislation or administrative policy, or which present a moderate physical constraint to construction, and for which extensive, costly mitigation measures other than WESTERN's standard measures, could be needed to ameliorate adverse impacts. Because of the extent and cost, areas with highly sensitive conditions/resources are generally avoided when possible. Examples of highly sensitive conditions include cultural resource sites eligible to the NRHP, large areas of slope greater than 25%, wetlands, some critical wildlife ranges, raptor nests, habitat management units, residential areas, sensitive viewpoints, and stream and reservoir crossings.

- Moderate: Areas that contain environmental conditions/resources protected by legislation or administrative policy for which either WESTERN's standard mitigation measures or other cost effective measures can be used to ameliorate adverse impacts. Such areas were not avoided during the routing analysis. Examples of moderately sensitive conditions/resources include raptor nesting buffer zones, small floodplains, and oil and gas fields, and critical winter range for big game.

- Low to None: Areas that do not contain known sensitive environmental conditions/resources and were therefore considered opportunity areas in the routing analysis.

The constraint level associated with each environmental condition/resources is detailed in Table B.1. Some environmental conditions, such as existing utility corridors, present opportunities for transmission line siting. Such opportunities are also identified in Table B.1.

Table B.1 Environmental Resource Sensitivity Relative to Transmission Line and Substation Siting for the Seminoe-Kortes Consolidation Project, Wyoming, 1990.

Environmental Resource/ Environmental Condition	Constraint Level VH	H	M	L-N	Opportunity Potential
Soils					
Wetlands (assumes area cannot be spanned; also, see terrestrial and aquatic biota)		•			
Unstable soils prone to slumping (steep slopes)			•		
Soils subject to wind and water erosion				•	
Geology/Topography					
Areas of rock outcrop				•	
Floodprone areas (assumes area cannot be spanned)			•		
Fault lines/areas of recent seis- micity			•		
Steep slopes (i.e., greater than 25%) that cannot be spanned		•			
Areas of undeveloped mineral reserves				•	
Air Quality				•	
Climate				•	
Hydrology					
Surface water (stream crossings)		•			
Reservoir (not easily spanned)		•			
Groundwater				•	

Table B.1 (continued)

Environmental Resource/ Environmental Condition	Constraint Level VH	H	M	L-N	Opportunity Potential
Terrestrial and Aquatic Biota					
Locations of threatened and endangered species per the Endangered Species Act of 1973, as amended, and habitat critical of to each	•				
Habitat used by T&E animal species but not critical			•		
Locations of highly sensitive species and habitat critical to each					
- State listed rare, unique, or endemic species		•			
- economically important terrestrial species (e.g., big game, waterfowl)			•		
- economically important aquatic species (e.g., trout)			•		
- species protected by Federal or State law, other than the Endangered Species Act (e.g., migratory birds, raptors)		•			
Unique habitats (e.g., wetlands, riparian woodlands, Class I trout streams)		•			
Wildlife Habitat Management Units		•			
Locations of species and habitats not encompassed above				•	•
Land Use					
Encroachments by private structures	•				
Residential area or site or residential zoning		•			
Existing transmission line ROW				•	•
Pipeline ROW				•	•
Road ROW				•	•
Wilderness Study Area	•				
Campgrounds		•			
Hay meadows			•		

Table B.1 (continued)

Environmental Resource/ Environmental Condition	Constraint Level VH	H	M	L-N	Opportunity Potential
Road Rows				•	•
Visual					
Scenic preservation area	•				
Areas of high scenic quality (Class II)		•			
Class III Areas			•		
Cultural					
Sites enrolled in the National Register of Historic Places (NRHP)	•				
Sites recommended as eligible to the NRHP		•			
Sites of unknown status with regard to the NRHP			•		
Sites not eligible for inclusion in the NRHP				•	
Areas of predicted high site density		•			
Buffer zone of 1/4 miles around significant historic sites	•				
Paleontological					
National Natural Landmark Sites (per the Historic Sites Act of 1953)	•				
Known significant vertebrate and invertebrate fossil locales protected by law		•			
Geological formations with high potential for significant fossils			•		

APPENDIX C:

Environmental Impact Assessment Methodology
For Seminoe-Kortes Consolidation Project

C.1.0 INTRODUCTION

The proposed Seminoe-Kortes Consolidation Project occurs in an area that contains numerous resources that exhibit varied levels of sensitivity to construction and operation of transmission lines and substations. The proposed project is described in Section 2 of the environmental assessment and the existing environment is described in Section 3. The following appendix is a description of the methods used to assess potential impacts of the proposed project on the existing environment of the area.

C.2.0 METHODS

C.2.1 Factors Considered in Determining Impact

Impact levels for each sensitive environmental condition were determined by considering the type of action; available and committed mitigation; the spatial relationship of the action to the condition; the size and form of the condition; and the relative sensitivity of the condition. Each is briefly discussed below.

The potential effects on a given environmental condition of constructing and operating a substation and transmission lines are not constant. They may vary widely depending on whether there is an existing transmission line along the route to be used; whether there is an existing accessway; and whether, in the absence of an accessway, one would be constructed. If, for example, a new transmission line were to be built parallel to an existing one, the strike hazard to waterfowl and other birds would be less than if the line is located on new ROW, since the new parallel line would only add to an existing obstruction. Similarly, relative to effects on visual quality, the presence of an existing parallel line means that the visual contrast of the new line, and hence its impacts, would be less than it would have been without the existing line, other things being equal. If an accessway already exists and could be used during construction, the total level of disturbance would be less than if a new accessway is required and disturbance would be restricted primarily to the structure sites.

Another important component of the type of action is transmission line design. Wood-pole structures can have different environmental effects than lattice steel structures, particularly to land use or amount of area potentially disturbed (e.g., ROW size differences) and visual resources (e.g, different visual contrast for wood than single steel lattice). For this impact assessment the following have been assumed:

- Steel lattice structures of low reflective material with conductors suspended from nonreflective insulators in horizontal configuration.
- ROW width not to exceed 100 feet for single lines and 200 feet for parallel lines.
- ROW travel way width 12-foot maximum.
- Substation and passive repeater will be a dull non-reflective color.

Other variables strongly affect impact levels. The most notable of these is mitigation. A very extensive standard and special set of mitigation measures would be implemented as part of the project. Some of these measures (e.g., seasonal avoidance of important wildlife habitat) essentially eliminate impacts that otherwise would be expected to occur.

Two types of mitigation measures were considered: standard and special. Standard mitigation measures are standard construction practices and other measures are those that WESTERN has adopted in constructing its transmission lines (see Table C.2.1). Special mitigation measures have been designed in response to the specific conditions encountered by the project. The proposed special mitigation measures for each of the environmental conditions assessed are detailed in Section 4.0 of the environmental assessment.

Another variable that affects impact levels is the spatial relationship between the environmental condition and the action. Greater distance generally reduces impact levels. Where appropriate, the distance between the proposed action and the environmental condition that could be affected has been considered in determining project impacts.

The size and form of the environmental condition also affect impact. If a sensitive environmental condition is small enough that it can be spanned by the

line, or if construction access can be routed around it, impact levels may be reduced. Floodplains and wetlands are examples of such conditions.

C.2.2 Definition of Impact Level

After taking the above factors into consideration, the impact levels defined were classified into three degrees of severity:

- Significant
- Moderate
- Low to none

Significant impacts (as defined in the Council on Environmental Quality [CEQ] guidelines, 40 CFR 1500-1508) are those that are most substantial and therefore should receive the greatest attention in decision making. To define significance, criteria based on agency policies and guidelines were used wherever available. For example, the U.S. Bureau of Land Management (BLM) 1980 criteria define a visual impact as significant if it fails to meet the defined visual quality objectives for a land management unit. There are also accepted criteria that define a significant cultural impact, namely when a site on or eligible to the NRHP is disturbed.

Moderate impacts are those that do not meet the criteria to be classified as significant, but nevertheless result in a degree of change that is easy to detect.

Impacts classified as low-none cause little or no change to existing conditions; they cannot be easily detected.

The three impact levels were evaluated on both a short-term and long-term basis. Short-term impacts are those affecting a resource during the period of project construction and for a short period of time thereafter. They result from the activities required to construct the line or from the disturbance caused by these activities. Examples of short-term impacts are those on wildlife resulting from construction in a critical zone during the period of use and the potential for increased soil erosion until vegetative ground cover is reestablished. Long-term impacts are those affecting a resource during the entire life of the project. They are derived from the presence of the line, the action of passing electricity through the line's conductors, or periodic or emergency maintenance operations. Examples of long-term impacts include most land use and visual impacts.

Impacts of the proposed Seminoe-Kortes Consolidation project on the environmental resource in the project area and mitigation for potentially significant impact are presented in Section 4.0 of the EA.

Table C.2.1 WESTERN's Standard Mitigation Measures, Seminoe-Kortes Consolidation Project, Wyoming, 1990.

1. The contractor shall limit the movement of his crews and equipment to the ROW, including access routes. The contractor shall limit movement on the ROW so as to minimize damage to grazing land, crops, orchards, and property, and shall avoid marring the lands.

2. When weather and ground conditions permit, the contractor shall obliterate all contractor-caused deep ruts that are hazardous to farming operations and to movement of equipment. Such ruts shall be leveled, filled and graded, or otherwise eliminated in an approved manner. In hay meadows, alfalfa fields, pastures, and cultivated productive lands, ruts, scars, and compacted soils shall have the soil loosened and leveled by scarifying, harrowing, disking, or other approved methods. Damage to ditches, tile drains, terraces, roads, and other features of the land shall be corrected. At the end of each construction season and before final acceptance of the work in these agricultural areas, all ruts shall be obliterated, and all trails and areas that are hard-packed as a result of contractor operations shall be loosened and leveled. The land and facilities shall be restored as nearly as practicable to their original condition.

3. Water turnoff bars or small terraces shall be constructed across all ROW access on hillsides to prevent water erosion and to facilitate natural revegetation on the trails.

4. The contractor shall comply with all federal, state, and local environmental laws, orders, and regulations. Prior to construction, all supervisory construction personnel will be instructed on the protection of cultural and ecological resources. To assist in this effort, the construction contract will address: (a) federal and state laws regarding antiquities and plants and wildlife, including collection and removal, and (b) the importance of these resources and the purpose and necessity of protecting them.

5. The contractor shall exercise care to preserve the natural landscape and shall conduct his construction operations so as to prevent any unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the work. Except where clearing is required for permanent works, approved construction roads, or excavation operations, vegetation shall be preserved and shall be protected from damage by the contractor's construction operations and equipment.

6. On completion of the work, all work areas except access trails shall be scarified or left in a condition which will facilitate natural revegetation, provide for proper drainage, and prevent erosion. All destruction, scarring, damage, or defacing of the landscape resulting from the contractor's operations shall be repaired by the contractor.

Table C.2.1 (Continued).

7. Construction roads not required for maintenance access shall be restored to the original contour and made impassable to vehicular traffic. The surfaces of such construction roads shall be scarified as needed to provide a condition which will facilitate natural revegetation, provide for proper drainage, and prevent erosion.

8. Construction staging areas shall be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent. On abandonment, all storage and construction materials and debris shall be removed from the site. The area shall be regraded as required so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion.

9. Borrow pits shall be so excavated that water will not collect and stand therein. Before being abandoned, the sides of borrow pits shall be brought to stable slopes, with slope intersections shaped to carry the natural contour of adjacent undisturbed terrain into the pit or borrow area giving a natural appearance. Waste piles shall be shaped to provide a natural appearance.

10. Construction activities shall be performed by methods that will prevent entrance, or accidental spillage, of solid matter, contaminants, debris, and other objectionable pollutants and wastes into streams, flowing or dry watercourses, lakes, and underground water sources. Such pollutants and wastes include, but are not restricted to, refuse, garbage, cement, concrete, sanitary waste, industrial waste, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.

11. Dewatering work for structure foundations or earthwork operations adjacent to, or encroaching on, streams or watercourses shall be conducted in a manner to prevent muddy water and eroded materials from entering the streams or watercourses by construction of intercepting ditches, bypass channels, barriers, or settling ponds, or by other approved means.

12. Excavated material or other construction materials shall not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters where they can be washed away by high water or storm runoff or can in any way encroach upon the watercourse itself.

13. Waste waters from concrete batching or other construction operations shall not enter streams, watercourses, or other surface waters without the use of such turbidity control methods as settling ponds, gravel-filter entrapment dikes, approved flocculating processes that are not harmful to fish, recirculation systems for washing of aggregates, or other approved methods. Any such waste waters discharged into surface waters shall be essentially free of settleable materials. Settleable

Table C.2.1 (Continued).

material is defined as the material which will settle from the water by gravity during a one-hour quiescent detention period.

14. The contractor shall utilize such practicable methods and devices as are reasonably available to control, prevent, and otherwise minimize atmospheric emissions or discharges of air contaminants.

15. The emission of dust into the atmosphere will not be permitted during the manufacture, handling, and storage of concrete aggregates, and the contractor shall use such methods and equipment as are necessary for the collection and disposal, or prevention, of dust during these operations. The contractor's methods of storing and handling cement and pozzolans shall also include means of eliminating atmospheric discharges of dust.

16. Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments, or other inefficient operating conditions, shall not be operated until corrective repairs or adjustments are made.

17. Burning or burying of waste materials on the ROW or at the construction site will not be allowed. The contractor shall remove all waste materials from the construction area. All materials resulting from the contractor's clearing operations shall be removed from the ROW.

18. The contractor shall make all necessary provisions in conformance with safety requirements for maintaining the flow of public traffic and shall conduct his construction operations so as to offer the least possible obstruction and inconvenience to public traffic.

19. WESTERN will apply necessary mitigation to eliminate problems of induced currents and voltages onto conductive objects sharing a ROW, to the mutual satisfaction of the parties involved. WESTERN will install fence grounds on all fences that cross or are parallel to the proposed line.

20. If evidence of prehistoric, historic or paleontological sites is discovered during construction, all activities within a 50-foot radius would cease immediately, and appropriate personnel within WESTERN would be notified to assure proper handling of the discovery by qualified archaeological or paleontological personnel.

APPENDIX D:

Biological Assessment
For Endangered Species Act Compliance
Seminoe-Kortes Consolidation Project

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Fish and Wildlife Enhancement
2617 East Lincolnway, Suite A
Cheyenne, Wyoming 82001

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

W.35

May 11, 1990

Mr. Stephen A. Fausett
Area Manager
Loveland Area Office
Western Area Power Administration
P.O. Box 3700
Loveland, CO 80539

Dear Mr. Fausett:

This responds to your May 10, 1990 biological assessment on your agency's proposal to consolidate the switchyard facilities of the Seminoe and Kortes powerplants into one nearby substation downstream from Kortes Dam in Carbon County, Wyoming.

Based upon the information and project stipulations provided in the subject assessment, we concur with your conclusion that the construction and operation of the switchyard facilities is not likely to adversely affect the endangered bald eagle (Haliaeetus leucocephalus), peregrine falcon (Falco peregrinus), or black-footed ferret (Mustela nigripes).

We appreciate your efforts to ensure the conservation of these endangered species as a part of our joint responsibilities under the Endangered Species Act, as amended. If you have any questions, contact me or Richard Hill of my staff at the letterhead address or (307) 772-2374.

Sincerely,

R. G. Starkey

Ronald G. Starkey
State Supervisor
Wyoming State Office

cc:
Assistant Regional Director, FWE, Denver, CO (FWE-60120)
Field Supervisor, MT/WY, FWE, Helena, MT (FWE-61125)
Director, WGFD, Cheyenne, WY
Nongame Coordinator, WGFD, Lander, WY

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D.1.0 INTRODUCTION

The Endangered Species Act of 1973 (ESA) requires Federal agencies to "insure that any act authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat of such species." The purpose of the ESA is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved" and "to provide a program for the conservation of such endangered species and threatened species"

Section 4 of the ESA (Determination of Endangered Species or Threatened Species) grants the Secretary of the Interior power to determine whether a species is considered threatened or endangered. This determination is based on the present status of the species such as population numbers, limited habitat, disease, existing regulatory mechanisms, or any man-made influences jeopardizing the species' continuing existence.

Section 7 of the ESA (Interagency Cooperation) specifies that all other Federal departments and agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities by "taking such action necessary to insure that actions authorized, funded, or carried out by them [Federal departments and agencies] do not jeopardize the continued existence of any listed species (pursuant to Section 4) or result in the destruction or modification of critical habitat of such species."

The consultation process is designed to assist Federal agencies when complying with the ESA, and authority of consultation has been delegated by the Secretary of the Interior to the Director of the U.S. Fish and Wildlife Service (USFWS). The consultation process involves several phases. First, a potential species list is requested from the USFWS by the affected agency. The USFWS responds with a list of candidate, proposed, and listed species within the proposed project area. When the project is a construction project, the agency then prepares a biological assessment which identifies the project, details the biology of the species on the list submitted by the USFWS, analyzes the cumulative effects of the project, and determines if there is likely to be an effect (either beneficial or adverse) on any listed or proposed species. If a "may affect" determination is made, the agency must request formal consultation with the USFWS. Formal consultation involves USFWS consideration of the proposed project and how it may affect the biology of any listed species, including the magnitude of such effects and potential cumulative effects. Based on this information, a Biological Opinion is issued by the USFWS which states one of three possible conclusions: the proposed action, 1) may promote the continued existence of the species; 2) is not likely to jeopardize the continued existence of the species; or 3) is likely to jeopardize the continued existence of the species. Reasonable and prudent alternatives must be addressed by the USFWS as part of the Biological Opinion when a determination is made that the proposed project is likely to jeopardize the continued existence of the species.

This biological assessment was prepared for the Seminoe-Kortes Consolidation Project because three federally endangered species (peregrine falcon [*Falco peregrinus*], black-footed ferret [*Mustela nigripes*], and bald eagle [*Haliaeetus luecocephalus*]), potentially occur in the study area based on range and habit requirements. These species could potentially be adversely affected by construction and operation of the substation facilities and new transmission line. The bald eagle and peregrine falcon assessments were prepared from existing data and interviews with local biologists. The background information concerning black-footed ferrets was obtained from review of existing data and interviews with biologists. The black-footed ferret survey on the prairie dog colony within the project area was conducted per the current USFWS (1986) guideline for clearance surveys and is reported in Mariah (1989).

A description of the proposed action and maps of the project area are provided in the EA.

D.2.0 ENDANGERED SPECIES EVALUATIONS

D.2.1 BLACK-FOOTED FERRET

D.2.1.1 Status

The black-footed ferret is considered one of North America's most endangered mammals. It is a member of the mustelid or weasel family and is the only ferret native to North America (Hall and Kelson 1959). First described in 1851 by Audubon and Bachman, it was not reported again for 25 years (Fortenbery 1972, Hillman and Carpenter 1980). Apparently, the black-footed ferret was never abundant. Its use by the Plains Indians as a religious talisman suggests that it has always been quite rare (Henderson et al. 1974). However, the rarity of early sightings may also be related to the fact that the Great Plains and intermountain basins were sparsely populated and there were few observers. Also, ferrets are seldom seen because of their secretive nature and nocturnal habits (Hillman and Carpenter 1980).

Many authorities considered the black-footed ferret extinct by the middle of this century, until it was observed in South Dakota in 1964 (Hillman 1968). The South Dakota population eventually disappeared, and only scattered reports of the animals persisted until 1981 when another viable population was discovered near the town of Meeteetse in northwest Wyoming (Clark et al. 1988).

Census results estimated a high of 130 ferrets in the Meeteetse population during the summer of 1984 (Wyoming Game and Fish Department [WGFD] 1985). The population declined to roughly 65 known animals during the winter of 1984-1985 and further declined to only a few remaining individuals concomitant with the discovery of plague within prey species and then canine distemper in the colony during the summer of 1985. A decision was made to capture the remaining wild ferrets and place them in a captive breeding program to save the species. At present, there is no known wild population of the black-footed ferret in existence. There are currently approximately 120 black-footed ferrets split among three groups held in captivity in Wyoming, Virginia, and Nebraska, (WGFD 1989).

D.2.1.2 Distribution

Historically, the range of the black-footed ferret coincided closely with that of prairie dogs (*Cynomys* spp.) throughout the Great Plains, semiarid grasslands, and mountain basins of North America (Hillman and Carpenter 1980). The species is thought to have been distributed from southern Alberta and Saskatchewan, Canada south to Arizona and Texas in the United States (Henderson et al. 1974). The present range of the species is much smaller due to reduction in prairie dogs upon which the ferret preys. However, remanent ferret populations may remain in parts of the former range (Hillman and Carpenter 1980) and most prairie dog colonies are considered potential ferret habitat.

D.2.1.3 Life History and Habitat Requirements

Black-footed ferrets are nearly always associated with prairie dogs including white-tailed (*Cynomys leucurus*), black-tailed (*C. ludovicianus*), and Gunnison's (*C. gunnisoni*) species. Ferrets not only rely on prairie dogs as their primary source of prey but also live in prairie dog burrows. Ferrets are primarily nocturnal but are also active during daylight hours, especially during the summer (Henderson et al. 1974, Linder et al. 1972, Fortenbury 1972, Hillman 1968).

The following discussion of life history is taken from Hillman and Carpenter (1980) with many aspects substantiated by recent studies in northwestern Wyoming. Black-footed ferrets breed in March and early April. The gestation period is 42 to 45 days with litters of up to five young born in prairie dog burrows in late May and early June. The kits remain underground until late June or early July, at which time the young are one-half to two-thirds grown. In early summer, the kits are most often together in one burrow. The female may move her litter to other burrows where she has made a kill where they remain for several days. As the kits grow older, the adult female places them in separate burrows scattered throughout the prairie dog town. She visits these burrows at night, and the kits may accompany her as she travels about the town. Ferrets are most commonly observed in late or early fall, especially in family groups. Adult male ferrets take no part in rearing the young and live a solitary life except during the breeding season.

D.2.1.4 Endangerment Factors

Black-footed ferrets are dependent on prairie dogs. The ferret's decline is linked to the continued decline of this primary prey species and reduction in habitat provided by the prairie dogs. Prairie dog numbers and acres of occupied colonies have declined drastically as a result of major land use changes and extensive poisoning campaigns aimed at eradicating the prairie dog from western rangelands (Linder et al. 1972, Clark 1978). Poisoning programs by the U.S. Biological Survey (now USFWS) and various state and private groups were carried out on hundreds of thousands of acres throughout the West, drastically reducing prairie dog numbers and probably black-footed ferrets as well (Clark 1978, Henderson et al. 1974, Smith 1967, Cottam and Caroline 1965, Cahalane 1954). Man's alteration of the habitat influenced prairie dog numbers more than any other factor; plowing of the grasslands and eradication of prairie dogs from rangeland were extensive (Black-footed Ferret Recovery Team 1978). Although prairie dogs still occupy much of their former range, their numbers are only a small fraction of those that occurred in the late 1800s.

The number of animals necessary to maintain an adequate gene pool for a stable or increasing ferret population is unknown. Inbreeding may reduce reproductive success and survival. The current captive breeding program is attempting to address this problem by carefully pairing the remaining individuals and monitoring the results.

D.2.1.5 Presence in Study Area

Numerous black-footed ferret sightings have been reported in Carbon County (Jobman 1981, 1987; WGFD 1988). WGFD (1988) black-footed ferret sighting report data files for Carbon County list 57 reports with specific legal locations, 11 reports with general locations (no legal description), and six reports with physical evidence (animals trapped or skulls found). Although no reports are listed within the Seminoe-Kortes study area, three reports are within five miles. A confirmed sighting of a dead ferret in a stock tank approximately three miles east of the substation site was made in 1972. A probable sighting was reported approximately four miles east of the proposed Miracle Mile-Cheyenne line in 1983.

The most recent report was in May 1988 just off the study area in Section 16 in Seminoe State Park, this sighting has not been verified.

Black-footed ferrets surveys conducted on U.S. Bureau of Reclamation (BuRec) land in 1980 did not identify any ferrets associated with prairie dog colonies examined in the Seminoe-Kortes project area or on lands associated with Seminoe or Pathfinder Reservoir (Fitzgerald 1981).

Potential ferret habitat in the form of a 337 acre prairie dog colony occurs in the northern portion of the project area around the new substation site (see figure 3.2 in EA). No prairie dog colony occurs in the vicinity of the Sinclair-Platte Substations. The prairie dog colony was surveyed for black-footed ferrets per the USFWS (1986) survey guidelines and is reported in Mariah (1989). Procedures for the survey were discussed with Mr. Richard Hill (USFWS biologist, Cheyenne, Wyoming) and Tom Rinkes (BLM biologist, Rawlins, Wyoming) prior to the survey. The survey employed diurnal search procedures as described by USFWS (1986) and Clark et al. (1988). A total of 19.4 person-hours was spent during the three inspections of the prairie dog colony. No black-footed ferret and no potential black-footed ferret sign were observed during the survey of the 337 acre prairie dog colony on the Seminoe-Kortes project area.

<u>D.2.1.6 Impact Evaluation</u>

Given the lack of black-footed ferret sign and the short duration and small area of disturbance associated with the Seminoe-Kortes Consolidation Project, no adverse effect is expected on the black-footed ferret due to the proposed project.

D.2.2 BALD EAGLE

<u>D.2.2.1 Status</u>

The bald eagle was first listed as an endangered species by the USFWS on March 11, 1967 (Federal Register 32:4001). The southern subspecies (*Haliaeetus leucocephalus leucecephalus*), which include those individuals that occurred south of 40° latitude, was listed as endangered while the northern subspecies (*H.l. alaskanus*), occurring north of 40° latitude, was not listed at the time. The bald eagle was reclassified on February 14, 1978 (USFWS 1978), and subspecies were no longer separated for regulatory management. Both wintering and nesting bald eagles were classified as endangered in 43 of the 48 conterminous states, and as threatened in Washington, Oregon, Minnesota, Wisconsin, and Michigan. In addition to protection under the ESA, bald eagles in all states are also protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Acts.

An accurate population estimate for the bald eagle is difficult to establish, especially for remote regions of Alaska and Canada. Braun et al. (1975) estimated the continental population to be between 35,000 and 60,000 eagles, with most occurring in Alaska and Canada (U.S. Department of the Interior [USDI] 1974). The breeding population in the conterminous 48 states is an estimated 1,500 pairs. There may be an additional 500 to 1,000 nonbreeding immatures and adults in the lower 48 states during the summer (Marshall and Nickerson 1976).

During the winter, some eagles that breed in Canada or Alaska migrate into and disperse throughout the lower 48 states. The 1984 mid-winter count reported nearly 12,000 bald eagles, with counts from 1979 to 1984 ranging between 9,282 and 13,825 birds (personal communication with B. Millsap, National Wildlife Federation, 1985). During 1980-1985, Wyoming reported an annual average of 457 bald eagles counted during the midwinter survey (WGFD 1988-89).

D.2.2.2 Distribution

Bald eagles formerly nested in most states where suitable habitat occurred. They have historically nested throughout the Rocky Mountain states, including the wooded mountains and river woodland areas of Wyoming, Montana, and North Dakota. The breeding range was diminished during the nineteenth and twentieth centuries. In recent years, eagles have been returning to breed successfully at historic nest sites and have been establishing new territories. The largest breeding concentrations of bald eagles in the United States, outside of Alaska, are presently found in the Great Lakes states and Washington. Primary breeding areas are also found in California, Oregon, Maine, Florida, and the tri-state corner of Idaho, Montana, and Wyoming. Inventories of 50 known nesting territories in Wyoming during 1988 documented that 42 pairs attempted to nest and at least 45 young were produced (WGFD 1988-89).

Most bald eagles that breed in the 48 conterminous states also winter there. Individuals nesting in northern states may move south to winter where there is more open water and better prey availability. In addition, some eagles that nest in Alaska and Canada move south to open water areas in the lower 48 states. These movements begin during the post-fledgling dispersal period and are usually triggered by freezing water in northern areas. The largest wintering concentrations occur in the Klamath Basin, California; in the midwestern states along the Mississippi, Missouri, Illinois, Platte, and Arkansas Rivers; and in the Northwest encompassing Washington, Oregon, Idaho, and western Montana. Major rivers and other open water bodies in Wyoming, including the North Platte River system, serve as wintering grounds for the bald eagle.

D.2.2.3 Life History and Habitat Requirements

Bald eagles normally reach breeding age at about five years, which roughly coincides with full adult plumage (Hancock 1973). The breeding season of the bald eagle varies with latitude. Pre-nesting activities occur as early as January but typically take place in February or early March and include courtship flight, nest repair, and nest building. Egg laying and incubation begin in March and last 34 to 35 days. There may be one to four eggs with an average of two

(Brown and Amadon 1968). The period from hatching to fledgling is about 10-13 weeks, with a post-fledgling period of 3-10 weeks (Todd 1979).

Nests are usually located in trees; optimum nesting habitat includes proximity to open water providing a food source, large nest trees with sturdy branches at sufficient height, and stand heterogeneity. Good visibility from the nest and a clear flight path are essential requirements (Grubb 1976). The same nest is often used year after year with new nesting material added each year. Nests are often rebuilt in the same tree. Prey items during the nesting season consist primarily of fish (Grubb and Hansel 1978). Other food items include songbirds, invertebrates, small animals, and carrion.

Bald eagles migrate from breeding areas between September and December and generally winter as far north as open water and sufficient food are available. The major habitat requirements on wintering grounds include a food source and suitable trees for diurnal perching and night roosting. Wintering eagles gather in large aggregations sharing communal roosts, diurnal perches, and feeding areas located downstream of hydroelectric dams where there is access to dead or dying fish or waterfowl (Cooksey 1962, Ingram 1965). Food availability is probably the single most important factor affecting winter eagle distribution and abundance (Edwards 1969, Steenhoff 1976). Waterfowl --primarily dead or crippled individuals -- are often taken where available (Shickley 1961, Spencer 1976). In some regions, carrion can also be an important food source. Deer, cattle, sheep, antelope, and road-killed cottontails and jackrabbit are readily utilized when available. Live animals such as mice, cottontails, jackrabbits, gophers, woodrats, and kangaroo rats are also taken (Lish and Lewis 1975, Platt 1976, Beck 1980). Eagles shift food sources as availability changes.

Perches are an essential element in bald eagles' selection of foraging areas, since they are necessary for hunting and resting (Stalmaster and Newman 1979). Perch sites must be in plain view of potential food sources and are generally within 160 ft of water (Vian 1971). Night roost sites offer protection from predators and a degree of protection from inclement weather. Large, live trees that occur in sheltered areas are preferred (Lish 1975). Eagles may roost individually or in small groups, and roosts may be used in successive years. Eagles generally leave the roost for feeding areas in the early morning and return in the evening, except during severe weather when they may remain at the roost throughout the day.

D.2.2.4 Endangerment Factors

The decline in eagle numbers, especially nesting pairs, was first reported by Howell (1937), and breeding populations disappeared entirely in some regions (Sprunt 1969). Reasons given for the decline were: loss of habitat; human disturbance at nests, roosts, and perches; pesticide and lead contamination of prey resulting in thinning egg shells and reduced reproductive success; illegal shooting, poisoning, and trapping; and electrocution. Increased human activity and land development adversely affected the suitability of wintering and breeding habitats.

Direct and indirect effects of organochlorine insecticides severely impacted bald eagle populations (Bailey 1984). Dieldrin and DDE (DDT) are implicated most often in deaths of individual birds. Chronic exposure to DDE is known to inhibit reproduction by interfering with calcium metabolism which results in thin eggshells and hatching failure (Bailey 1984). The use of DDT in the United States was curtailed in the early 1970s, and nesting populations have begun to recover. Heavy metals as mercury as well as lead-contaminated prey, particularly in wintering areas where eagles feed on crippled ducks and geese, appear to be additional problems.

D.2.2.5 Presence in the Study Area

Bald eagles occur in the Seminoe-Kortes project study area as winter residents. The birds in the area are part of a fairly large number of eagles that use the south central Wyoming region in the winter. The bald eagle is a regular winter resident along the open water of the North Platte River and downstream into the upper portions of Pathfinder Reservoir (personal communication with G. Hiatt, WGFD, 1986 and 1987). Feeding generally occurs along the open water areas for fish or for crippled waterfowl. Eagles also feed on dead animals such as deer, cattle, antelope, and rabbits in rangeland habitats.

Historical bald eagle observations within the study area contained on the WGFD's computerized Wildlife Observation System show considerable use of the Miracle Mile and upper portions of Pathfinder by wintering bald eagles. January surveys by the BLM have identified two to four bald eagles perched along the North Platte River downstream of Kortes Dam. Cottonwoods along the North Platte River provide perches and roosts for the eagles wintering in the study area. A favorite diurnal perch noted by BLM (personal communication with T. Rinkes, BLM, 1987) is shown on Figure 3.2 in the EA. Winter 1987 bald eagle surveys conducted by WGFD for the Seminoe Reservoir Enlargement Project identified one to two bald eagles in the Miracle Mile segment. Up to seven additional bald eagles were seen in the upper end of Pathfinder Reservoir (personal communication with Guenzel, WGFD, 1987). This is consistent with earlier information in a study conducted by BuRec (1981) which showed the upper portion of Pathfinder Reservoir as a winter concentration area for the bald eagle.

A traditional nocturnal bald eagle roost site is located outside the Seminoe-Kortes project area in the Pedro Mountains about eight miles north of the proposed substation site (BLM 1985). The number of eagles which regularly use this roost has been difficult to determine. This roost also appears to be more dispersed than many other known roosts in Wyoming (personal communication with Guenzel, WGFD, 1987). No traditional nocturnal perches are known to occur in the Seminoe-Kortes project area.

Although potential nesting habitat occurs in some of the trees along the North Platte River, there are no known bald eagle nests within the Seminoe-Kortes area.

D.2.2.6 Impact Evaluation

It is not likely the Seminoe-Kortes project will adversely affect bald eagles wintering in the area. Only a small amount of terrestrial wintering habitat would be removed at the substation site relative to the total habitat available in the project area and surrounding region. Construction is planned during the summer months when the eagles are absent. Two existing lines across the North Platte River would be rebuilt; however, there would be no additional transmission lines constructed across the river. Existing transmission lines near Kortes Dam would be removed as would a portion of the transmission line along the north end of Seminoe Reservoir (see Project Description Section 2.0 in EA) thereby decreasing the chances of bald eagle collisions with lines near the water.

Bald eagles use large trees near open water as hunting perches. Project construction is not expected to impact riparian trees. In addition, moving the existing substations from Kortes and Seminoe Dams and relocating this equipment off the North Platte River would decrease the risk of oil spills affecting eagle food sources.

Bald eagles can be killed by electrocution on electric lines. The Seminoe-Kortes project would not pose an electrocution hazard because the phase spacing on the new lines would be too large for eagles to simultaneously contact a conductor and ground.

D.2.3 PEREGRINE FALCON

D.2.3.1 Status

The American peregrine falcon (*Falco peregrinus anatum*) was initially considered as federally endangered in 1970 (35 FR 8495-8497), with formal listing on July 14, 1977 (42 FR 36425). The American peregrine falcon both breeds in and migrates through the continental United States. The Arctic peregrine falcon (*F. p. tundrius*) breeds in the tundra from arctic Alaska through Greenland and migrates into and through the lower 48 states. The Arctic peregrine is considered threatened on this breeding range, but any peregrine falcon in the lower 48 states is considered endangered. The peregrine became extinct as a breeding species east of the Rocky Mountains in the mid-1960s, while the breeding population in the western states was reduced by over 50 percent (Hickey 1969). By 1975, at least 75 percent of peregrine eyries in the western United States were vacant (Fyfe et al. 1976).

Reintroduction of the species in the West began in 1974 with approximately 907 successfully reintroduced since that time (personal communication with Peregrine Fund, 1987). A total of 112 captive-bred young was placed in eyries in Wyoming between 1980 and 1986.

D.2.3.2 Distribution

Historically, the American peregrine falcon bred in an area ranging from tree line in Canada and Alaska south to Mexico. At present, there are only remnant populations breeding in scattered locations. There is some limited breeding in Wyoming; two known active peregrine eyries are located in the northwest corner of the state (personal communication with B. Oakleaf, WGFD, 1987).

Both the American and Arctic peregrine falcon winter in or migrate through the lower 48 states. The peregrine is an occasional and sporadic migrant through Wyoming.

D.2.3.3 Life History and Habitat Requirements

Peregrine falcons mature at about two to three years of age. Adults usually return to the same territory year after year. There may also be an alternate nest site in the pair's breeding territory (Fyfe et al. 1976). The pair occupies the breeding territory in mid-March. The female lays a clutch of three to four eggs in April. Both male and female incubate; however, the female does most of the incubating while the male provides most of the prey. After about 33 days the young hatch and are fed, brooded, and defended by both parents. Fledgling occurs in June or July, and soon afterwards the young are independent.

The four major habitat requirements for nesting are; 1) a suitable nesting site on a cliff, 2) an adequate prey base, 3) proximity to water, and 4) isolation from human disturbance (Hayname et al. 1977). Peregrine falcons nest on cliffs near rivers, lakes, or marshes. Most nesting sites are 43 meters (150 feet) or more in height, and the cliff wall usually has a small cave or overhanging ledge (USFWS 1982). The nest ledge will have loose soil, sand, gravel, and dead vegetation to allow the peregrine to construct a scrape for egg laying (Enderson and Craig 1974, Cade 1960).

The average hunting territory for the peregrine pair is usually within 10 miles of the nest. Preferred hunting areas include cropland, meadows, marshes, lakes, and rivers where birds, the primary prey base, are abundant (Porter and White 1973).

D.2.3.4 Endangerment Factors

Several important factors that have contributed to the decline of the peregrine are: 1) eggshell thinning caused by pesticide poisoning, 2) trapping and taking of young by falconers, 3) shooting, 4) disturbance of nest sites by human encroachment, and 5) habitat destruction that reduces prey availability (Herbert and Herbert 1965, Peakall 1974).

The peregrine falcon's high position on the food chain greatly increases the problems of pesticide accumulation, causing behavioral and physiological changes that result in reproductive failure. This factor may well be the primary cause of decline and the major factor preventing the peregrine population from recovery. Eggshells collected between 1973 and 1979 in Colorado and New Mexico were 16 percent thinner than those collected prior to 1947 (Enderson et al. 1982). Concentrations of DDT as low as 15 parts per million can result in unsuccessful hatching (Peakall 1974).

The concern over the effects of pesticides on falcons and other wildlife resulted in the ban of DDT in the United States. However, some peregrines continue to accumulate significant amounts of DDT while they winter in Central and South America, which is causing continuing eggshell thinning (Henny et al. 1982). Prey species returning to the United States from Central and South America, which are food for peregrines during the nesting season, are also accumulating significant amount of pesticides and provide a continued source of contamination.

Disturbance of nest sites by human activities has also contributed to peregrine falcon decline. The most sensitive period of disturbance is during courtship and incubation.

D.2.3.5 Presence in the Study Area

No active or historic peregrine falcon eyries have been found within 10 miles of the Seminoe-Kortes study area (personal communication with T. Rinkes, BLM, 1987). Potential nesting habitat occurs in the steep cliffs in the Ferris Mountains approximately 12 miles to the west of the proposed project. If peregrine populations recover, nesting could occur in this area.

Peregrine falcons occur in and pass through the Seminoe-Kortes project area mainly during spring migration; migrants may also occur in the area in late summer. Falcons may use habitats along the North Platte River and the shore at Pathfinder Reservoir for hunting. The USFWS (1979) noted that peregrine falcons were occasionally seen at the Pathfinder National Wildlife Refuge. BuRec (1979) peregrine falcon studies on Lower Missouri Region lands did not report any peregrines on Pathfinder or on or near the project area.

D.2.3.6 Impact Evaluation

The proposed Seminoe-Kortes project is not expected to have an adverse impact on peregrine falcons because there are no active peregrine eyries within 10 miles of the proposed project, and the likelihood of adversely affecting migrating peregrines is low. The new structures and line are larger than the old line to be rebuilt and should be more easily seen by peregrines. The likelihood of impacts (collisions with new lines) would be greater if new structures and lines were constructed within potential hunting areas (along the river in riparian areas, over wetlands) where visibility may be poor (lines that occur near or below tree level, over marshlands, or areas with high fog or steam potential); however, the proposed Seminoe-Kortes project does not include any new or additional crossings of the North Platte River or other known prey concentration areas. The North Platte River will be crossed in the same ROW as currently used for the lines that will be replaced. Existing transmission lines near Kortes Dam would be removed as would a portion of the transmission line along the north end of Seminoe Reservoir, thereby decreasing chances of peregrine falcon collisions with lines near water.

No electrocution hazard is expected due to the wide spacing of the conductors, which would prevent simultaneous contact of conductors and ground.

D.3.0 SUMMARY

D.3.1 BLACK-FOOTED FERRET

Prairie dogs occur on 337 acres at the proposed substation site and along the northern portions of the proposed new and rebuilt transmission lines within the Seminoe-Kortes project study area. Any active prairie dog colony is considered potential black-footed ferret habitat. Ferrets have been reported in Carbon County, Wyoming, and a ferret sighting was confirmed within five miles of the study area in 1973. A ferret clearance survey was conducted on the area during winter 1988-1989 (Mariah 1989). No ferret sign was found. Given the lack of ferret sign, the small amount of prairie dog colony to be covered by the substation and ocean road and access road (6-10 acres), and the short duration of the construction, the project is not expected to effect black-footed ferrets.

D.3.2 BALD EAGLE

Bald eagles do not nest in the study area, but they occur along the North Platte River and the upper end of Pathfinder Reservoir during the winter. A bald eagle winter roost occurs in the Pedro Mountains about eight miles north of the proposed substation sites. Eagles forage in and fly through the study area in the winter. Transmission line construction in the summer would not adversely affect bald eagles. The project would not result in additional transmission lines across the river; two existing lines would be upgraded. Removal of old lines near Kortes Dam and along the north shore of Seminoe Reservoir would be expected to decrease the potential for bald eagle collision. In addition, moving the existing substations from Kortes and Seminoe Dams and relocating this equipment off the river would decrease the risk of oil spills affecting eagle food sources. No electrocution hazards are present due to the size of the

proposed structures. Therefore, it is expected that the project would not affect bald eagle populations.

D.3.3 PEREGRINE FALCON

Peregrine falcons do not nest in or near the study area. They may occassionally occur in the area in the spring and fall as migrants. There would not be a net increase in transmission lines within riparian areas along the North Platte River or other habitats within which prey species concentrate along the North Platte River. Numerous other transmission lines already exist in uplands throughout the area, and no problems relative to peregrines have been indentified to date. Electrocution hazards would not be present due to the size of the structures. The project is not expected to effect peregrine falcons.

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along the north end of Seminoe Reservoir, thereby decreasing chances of peregrine falcon collisions with lines near water.

No electrocution hazard is expected due to the wide spacing of the conductors, which would prevent simultaneous contact of conductors and ground.

D.3.0 SUMMARY

D.3.1 BLACK-FOOTED FERRET

Prairie dogs occur on 337 acres at the proposed substation site and along the northern portions of the proposed new and rebuilt transmission lines within the Seminoe-Kortes project study area. Any active prairie dog colony is considered potential black-footed ferret habitat. Ferrets have been reported in Carbon County, Wyoming, and a ferret sighting was confirmed within five miles of the study area in 1973. A ferret clearance survey was conducted on the area during winter 1988-1989 (Mariah 1989). No ferret sign was found. Given the lack of ferret sign, the small amount of prairie dog colony to be covered by the substation and ocean road and access road (6-10 acres), and the short duration of the construction, the project is not expected to affect black-footed ferrets.

D.3.2 BALD EAGLE

Bald eagles do not nest in the study area, but they occur along the North Platte River and the upper end of Pathfinder Reservoir during the winter. A bald eagle winter roost occurs in the Pedro Mountains about eight miles north of the proposed substation sites. Eagles forage in and fly through the study area in the winter. Transmission line construction in the summer would not adversely affect bald eagles. The project would not result in additional transmission lines across the river; two existing lines would be upgraded. Removal of old lines near Kortes Dam and along the north shore of Seminoe Reservoir would be expected to decrease the potential for bald eagle collision. In addition, moving the existing substations from Kortes and Seminoe Dams and relocating this equipment off the river would decrease the risk of oil spills affecting eagle food sources. No electrocution hazards are present due to the size of the

proposed structures. Therefore, it is expected that the project would not affect bald eagle populations.

D.3.3 PEREGRINE FALCON

Peregrine falcons do not nest in or near the study area. They may occassionally occur in the area in the spring and fall as migrants. There would not be a net increase in transmission lines within riparian areas along the North Platte River or other habitats within which prey species concentrate along the North Platte River. Numerous other transmission lines already exist in uplands throughout the area, and no problems relative to peregrines have been indentified to date. Electrocution hazards would not be present due to the size of the structures. The project is not expected to effect peregrine falcons.

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APPENDIX D - ADDENDUM A

Agency Correspondence

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NOV 17 1986

Mr. Wayne Brewster
Field Supervisor
U.S. Fish and Wildlife Service
Endangered Species Office
P.O. Box 10023
Helena, MT 59626

Dear Mr. Brewster:

Western Area Power Administration (Western) plans to consolidate the switchyard facilities of the Seminoe and Kortes powerplants into one new nearby substation. The project is located in north-central Carbon County, Wyoming (Figure 1). The Seminoe and Kortes switchyards were constructed in 1939 and 1951, respectively. The equipment is well beyond its expected service life of 35 years and needs to be replaced. The switchyard at Seminoe is located on top of the powerplant and the switchyard at Kortes is located on top of the dam. Both of these locations are inaccessible for maintaining and replacing switchyard equipment. Continuing deterioration of equipment and poor access at both Seminoe and Kortes mandate construction to restore proper levels of system reliability. Also, the location of the existing switchyards, which contain oil-filled equipment, make them highly susceptible to oil spills into the North Platte River.

Western is presently preparing an environmental assessment for the project, which will include an analysis of potential new substation site locations and alternative 115-kV transmission line routing. Conductor spacing in the design of transmission lines equal or greater than 69 kV is more than sufficient to preclude any possibility of electrocution to raptors.

The existing 69-kV Seminoe-Casper Line will be rebuilt to 115 kV south of the new substation, and will connect to the existing 115-kV Seminoe-Sinclair Line at a location close to the Seminoe Dam. The 115-kV Seminoe-Sinclair connection will be retained from the Seminoe Switchyard for emergency use. An option being considered is to rebuild this segment of the 69-kV Seminoe-Casper Line to 230 kV and operate at 115 kV until a need for 230 kV arises.

The existing 115-kV Alcova-Kortes West Line will be connected to the 115-kV Seminoe-Kortes Line at a location west of the Kortes Dam. This line will connect Seminoe Powerplant to the new substation. There will be a short tap line from Kortes Switchyard to the line from Seminoe Switchyard to the new substation. This tap line would only be used during emergency.

The southern segment of the Alcova-Kortes East 115-kV Line will be utilized to connect Kortes Powerplant to the new substation.

The 115-kV Kortes-Cheyenne Line will be rerouted to the new substation. A portion of the 115-kV Kortes-Cheyenne Line connecting to the Kortes Switchyard would be removed.

The 115-kV Seminoe-Cheyenne Line will be rerouted to the new substation. A portion of the 115-kV Seminoe-Cheyenne Line connecting to the Seminoe Switchyard would be removed.

The Seminoe and Kortes switchyards would feed radially into the new substation, which would be located directly in the path of the 115-kV Alcova-Kortes East and West lines. Both of these lines would be terminated at the new substation. The area required for the new substation would range between 5 and 10 acres.

The existing 69-kV Seminoe-Casper Line passes just west of the proposed substation site. The northern portion of line going to Casper would be terminated into the new substation at 69 kV. The southern portion of the 69-kV line will be rebuilt to 115 kV (or 230 kV) and fed through a new 115-kV (or 230-kV) segment constructed to the substation.

In accordance with the Endangered Species Act of 1973, P.L. 93-205 (87 Stat. 884) as amended, Section 7, we are requesting that your agency furnish us with a listing of proposed, candidate, and listed endangered species that may occur in the area of the proposed action. The information received will be utilized in the environmental evaluation to be conducted for the proposal. No construction will begin until the requirements of the National Environmental Policy Act have been fulfilled.

By copy of this letter, we are also requesting that the Wyoming Game and Fish Department notify us of their potential concerns pertaining to proposed action.

Sincerely,

Mark N. Silverman

Mark N. Silverman
Area Manager

Enclosure

cc:
Mr. William Morris
Director
Wyoming Game and Fish Department
5400 Bishop Blvd.
Cheyenne, WY 82002
(w/copy of enclosure)

bcc:
G. Frey, A0410, Golden, CO
(w/o copy of enclosure)

J2011:RJONES:gdm:x7371:11/12/86:A-23, 24, & 25.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Endangered Species, Field Office
Federal Bldg., U.S. Courthouse
301 South Park
P.O. Box 10023
Helena, Montana 59626

IN REPLY REFER TO:
W.35 Seminoe/Kortes Consolidation Project
6-1-87-I-004

December 10, 1986

Mr. Mark M. Silverman, Area Manager
Department of Energy
Western Area Power Administration
Loveland Area Office
P.O. Box 3700
Loveland, Colorado 80539

Dear Mr. Silverman:

This responds to your November 17, 1986 letter regarding the proposed switch-yard and consolidation and transmission line reconstruction project near Seminoe and Kortes Dams in Carbon County, Wyoming.

In accordance with Section 7(c) of the Endangered Species Act as amended (ESA), we have determined that the following listed and proposed threatened or endangered (T/E) species may be present in the project area.

Listed Species	Expected Occurrence
Bald eagle (Haliaeetus leucocephalus)	Migrant and winter resident
Peregrine falcon (Falco peregrinus)	Migrant
Black-footed ferret (Mustela nigripes)	Possible resident of prairie dog towns

Proposed Species

None

There are no Category 1 candidate species known to us in the project area. For your information we have enclosed the most current listing of candidates for Wyoming, including contacts you may find useful for future reference.

Section 7(c) of the ESA requires that Federal agencies, proposing major Federal construction actions, conduct a biological assessment to determine the effects of the proposed actions on listed and proposed species. If the biological assessment is not initiated within 90 days, the list of T/E species should be verified with the FWS prior to initiation of the assessment. The biological assessment should be completed within 180 days of initiation, but can be extended by mutual agreement between your agency and the FWS. The biological assessment may be undertaken as part of your agency's compliance of Section 102 of NEPA, and incorporated into the draft or final NEPA document. We recommend that your biological assessment include:

1) a description of the project;
2) the current status, habitat use, and behavior of T/E species in the project area;
3) discussion of the methods used to determine the information in item 2;
4) direct and indirect impacts of the project to T/E species;
5) cumulative impacts from federal, state, or private projects in the area;
6) coordination measures that will reduce/eliminate adverse impacts to T/E species;
7) the expected status of T/E species in the future (short and long term) during and after project completion;
8) determination of "no effect/may affect" to listed species;
9) citation of literature and personal contacts used in assessment.

If you determine that the project "may affect" any of the above listed species, formal consultation should be initiated with us. If you conclude that "no effect" is likely, we should be asked to review the assessment and concur with your determination of no effect.

Section 7(d) of the ESA requires that the Federal agency and permit or license applicant shall not make any irreversible or irretrievable commitment of resources which would preclude the formulation of reasonable and prudent alternatives until consultation on listed species is completed.

Please contact us by mail at the above letterhead address or by telephone at 406-449-5225 (FTS 585-5225) if we can be of further assistance.

Wayne [signature]

Enclosure

cc: Regional Director, FWS (FA/SE-60153), Denver, CO.
ES, Cheyenne, WY
Wyoming DEQ

RAC/clh

"Take Pride in America"

THE STATE OF WYOMING

MIKE SULLIVAN
GOVERNOR

Game and Fish Department

January 13, 1987

BILL MORRIS
DIRECTOR

EIS 3094
USDOE/Western Area Power
Admin.-Seminoe & Kortes
Powerplants-Switchyard
Facilities Consolidation
Carbon County

Mr. Mark N. Silverman
Area Manager-USDOE
Western Area Power Admin.
P.O. Box 3700
Loveland, CO 80539

Dear Mr. Silverman:

As we understand, Western Area Power Administration plans to consolidate the switchyard facilities of the Seminoe and Kortes power plants into one new nearby station. The main components of this project consist of a 5 to 10 acre switchyard site and the building of new lines to this switchyard facility. Some old powerlines will also be torn down and some existing segments will be rebuilt.

The southern half of the project area contains summer range for mule deer, while the northern half contains crucial winter range. The project falls totally within the Shirley Mountain Mule Deer herd unit (DAU). This area is also within the Shirley Mountain DAU for elk. The northern two thirds of the project area is classified as winter range for elk while the southern portion is summer range. The northern mile and a half of the new power line is also winter range for antelope, while the remainder is classified as summer range. The project area is located within the Medicine Bow antelope DAU.

Most of Sections 5 and 8, T25N, R84W are classified as crucial winter range and as lambing sites for bighorn sheep. In addition to the November 15th to April 30th restriction, we recommend no activity occur in these two sections during June. We are concerned about the amount of vehicle traffic that will occur in the Seminoe Mountains area. If the increase will be significant, there is a potential for inducing stress-related pneumonia into the resident bighorn sheep herd. Special mitigation efforts such as re-routing traffic or dust suppression may be necessary.

There is a possibility prairie dog towns may be present along portions of the project area. Since these are the preferred habitat of the black-footed ferret, any prairie dog towns encountered should be mapped and searched for ferrets.

Bald eagles use the project area in the winter. The main problem that could result from these new lines is an increased collision hazard due to the increased number of lines. We recommend all of these lines be designed to use as few corridors as possible and cross the Platte River as seldom as possible.

No other potential habitat for endangered terrestrial species is known to occur in this area.

Aside from the habitat lost as a result of this project, the major potential impact to terrestrial wildlife will occur through disturbance to big game on winter ranges. We recommend construction activities on winter ranges be curtailed from mid-November until the end of April. This is also a high recreational use area for fishermen and hunters, and if construction activities pose a conflict with these recreational pursuits (i.e. blasting), then resolution of these conflicts should be addressed. Any blasting activity should be timed not to interfere with bighorn sheep hunters in early September and deer hunters during the second half of October.

We recommend that habitat disturbance be kept to a minimum. Although habitat losses do not seem high, any loss of crucial ranges is undesirable. In addition, where new lines are constructed, we recommend ground disturbance be minimized. In order to minimize habitat loss and long-range disturbance to wildlife, we recommend road construction and reconstruction be kept to a minimum. Where the ground is disturbed and vegetation lost, sites should be revegetated with native vegetation as soon as possible after construction.

The new powerlines will cross Lost Creek, a Class 4 stream containing rainbow, brown and brook trout. Care should be taken during construction to protect Lost Creek from both instream damage and upper bank damage that could cause erosion and stream siltation. The remainder of the new powerlines are scheduled to be built across dry upland sites. Powerline construction in these areas should be completed in a manner that minimizes surface disturbance and eliminates soil erosion.

The deteriorating and oil-filled equipment referred to may contain toxic materials (P.C.B.'s etc.). Removal of any equipment containing toxic materials and/or petroleum products would certainly eliminate one of the greatest potential threats to fisheries and human welfare in the North Platte River basin.

Paragraphs 3 and 4 of your November 17, 1986, letter to Wayne Brewster refer to retention of connections at the Seminoe and Kortes switchyards for emergency use. Regarding the retention of the switchyard facilities, we have the following recommendations.

1. Remove all P.C.B.'s, including stored material, from the dams and immediate area around the dams where it could potentially reach the water.

2. Reduce oil and/or other hazardous and toxic materials at the dam sites to minimum levels and review containment capability.

We would like additional information concerning the size of the construction crew, potential housing sites and commuting routes. Such information is necessary to properly evaluate these activities in relation to habitat loss and wildlife disturbance.

Please contact this office if we may be of further help.

Sincerely,

Francis Petera

FRANCIS PETERA
ASSISTANT DIRECTOR
OPERATIONS

FP:HBM:ssc
cc: Game Div.
Fish Div.
Mr. Wayne Brewster-Field Supv.-USF&WS-Endangered Species Ofc.
P.O. Box 10023-Helena, MT 59626

APPENDIX E:

Floodplains-Wetlands Assessment
For Seminoe-Kortes Consolidation Project

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E.1.0 INTRODUCTION

Executive Order 11988 mandates that floodplain managment and flood hazards be considered in planning projects. Floodplains are defined as lowlands adjoining inland waters, and include the area that would be inundated by a one percent (100-year) or greater probability flood in any given year. Similarly, Executive Order 11990 mandates that government agencies consider preservation of wetlands in planning and management actions. Wetlands are defined by the U.S. Department of Energy as areas inundated by surface or groundwater with a frequency sufficient to support vegetation or aquatic life requiring saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands include swamps, potholes, marshes, bogs, sloughs, floodplains, lakes, reservoirs, and springs.

The following constitutes the floodplains-wetlands assessment for the Seminoe-Kortes Consolidation Project. Detailed descriptions of the proposed project and existing environment, impact assessment, and maps of the project area are provided in the environmental assessment (EA).

E.2.0 FLOODPLAINS AND WETLANDS IN PROJECT AREA

The major floodplain in the Seminoe-Kortes study area is associated with the North Platte River; smaller floodplains also occur along the tributary streams. Floodplains in the study area have not been officially delineated or designated by the Federal Emergency Management Agency (FEMA) (V. Motoyama, National Hazards Program Specialist 1989, personal communication) or Carbon County Planning and Development Office (S. Grafton, Director, 1989, personal communication). The absence of potential urban development and the control of floods by Seminoe and Kortes Dams are probably the main reasons that no floodplain has been officially designated in the area.

A large portion of the North Platte River floodplain in the project area has been inundated by Seminoe and Kortes Reservoirs. Approximately one mile of the floodplain below Kortes Dam is very narrow and confined by the steep sides of Seminoe Canyon (see Figure 2.1 in EA). The remaining two miles of the North Platte River after it exits Seminoe Canyon exhibit a wider (approximately 50 to

300 hundred yards) floodplain that has developed in the north end of the study area. This wider floodplain supports a variety of riparian vegetation including grassy meadows, willows, and narrow-leaf cottonwood. Existing transmission lines originating on the west side of the river at the Seminoe and Kortes power plants cross the North Platte River and associated floodplains approximately 1.25 miles north of Seminoe Canyon (see Figure 2.1 in EA). A pipeline and the paved highway also cross the floodplain in the same vicinity as the transmission lines. Campgrounds and campsites are located within the North Platte River floodplain in the project area.

Floodplains of most of the tributary streams in the project area are relatively narrow because these streams flow through steep, narrow valleys or are deeply incised. Lost Creek, the major tributary on the east side of the study area, meanders through relatively flat topography and a broad, meadow type floodplain approximately 0.5 mile east of the North Platte River.

Wetlands are restricted to the reservoirs, North Platte River, and tributary streams in the study area. The U.S. Fish and Wildlife Service (USFWS) and Bureau of Land Mangement (BLM), Rawlins District, will be delineating and classifying wetlands in the Seminoe-Kortes study during 1989 as part of the National Wetlands Inventory (K. Drake, USFWS, 1989, personal communication). However, records of this standardized wetlands inventory were not available in time for inclusion in this assessment.

Riverine, lacustrine, and palustrine type wetlands (Cowardin et al. 1979) occur in the study area. Wetlands associated with the reservoirs are included in the lacustrine system because they are greater than 20 acres in size and have less than 30 percent coverage of trees, shrubs, or persistent emergents. Those wetlands that are less than 20 acres in size and are dominated by trees, shrubs, and persistent emergents are classified as palustrine. Palustrine wetlands occur on the edges of reservoirs but are more common along the streams in the study area. Narrow riparian areas in the flood plains along the North Platte River and the tributary streams are palustrine wetlands that are valuable wildlife habitats. Most of the wetlands associated with the North Platte River are considered riverine, which includes those contained within a channel that are not dominated by trees, shrubs, or persistent emergent type vegetation. The

unvegetated portion of the channels of the tributary steams are also included in the riverine classification.

No floodplain or wetland occurs in the immediate vicinity of the Sinclair and Platte Substations.

E.3.0 IMPACT ASSESSMENT

Project construction and operation could adversely impact flood plains and wetlands if they were disturbed for structure locations or access roads. Structures placed in flood plains could catch debris and increase the area subject to flooding by impeding flow of flood waters. Wetland and riparian vegetation could be disturbed during construction as equipment travels along the ROW or if the ROW is cleared of trees and shrubs. Wet soils are easily compacted, which could reduce subsequent vegetation growth and productivity. Riparian vegetation could be adversely impacted if the ROW is cleared during maintenance. Impacts to flood plains and wetlands would be considered significant if long-term loss of more than one percent of wetland-riparian vegetation occurred or if structures in the floodplain caught debris and increased amount of area flooded.

Flooding of the North Platte River at the transmission line crossing is not expected because flows are controlled by the Seminoe and Kortes Dams. New transmission line structures would not be located in the present floodplain of the North Platte River. Structures will be located nine feet above the floodplain at maximum spillway capacity of Kortes dam (approximately 50,000 cfs). Historic flows, recorded since 1900; indicate no flows greater than approximately 22,000 cfs. The proposed transmission lines across the North Platte are replacements for existing lines, which have not exhibited problems associated with current location relative to the floodplain. The floodplains on the smaller tributary streams are narrow enough to be easily spanned and no structures would be located in them. No adverse impact to floodplains is expected due to the proposed project. Wetlands crossed by the proposed project are small enough to be spanned, thereby eliminating the need for placement of structures and associated disturbance of vegetation in wetlands.

The North Platte River crossings would be in the same ROW as the existing lines to be rebuilt, therefore there should be no need to clear additional riparian-wetland vegetation during construction and maintenance of the rebuilt lines. Existing crossings would be used for movement of equipment and material across streams and riparian-wetland areas so no additional soil compaction is expected to occur that would adversely affect vegetation productivity. Bands of riparian-wetland vegetation along the other tributary streams are narrow, located in the canyon bottoms, and can be easily spanned by the proposed transmission lines without vegetation clearing. Riparian and wetland vegetation would be controlled only to the extend necessary for safe operation and no major long-term reduction in the amount of wetland in riparian vegetation in expected. Impacts to wetlands and riparian vegetation are expected to be low.

APPENDIX F:

ELECTRICAL CHARACTERISTICS
SEMINOE-KORTES
TRANSMISSION LINE PROJECT

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F.1 ELECTRICAL CHARACTERISTICS

F.1.1 Line Characteristics

The electrical effects of the proposed 115- and 230-kV transmission lines can be characterized as "corona effects" and "field effects." Corona is the electrical breakdown of air into charged particles caused by the electrical field at the surface of the conductors. Effects of corona are audible noise (AN), visible light, radio and television interference, and photochemical oxidants. Field effects are induced currents and voltages in conducting objects near the line, and related effects that occur as a result of electric and magnetic fields (EMF) at ground level.

F.1.1.1 Corona Effects

Corona can occur on the conductors, insulators, and hardware of an energized high-voltage transmission line.

(a) AUDIBLE NOISE. Transmission line AN is measured in decibels (A-weighted) or decibel ampere (dBA). Some typical noise levels are: library, 40 dBA; light automobile traffic at 100 feet, 50 dBA; an operating air conditioning unit at 200 feet, 60 dBA; and freeway traffic or a freight train at 50 feet, 70 dBA. This last level represents the point at which a contribution to hearing impairment begins. The estimated average noise levels for the transmission lines in this project are:

	Weather	
	Wet	Fair
Miracle Mile-Seminoe 115-kV	23.0	-2.0
Miracle Mile-Sinclair 115-kV	23.	-2.0
Cheyenne-Miracle Mile 1, 115-kV	16.1	-8.9
Cheyenne-Miracle Mile 2, 230-kV	48.0	23.0

(b) Radio Interference, Television Interference, and Communication Band Interference. Corona-generated radio interference (RI) is most likely to affect the amplitude modulation (AM) broadcast band. Frequency modulation (FM) radio reception is rarely affected. Only AM radio receivers near transmission lines are affected by RI. An acceptable level of maximum fair-weather RI at the edge of a right-of-way (ROW) is 40 to 45 decibels above 1 microvolt per meter (dBuV/m). The predicted wet and fair-weather levels for the proposed transmission line are as follows:

	RI Wet	RI Fair	TVI Wet
Miracle Mile-Seminoe 115-kV	40.0	23.0	1.1
Miracle Mile-Sinclair 115-kV	40.0	23.0	1.1
Cheyenne-Miracle Mile 1, 115-kV	30.8	13.8	-7.9
Cheyenne-Miracle Mile 2, 230-kV	62.4	45.4	23.3

The level of corona-generated television interference (TVI) at the edge of the ROW is a much lower level than occurs on many 500-kV lines where TVI has not been a serious problem.

Corona-generated interference can disrupt communication bands such as citizen's and mobile bands. However, mobile-radio communication bands are not susceptible to transmission line interference because they are generally frequency modulated.

There are various mitigative techniques for eliminating adverse impacts to radio, television, and communication band reception. In the unlikely event that interference occurs with these types of communications, typical mitigation that can be implemented includes cleaning insulators, tightening line hardware, and inspecting conductor surfaces for irregularities. Individual complaints about interference, should they occur, will be resolved by the Western Area Power Administration (Western).

(c) Visible Light. Corona is visible as a bluish glow or as bluish plumes. On the proposed line, corona levels will be so low that corona on the conductors will not be observable.

(d) Photochemical Oxidants. When corona is present, the air surrounding the conductors is ionized and many chemical reactions take place producing small amounts of ozone and other oxidants. Approximately 90 percent of the oxidant is ozone and the remainder is mainly nitrogen oxides.

The National Primary Ambient Air-Quality Standard for photochemical oxidants, of which ozone is the principal component, is 235 microgram/cubic meter or 120 parts per billion (ppb). The approximate maximum incremental ozone-levels at ground level calculated for the proposed line are as follows:

	Ozone (ppb)
Miracle Mile-Seminoe 115-kV	0.0144
Miracle Mile-Sinclair 115-kV	0.0144
Cheyenne-Miracle Mile 1, 115-kV	0.0148
Cheyenne-Miracle Mile 2, 230-kV	0.6775

Measurements near transmission lines have shown that the amount of oxidants produced by operating transmission lines is barely measurable and of no environmental consequence.

F.1.1.2 Field Effects

Electric and Magnetic Fields.

(a) Electric Fields. Electric fields are related to the voltage, or electrical pressure, on an object. Any object with an electric charge will have a voltage that is not confined to the object itself, but extends into the space surrounding the object. The higher the voltage on the object, the more intense the surrounding electric field, which is measured as the rate of change (or gradient) of the voltage over distance.

In the case of electrical equipment or facilities, any electrically charged conductor will have an associated electric field, including in-home wiring and common household appliances. The electric field alternates at a frequency of 60 cycles per second (Hertz or Hz), the standard North American alternating current (ac) electrical system frequency. Electric fields are measured in units of volts per meter (V/m), or thousands of volts per meter (kV/m). This denotes a measure of the difference in voltage between two points one meter apart. If voltage levels remain relatively constant, electric fields at any given point vary little over time, as long as the conductor remains energized. As a perspective, the Earth has a natural static (nonalternating) electric field of about 0.15 kV/m. This background electric field can locally increase to a range of 3-10 kV/m during rain or dust storms.

Electric fields surround the conductors of energized transmission lines. A three-phase alternating current transmission line requires three energized conductors to form a complete circuit. The strength of the electric field is greatest very near the conductor; field strengths drop rapidly with distance from the conductor. Fields from other nearby conductors, if present, may tend to have a cancelling effect, lowering actual field strengths in the vicinity. Electric fields are relatively poor at penetrating any conductive shielding, such as trees, buildings, or soil. Foliage and the structures supporting the transmission line also act as effective shielding against electric fields. Electric fields associated with buried electrical distribution lines that deliver residential electric service are, therefore, effectively shielded, and little or no electric fields are measurable at the ground surface.

Inside a home, electric fields from the transmission line would likely be effectively shielded, and any fields present would be the result of house wiring and home electrical devices. Most common household appliances have electric fields in the 0.01 to 0.10-kV/m range, as their voltage or potential is limited by 110- or 220-volt house current. Some household electrical devices having transformers to step up voltages, such as a television or fluorescent light, can however, have much higher electric fields. Numerous conductors spread over a large surface area can also have high electric fields, with an electric blanket or heating pad being a good example. In very close proximity, the wires of an electric blanket can have electric fields of a few hundred V/m to as high as 10 kV/m.

The calculated electric fields at the minimum clearances for the proposed lines for this project are as follows:

	Minimum Clearance (feet)	Maximum Electric Field Under Line (kV/m)	Electric Field 50' from Centerline (kV/m)
Miracle Mile-Seminoe 115-kV	22	2.07	0.61
Miracle Mile-Sinclair 115-kV	22	2.07	0.61
Cheyenne-Miracle Mile 1, 115-kV	22	2.18	0.64
Cheyenne-Miracle Mile 2, 230-kV	24	4.31	2.06*

* At 60 feet (edge of ROW) = 1.29

(b) Magnetic Fields. Magnetic fields are caused by the flow of current in the transmission line conductors. Magnetic fields are present near any energized current-carrying object, or conductor, including all electrical household appliances and home wiring during use. Magnetic fields also alternate at the standard 60 Hz alternating current frequency. Magnetic fields have been traditionally measured in Gauss (G), or milligauss (mG) (0.001 G), which is a measure of the intensity of the magnetic-attraction (lines of force-per-unit area, or magnetic-flux density). The Earth's natural static (nonalternating) magnetic field is about 500 mG. Table F-1 lists the magnetic fields generated by typical household appliances. Maximum measured magnetic-field readings on personal computers used in offices can reach 50-70 mG, for example, dropping to about 5 mG at 12 inches. Magnetic-field strengths are directly related to, among other factors, the amount of current flow. The greater the current flow, the higher the magnetic field. Therefore, unlike electric fields, magnetic fields can vary significantly over time, fluctuating with load.

Magnetic fields associated with transmission lines behave similarly to electric fields in that they are most intense very near the conductors and fall away relatively quickly as the distance from the conductor increases. The partial cancellation effect from currents in adjacent conductors may also occur with magnetic fields, as it does with electric fields. However, where electric fields are rather easily shielded, magnetic fields penetrate structures and soil with little decrease of field strength. Physical distance thus becomes a very important factor in limiting magnetic field strength.

The maximum calculated 60-Hz magnetic field at 3.3 feet above ground under the proposed line and at the edge of the ROW is:

	Thermal Current Limit	Minimum Foot Clearance	Maximum Magnetic Field at Edge of ROW (G)	Maximum Magnetic Field Under Line (G)
Miracle Mile-Seminoe 115-kV	570	22	0.045	0.175
Miracle Mile-Sinclair 115-kV	570	22	0.045	0.175
Cheyenne-Miracle Mile 1, 115-kV	570	22	0.045	0.175
Cheyenne-Miracle Mile 2, 230-kV	980	24	0.080	0.281

These maximum levels are comparable with magnetic field levels measured near some common household appliances. The actual level of magnetic field strength will vary as the current on the line varies. It will be very seldom, if ever, that the maximum thermal current limit of the lines will be reached.

For the 10-year forecast maximum current, the calculated 60-Hz magnetic field at 3.3 feet above ground at the edge of the ROW is:

	10-year Forecast Peak Amperes Current	Magnetic Field at Edge of ROW (G)
Miracle Mile-Seminoe 115-kV	110	0.008
Miracle Mile-Sinclair 115-kV	35	0.003
Cheyenne-Miracle Mile 1, 115-kV	231	0.017
Cheyenne-Miracle Mile 2, 230-kV	231	0.018

Table F-1
Magnetic Field due to
Typical Household Appliances

Appliances	Maximum Field-milliGauss* 12-inches away	Maximum Measured
Electric Range	3 - 30	100 - 1,200
Electric Oven	2 - 5	10 - 50
Garbage Disposal	10 - 20	850 - 1,250
Refrigerator	0.3 - 3	4 - 15
Clothes Washer	2 - 30	10 - 400
Clothes Dryer	1 - 3	3 - 80
Coffee Maker	0.8 - 1	15 - 250
Toaster	0.6 - 8	70 - 150
Crock Pot	0.3 - 1	15 - 80
Iron	1 - 3	80 - 300
Can Opener	35 - 250	10,000 - 20,000
Mixer	6 - 100	500 - 7,000
Blender, Popper, Processor	6 - 20	250 - 1,050
Vacuum Cleaner	20 - 200	2,000 - 8,000
Portable Heater	1 - 40	100 - 1,100
Fans/Blowers	0.4 - 40	20 - 300
Hair Dryer	1 - 70	60 - 20,000
Electric Shaver	1 - 100	150 - 15,000
Color TV	9 - 20	150 - 500
Fluorescent Fixture	6 - 20	400 - 2,000
Fluorescent Desk Lamp	6 - 20	400 - 3,500
Circular Saws	10 - 250	2,000 - 10,000
Electric Drill	25 - 35	4,000 - 8,000

* (0.001 Gauss - 1mG)

F.1.1.3 Safety Considerations

The proposed transmission line would be constructed to meet or exceed National Electrical Safety Code (NESC) standards. Nevertheless, electrical equipment of any kind can be a safety hazard, and special care must be taken when working or playing near transmission lines to avoid hazardous situations.

Potential safety hazards from transmission lines are primarily related to possible induced voltages and currents on conductive objects near the line and directly contacting the line with a conductive object.

(a) Induced Currents and Voltages. When a conducting object, such as a vehicle or person, is placed in an electric field, currents and voltages are induced in the object. These induced currents and voltages represent a potential source of nuisance shocks near a high-voltage transmission line. With the conductor at 120°F and 24-foot clearance, the short-circuit current resulting from induced voltage of the proposed transmission line to the largest anticipated vehicle would be less than the NESC criterion of 5 milliampere.

(b) Steady-State Current Shocks. Steady-state currents are those that flow continuously after a person contacts an object and provides a path to the ground for the induced current. Primary shocks are those that can result in direct physiological harm. Primary shocks would not be possible from the induced currents under the proposed line.

Potential steady-state current shocks from vehicles under the proposed line are all at or below the secondary-shock levels. Secondary shocks are defined as those that could cause an involuntary and potentially harmful movement, but cause no direct physiological harm. Steady-state current shocks are not anticipated to occur very often, and when they do would represent a nuisance rather than a hazard.

(c) Spark-Discharge Shocks. Induced voltages appear on objects, such as vehicles, when there is an inadequate ground. If the voltage is sufficiently high, then a spark-discharge shock will occur as contact is made with the object. This type of shock could occur under the proposed line. However, the magnitude of the electric field would be low enough so that this type of shock would be rare and would occur only in a small area under the line near midspan.

Carrying or handling conducting objects under the proposed line could also result in spark discharges that are a nuisance. The primary hazard, however, is direct contact of the object with the conductors.

(d) Field Perception. When the electric field under a transmission line is sufficiently great, it can be perceived by hair erection on an upraised hand. It is very unlikely that the electric field under the proposed line would be perceivable by a person standing on the ground.

(e) Grounding and Shielding. Induced currents are always present around transmission lines. However, the grounding policies of Western would eliminate the possibility of nuisance shocks due to these currents from stationary objects such as fences and buildings.

Mobile objects cannot be grounded permanently, but coupled currents to persons in contact with mobile objects can be limited through adherence to the NESC and the use of conductor grounds. Electric field reduction and the accompanying reduction in induced effects, such as shocks, is also accomplished by conductive shielding.

Persons inside a conducting vehicle cab or canopy will be shielded from the electric field. Similarly, a row of trees or a lower-voltage distribution line will reduce the field on the ground in their vicinity. Metal pipes, wiring, and other conductors in a residence or building will shield the interior from the electric field.

(f) Magnetically Induced Currents and Voltage. Alternating magnetic fields induce voltages at the open ends of the conducting loops. The conducting loop can be formed by a fence, an irrigation pipe, an electrical distribution line, or a telephone line. The earth to which one end of the conductor is grounded forms the other portion of the loop. The possibility for a shock exists if a person closes the loop at the end by contacting both the ground and the conductor.

Grounding practices and the availability of mitigation measures mean that magnetic-induction effects from the line can be minimized. It is therefore unlikely that magnetically induced voltages and currents would have an adverse impact.

F.1.2 Biological Effects

F.1.2.1 Effects on Humans

Recent media coverage regarding a possible association between EMF and human health has created a public concern that exposure to EMF may cause a variety of adverse human health effects. Beginning in the 1970's, scientists conducted a number of studies to determine the relationship, if any, of EMF to plant and animal health.

Although a substantial amount of research on this subject has been done and is still in progress, the body of research on health effects is still preliminary and inconclusive. A growing number of studies suggest that under certain circumstances even relatively weak EMF can produce biologic changes. It is a widely held view that while the emerging evidence no longer allows the categoric assertion that there are no risks, there is no basis for asserting that there is a significant risk. In light of this possibility of a potential risk to human health, Western can factor EMF avoidance strategies into its transmission design and construction activities if those strategies can be accomplished at modest cost and are compatible with other environmental concerns. However, because of the uncertainties surrounding the EMF issue at

present, the expenditure of large sums of money, degradation of reliability and service, or greatly increased operating costs cannot be justified. Should science establish a significant risk to public health as a result of EMF exposure, it is Western's expectation that the issue of EMF standards, avoidance strategies, evaluation procedures, etc., would be addressed in statute and implemented in regulations after a careful, structured public debate that weighs risk against cost. Western will continue to monitor and financially support research on the biological effects of EMF with the hope for an early resolution of the issue.

Over the ROW, the electric field will be below the perception level of humans. Anticipated use of the ROW is transitory. The nearest residence to the line is over 1/2 mile away. At this distance both electric and magnetic fields from the lines will be less than typical residential levels. Operational experience over several decades with 230-kV and higher-voltage transmission lines have indicated no adverse biological or health effects related to electric or magnetic field exposure. Therefore, the electric and magnetic fields of the Seminoe-Kortes Transmission Lines are not anticipated to cause adverse health or biological effects.

F.1.2.2 Effects on Agriculture

(a) Honeybees. The electric fields from the proposed lines could have effects on honeybees and on hive performance. Under certain conditions, honeybees are adversely affected by electric fields (Wallenstein, 1973; Rogers, et al., 1982; Greenberg, et al., 1981; Greenberg and Bindokas, 1980; Greenberg, et al., 1984). These effects can be mitigated by avoiding high field regions on transmission line ROW and placing grounded metal cages or screens over the hives.

Beekeepers with hives located on the final ROW of the proposed transmission lines will be advised by Western of the possible adverse effects to bees and compensated fairly to assist in relocation of hives. The maximum fields beyond the ROW for the proposed line will not exceed the threshold levels where effects on bees have been observed. Therefore, there will be no impact beyond the ROW.

(b) Crops. High electrical fields (15-kV/m) have been observed to induce corona on the uppermost parts of plants (McKee, et al., 1978; Rogers, et al., 1982) resulting in minor damage to the leaf tips. The maximum electric field under the proposed line would be well below the level where induced corona has been observed on crop plants.

(c) Livestock. There are no indications that exposure to the fields beneath operating transmission lines affect livestock behavior or productivity. However, both ac and dc currents cause definite behavioral responses in dairy and beef cattle. For this reason metal water and feed troughs, like all conducting objects under the proposed transmission line, should be grounded to eliminate the possibility of nuisance shocks.

F.1.3 Cardiac Pacemakers

Currents and voltages that are introduced internally to the body represent a possible source of interference to cardiac pacemakers. Internal currents can be caused by electric fields, by magnetic fields, or by direct contact.

The conclusion drawn from research and reviews of the literature is that the overall risk to pacemaker wearers from transmission lines is minimal. This is especially true of 115- and 230-kV lines because of the relatively low electric fields when compared to 500- and 765-kV lines. The threshold for interference to the most sensitive pacemakers is estimated to be 3.4 kV/m. Thus the maximum fields of the proposed lines would almost never be at a level to cause interference with pacemakers. To date, no evidence has been found that a transmission line has caused a serious problem to the wearer of a pacemaker.

F.1.4 Hazards

The greatest hazard from a transmission line is direct electrical contact with the conductors. Therefore, extreme caution must be exercised when operating vehicles and equipment for any purpose in the vicinity of a transmission line.

In a high electric field, it is theoretically possible for a spark discharge from the induced voltage on a large vehicle to ignite gasoline vapor during refueling. However, the probability for exactly the right conditions to occur is extremely remote. For the proposed line, the maximum electric field is low enough that it is very doubtful the right conditions could ever be achieved (BPA 1979; Basin undated).

Because of the hazards associated with fires, Western prohibits storage of flammables, construction of flammable structures, and other activities that have the potential to cause or provide fuel for fires on ROWs.

Transmission line structures, wires, and other tall objects are likely points to be hit by lightning during a thunderstorm. Therefore, the area near structures and other tall objects should be avoided during thunderstorms. The proposed line is designed with overhead ground-wires and well-grounded structures to protect the system from lightning by routing a strike to the earth.

APPENDIX G:

Wyoming State Agencies' and Federal Agencies' Written Comments and Responses

12

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WESTERN
Loveland Area Office
MAR 26 1990

STATE OF WYOMING
OFFICE OF THE GOVERNOR
CHEYENNE 82002

MIKE SULLIVAN
GOVERNOR

March 22, 1990

Mr. Stephen A. Fausett
Area Manager
Western Area Power Administration
P. O. Box 3700
Loveland, CO 80539

Dear Mr. Fausett:

The Environmental Assessment for the Seminoe-Kortes Transmission Line/ Substation Consolidation Project has been circulated among agencies of the State of Wyoming for review. The opportunity to review this document is appreciated, and enclosed herewith are comments resulting from that review.

Please note that agencies have identified potential additional authorization requirements, the need for protection against oil spills, fault location and have requested establishment of utility corridors. If you have any questions with regard to these comments, please call me at 777-7574. Again, thank you for this opportunity to provide input and please continue to keep this office informed.

Sincerely,

Rod S. Miller

Rod S. Miller
Federal Land Planning Coordinator

RSM:sj

Enclosures

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Comment Letter 1

MIKE SULLIVAN
GOVERNOR

Wyoming State Archives, Museums & Historical Department

DAVID KATHKA, Ph.D
DIRECTOR

BARRETT STATE OFFICE BUILDING • CHEYENNE, WY 82002 • (307) 777-7519

March 13, 1990

MAR 14 1990

Mr. Dan Perdue
State Planning Coordinator
Herschler Building
Cheyenne, Wyoming 82002
ATTN: Mr. Rod Miller

RE: Seminoe-Kortes Substation Consolidation Project, SPC #90-026
SHPO #0489RL8034

Dear Mr. Perdue:

Richard Bryant of our staff has received information concerning the aforementioned project. Thank you for giving us the opportunity to comment.

1.1 Management of cultural resources on Western Area Power Administration (WAPA) projects is conducted in accordance with a memorandum of understanding between WAPA and the SHPO. The MOU calls for survey, evaluation and protection of significant historic and archeological sites prior to any disturbance. Provided WAPA follows the procedures established by the MOU, we have no objections to the project. Specific comments on the project's effect on cultural resource sites will be provided to WAPA when we review the cultural resource report.

Please refer to SHPO project control number #0489RL8034 on any future correspondence dealing with this project. If you have any questions contact Mr. Bryant at 777-6292.

Sincerely,

Thomas E. Marceau

Thomas E. Marceau
Deputy SHPO

FOR:
Dave Kathka, Ph.D.
State Historic Preservation Officer

TEM:RLB:klm

Response

1.1 Western will follow the procedures established by the MOU and work closely with the SHPO.

Comment Letter 2

Response

Wyoming State Land and Farm Loan Office

122 WEST 25TH STREET, HERSCHLER BUILDING
CHEYENNE, WYOMING 82002-0600
PHONE 307/777-7331

March 16, 1990

Mr. Rod Miller
State Planning Coordinator's Office
Herschler Building, 4th Floor East
Cheyenne, Wyoming 82002

Dear Rod:

I have reviewed the environmental assessment for the Seminoe-Kortes Transmission Line/Substation Consolidation Project. Several aspects of the proposed project involve state trust lands and will require authorizations through this office and the Board of Land Commissioners.

2.1 One of two potential helicopter staging areas is located on state land in Section 22, T26N, R84W. State lands would also be involved where the transmission line is to be rebuilt and for access road purposes. The Western Area Power Administration should contact Rick Williamson at 777-6634 regarding the necessary authorizations for these activities.

2.1 Western will coordinate with the Wyoming State Land Office.

Please let me know if you need any additional information.

Sincerely,

Paul R. Cleary
Paul R. Cleary
Deputy Commissioner

PRC:kaw

Comment Letter 3

DIRECTOR AND
STATE GEOLOGIST
GARY B. GLASS

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LABORATORY TECHNICIAN
JAY T. ROBERTS

--MEMORANDUM--

TO: Rod Miller, State Planning Coordinator's Office

FROM: Gary B. Glass, State Geologist

SUBJECT: Environmental Assessment: Seminoe-Kortes Transmission Line/ Substation Consolidation Project (State Identifer #90-026)

DATE: March 6, 1990

We have reviewed this Environmental Assessment (EA) and submit the following comments:

3.1 (1) The EA does not mention the potential for gold and(or) diamond paleoplacers to occur in the Tertiary conglomerates in the vicinity of the substation. Consequently, it also does not address the effects this project could have on mining claims in the area.

3.2 (2) We have also attached a recent article on active faults. Although the project is not on an active fault, it is near one. The Western Area Power Administration should consider potential seismic activity associated with these active faults as they design their project.

GBG/sb

Attachment

Response

3.1 The impacted area that falls within the jurisdiction of the State of Wyoming is the location of two existing transmission lines to be rebuilt in Sections 22 & 27, T. 26N., R.84W. With regard to mining claims, The United States of America (Western Area Power Administration) is subject to easements of record or use as well as outstanding mineral rights in third parties.

The site of the substation and the surrounding area is located on United States property administered by the Bureau of Land Management.

3.2 During the design phase of Western's transmission line and substation projects, geologic hazards such as active faults are taken into consideration.

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Comment Letter 4

5

United States Department of the Interior
BUREAU OF RECLAMATION
Great Plains Region
North Platte River Projects Office
P.O. Box 1630
Mills, Wyoming 82644-1630

IN REPLY REFER TO: C-420

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Mr. Stephen A. Fausett
Area Manager
Department of Energy
Western Area Power Administration
Loveland Area Office
P.O. Box 3700
Loveland CO 80539

Subject: Seminoe-Kortes Transmission Line/Substation Consolidation Project (Your Letter of February 23, 1990) (Environmental Assessment)

Dear Mr. Fausett:

We have reviewed the subject environmental assessment and offer the following comments:

4.1 1. The Bureau of Reclamation (Reclamation) supports Western's goal of decreasing the potential for future oil contamination of the North Platte River by removal of the existing circuit breakers at the Seminoe and Kortes switchyards; however, we are concerned about the potential for a spill during the draining of the breakers, and suggest that you develop a spill prevention, containment, and clean up plan prior to starting work.

4.2 2. Also, although it appears that we will require no special use permits for any new or replacement transmission lines (per Title V, Public Law 94-579), we do request that you work closely with this office regarding work schedules, use of staging areas, and any unforeseen environmental disturbances on Reclamation land.

Thank you for the opportunity to comment.

If you need additional information, please call Mr. Tony Morton of this office at telephone number (307) 261-5664, or FTS 328-5664.

Sincerely,

ACTING John H. Lawson
Project Manager

Response

4.1 Refer to the response to Letter 5 (Wyoming Department of Environmental Quality).

4.2 Western will coordinate with the Bureau of Reclamation.

Comment Letter 5

THE STATE OF WYOMING

MIKE SULLIVAN
GOVERNOR

1890-1990 WYOMING CENTENNIAL A LASTING LEGACY

Department of Environmental Quality

Herschler Building • 122 West 25th Street • Cheyenne, Wyoming 82002

Administration (307) 777-7937	Air Quality Division (307) 777-7391	Land Quality Division (307) 777-7756	Solid Waste Management Program (307) 777-7752	Water Quality Division (307) 777-7781

March 19, 1990

Mr. Mark M. Silverman, Area Manager
Department of Energy
Western Area Power Administration
Loveland Area Office
P.O. Box 3700
Loveland, CO 80539

RE: Seminoe-Kortes Transmission Line/Substation Consolidation Project

Dear Mr. Silverman:

Bill DiRienzo of the Water Quality Division reviewed the above referenced document and provided the following comments.

5.1 One of the major factors expressed in the "Purpose and Need" section of the EA and in the selection of the preferred alternative is the current risk of water quality contamination resulting from a potential spill of the oil used in the breakers. Also, section 4.1.6.2 on page 71 states "If an oil spill were to occur in the North Platte, impacts would be significant".

Certainly, there will be long term benefits in moving the equipment to a location off the river. However, all of the risks associated with the circuit breakers at their present location are at their greatest during the decommissioning and draining operation. The department does not believe that this area has been given adequate consideration in the EA. Section 4.1.4 on page 67 states that impacts to water resources are expected to be short-term and low-none. This is of course based on the determination that a spill will not occur, yet there are no standard or special mitigation measures expressed in the EA to lend confidence to this determination.

Therefore, because of the amount of oil involved, an SPCC should be filed with the U.S. EPA and a copy sent to this office. Sufficient sorbent materials should be stockpiled in the vicinity of the work, and the contractor and all employees should be familiar with the SPCC and trained in the use of the cleanup materials.

Response

5.1 The major oil filled equipment at Seminoe Switchyard consists of 9 oil circuit breaker tanks each containing 700 gallons of oil and two potential transformer tanks each containing 536 gallons of oil. Total oil contained at Seminoe Switchyard is 7,372 gallons of oil. At Kortes Switchyard the major oil filled equipment consists of 15 oil circuit breaker tanks each containing 850 gallons of oil for a total of 12,750 gallons.

Seminoe Switchyard is located on the roof of Seminoe Powerplant at the base of Seminoe Dam. Spill control consists of flapper valves that have been incorporated into the roof drainage system. Any oil from these valves would flow into a catch tank located in the bottom of the powerplant.

Kortes Switchyard spill containment consists of concrete bermed containment tubs around each oil circuit breaker. In the event of a spill at the oil circuit breaker the oil would be contained in the tub, pumped into the oil drain system, and disposed of properly.

Seminoe and Kortes Switchyards have an oil drain and fill system. During routine maintenance the oil circuit breakers are drained by a dedicated system of 2" piping into an oil storage tank located in the powerplants. When maintenance is complete the oil circuit breakers are refilled from the oil storage tank. This equipment is inspected monthly.

This project includes the removal of the major oil filled equipment at Seminoe and Kortes Switchyards. Before a piece of equipment is removed it would be drained of oil. The oil would be drained into the storage tanks in the powerplants as is done for routine maintenance. The oil in the storage tanks would then be pumped into a tanker truck for proper disposal. Only one tank would be drained and transferred into the truck at a time so the maximum spill in the event of a piping failure would be 850 gallons. The contractor would be required to have on site during oil transfer enough absorbent material to contain and cleanup 850 gallons of oil. After each tank is emptied the contractor would be required to clean the residual oil out of the tank with absorbent material and properly dispose of the absorbent material.

Western presently has on file current SPCC plans for both Seminoe and Kortes Switchyards. These existing plans will be reviewed and updated again prior to the decommissioning of any oil filled switchyard equipment. The SPCC plans will be forwarded to the Wyoming Department of Environmental Quality.

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Comment Letter 5

Mr. Mark M. Silverman
March 19, 1990
Page 2

5.2 Regulations concerning reporting and cleanup of hazardous material spills are contained in Chapter IV of the state water quality rules and regulations. In addition, the Water Quality Division has developed the "Wyoming Oil and Hazardous Substances Pollution Contingency Plan" which provides guidelines for response actions which will allow responsible parties to respond in an efficient and timely manner. Both of these documents are available upon request from the Water Quality Division. Questions concerning hazardous substance handling and reporting can be made to Leroy Feusner by calling (307) 777-7096 or writing to the address above.

Thank you for the opportunity to comment.

Sincerely,

Dennis Hemmer
Director
Department of Environmental Quality

DH/BD/jt

xc: Leroy Feusner, DEQ/WQD

Response

5.2 Western's Loveland Area Office has on file copies of "Wyoming Oil and Hazardous Substances Pollution Contingency Plan" and Chapter IV of the state water quality rules and regulations.

Comment Letter 6

THE STATE OF WYOMING

MAR 2 0 1990

MIKE SULLIVAN
GOVERNOR

Public Service Commission

700 W. 21ST STREET (307) 777-7427 FAX (307) 777-5700 CHEYENNE, WYOMING 82002

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CHAIRMAN
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CHIEF COUNSEL AND COMMISSION SECRETARY
STEPHEN G. OXLEY
ADMINISTRATOR

M E M O R A N D U M

TO: MR. ROD MILLER
FEDERAL LANDS COORDINATOR
STATE PLANNING COORDINATOR'S OFFICE

FROM: JON JACQUOT
CHIEF ENGINEFR
PUBLIC SERVICE COMMISSION

DATE: MARCH 20, 1990

RE: ENVIRONMENTAL ASSESSMENT FOR THE WESTERN AREA POWER ADMINISTRATION SEMINOE - KORTES TRANSMISSION LINE/SUBSTATION CONSOLIDATION PROJECT, STATE IDENTIFIER NO. 90-026

6.1 Thank you for the opportunity to comment on the referenced matter. The Commission has asked that I extend its request to Western Area Power Administration through your office for reservation of corridors along the routes of the lines of the project in order to accommodate other utility facilities in the future. This would act to create utility corridors through the subject area which would be preapproved and ready for the use of those in need of these corridors.

If you should have any questions regarding this request, please let me know.

mj

6.1 The easement that is acquired by the United States through Western Area Power Administration is considered a multi-use area that is often used by other entities whose projects do not interfere with the rights of the United States with regard to its facilities e.g. transmission lines.

On BLM administered lands, BLM would be responsible for establishing any consolidated utility corridors.

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Comment Letter 7

18

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT OFFICE
1300 THIRD STREET
P.O. BOX 670
RAWLINS, WYOMING 82301

WYW-113743

March 27, 1990

OFFICIAL FILE COPY
WESTERN
Loveland Area Office
MAR 3 0 1990

Route To	Initials	Date
J8010		
J2000	FPN	3/30
J2240		

Mr. William C. Melander, Environmental Coordinator
DOE, Western Area Power Administration
Loveland Area Office
P.O. Box 3700
Loveland, Colorado 80539

Dear Mr. Melander:

My staff has reviewed the Environmental Assessment (EA), DOE/EA-0325, for the Seminoe-Kortes Transmission Line/Substation Consolidation Project. Their comments are attached. Overall, they found the EA to be well written.

Some of the comments regarding standards for upgrading roads and maintaining vegetation along the powerlines might be appropriately addressed in the Plan of Development (POD) for the right-of-way. I understand that Eric Phillips will be working with Marilyn Nickerson of my staff to develop the POD.

If you need more information, please call Marilyn Nickerson, (307) 324-4841.

Sincerely,

Area Manager
Great Divide Resource Area

1 Enclosure
Encl. 1 - Comments on EA

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Comment Letter 7

Western Area Power Administration WTW-113743

7.1 Page 7, paragraph 5, line 5. When existing roads are upgraded, how wide will they be? Will there be any blasting? If so, a blasting plan will be required.

7.2 Page 7, paragraph 5, lines 5 and 6. There is no discussion as to what standards the 103 miles of road would be upgraded to.

7.3 Page 16, paragraph 1, line 7. Any upgrading of the road which forms the boundary of the Bennett Mountains WSA will require review and approval by the BLM before any surface disturbance must occur outside of the WSA.

7.4 Page 16, paragraph 1, lines 7 and 8. There is no discussion in the proposed action as to what standards the 10.3 miles of road would be upgraded to. Appendix C states that the running surface may be 12 feet. Is this the case for all upgrading?

7.5 Page 20, paragraph 3. There is no discussion of vegetation maintenance beneath the powerlines. For example, will trees beneath the powerline be removed every 10 years?

7.6 Page 33, paragraph 3, line 5. Very little Douglas Fir occurs in the Seminoe Mtns. Limber pine (*Pinus Flexilis*) is as common as ponderosa pine in the Seminoe Mtns. and within the project area. This addition should be included in Appendix A, page A-3.

7.7 Page 39, paragraph 3, line 9. During the 1989 nesting season there were at least 1,138 pair of American white pelicans nesting on Bird Island in Pathfinder Reservoir. This estimate does not include yearling birds which do not usually breed their first year but occur throughout the project area.

7.8 Page 48, paragraph 2, line 9. Bijeck should be changed to Bye-Jech. Change the next sentence to read "Congress will act on the BLM recommendations at a future date.

7.9 Page 56, paragraph 3, line 5 and page 69, paragraph 3, line 15. The unpaved road through the Seminoe Mtns. is a Bureau of Reclamation road. It is not Carbon County Road 351.

7.10 Page 87, Table 4.1. Change VRM Class I to Class II.

7.11 Page 89, paragraph 2, line 1. After "Carbon County Road 351" add "and the Bureau of Reclamation road through the Seminoe Mountains."

7.12 Page 93, paragraph 3, line 1. Change "Bijeck" to "Bye-Jech." Change "Environmental Specialist" to "Outdoor Recreation Planner."

000. Well written EA. Good job.

Response

7.1 Western usually requires a 12 foot wide road, with a minimum 50 foot radius on curves. Requirements for blasting are site specific and determined at the time of construction. The construction contract will require a blasting plan to be submitted and approved by Western prior to any blasting being performed.

7.2 Western's minimum standard road is 12 feet wide, with 50 foot minimum radius curves, and water bars for drainage. Cut slopes and fill slopes ratios are determined by the type of material the road is constructed through. Grades for newly constructed permanent roads normally do not exceed +/- 15 percent. Grades for temporary or reconstructed roads are that of the existing topography.

7.3 The Plan of Development (POD) will address the constraints on reconstructing the road.

7.4 Western's minimum standard road is 12 feet, 50 foot minimum radius curves, and water bars for drainage. Cut slopes and fill slopes ratios are determined by the type of material the road is constructed through. Grades for newly constructed permanent roads are +/- 15 percent. Grades for temporary or reconstructed roads are that of the existing topography.

7.5 Very little vegetation maintenance is anticipated. In ROW areas accessible with a bucket truck, trees would be trimmed and topped as necessary to prevent contact with the transmission line conductors. In areas not accessible by bucket truck, trees would be cut down only when tree height exceeds required clearance distances with the transmission line conductors.

7.6 The additional information has been incorporated into Appendix A.

7.7 The EA has been revised to include this updated information.

7.8 The correction and addition has been made in the EA.

7.9 The correction has been made in the EA.

7.10 The correction has been made in the EA.

7.11 The addition has been made in the EA.

7.12 The correctio. has been made in the EA.

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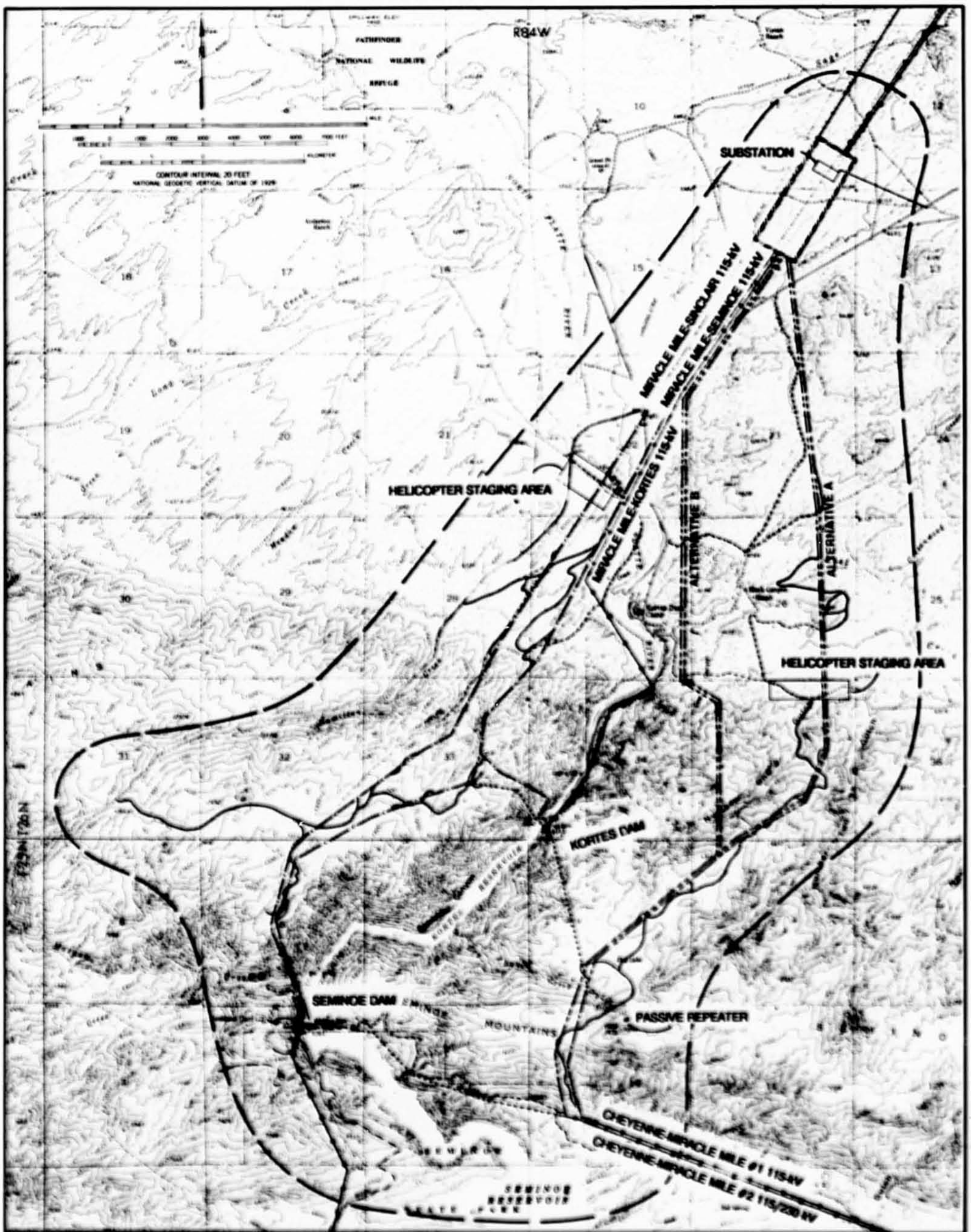

ACCESS ROADS TO BE UPGRADED
OTHER ACCESS ROADS
SUBSTATION AND WIDENED RIGHT-OF-WAY AREA
PASSIVE REPEATER
EXISTING TRANSMISSION LINE
NEW TRANSMISSION LINE
TRANSMISSION LINE TO BE REMOVED
TRANSMISSION LINE TO BE REBUILT
STUDY AREA BOUNDARY

SEMINOE-KORTES CONSOLIDATION PROJECT

U.S. DEPARTMENT OF ENERGY
WESTERN AREA POWER ADMINISTRATION

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Figure S.1 Seminoe-Kortes Consolidation Project, Carbon County, Wyoming, 1990.

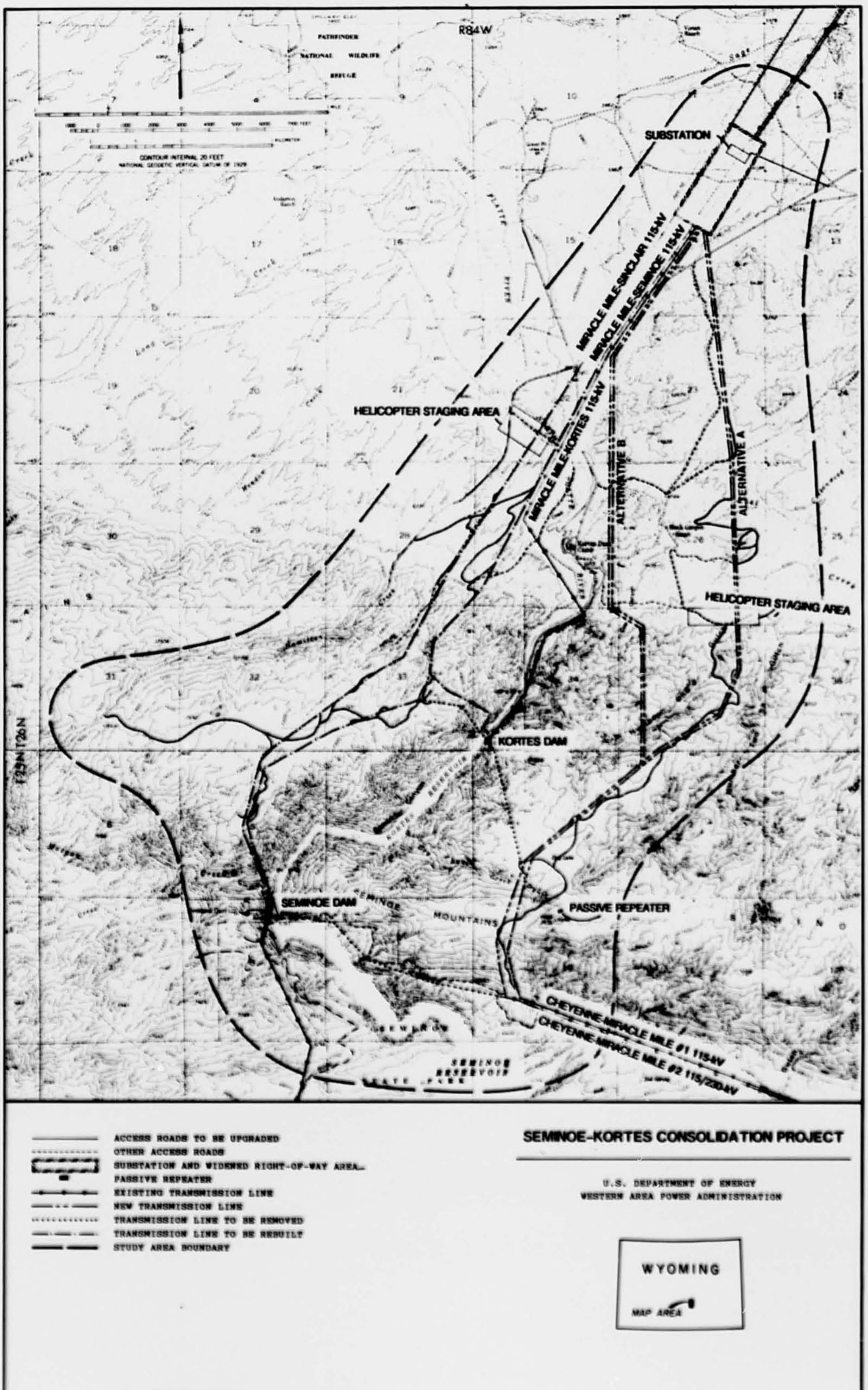

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Figure 2.1 Project Area Map Showing Facilities at Seminoe-Kortes Consolidation Project, Wyoming, 1990.

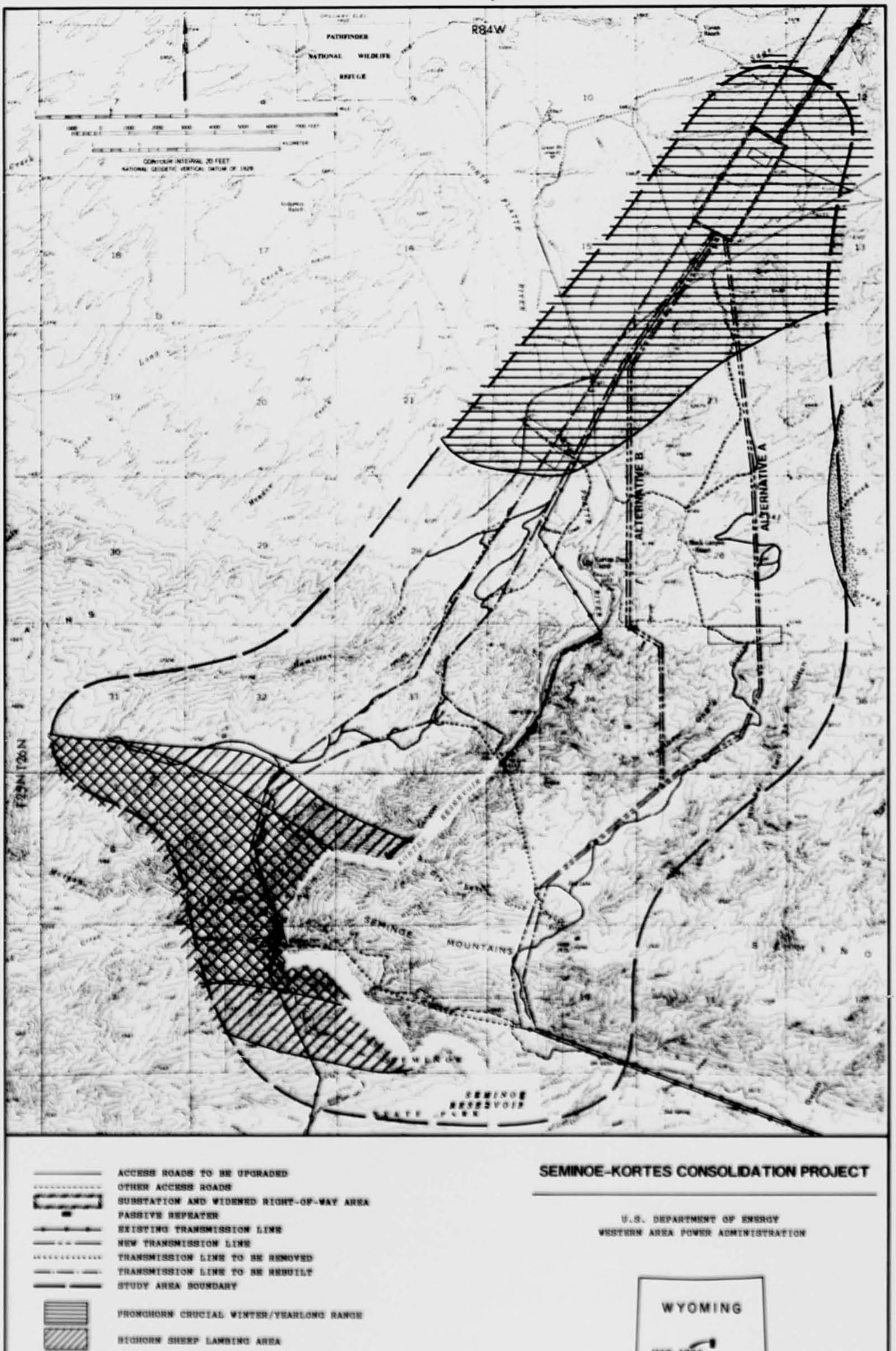

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Figure 3.1 Bighorn Sheep, Elk, and Pronghorn Crucial Winter/Yearlong Ranges, Seminoe-Kortes Consolidation Project, Wyoming, 1990.

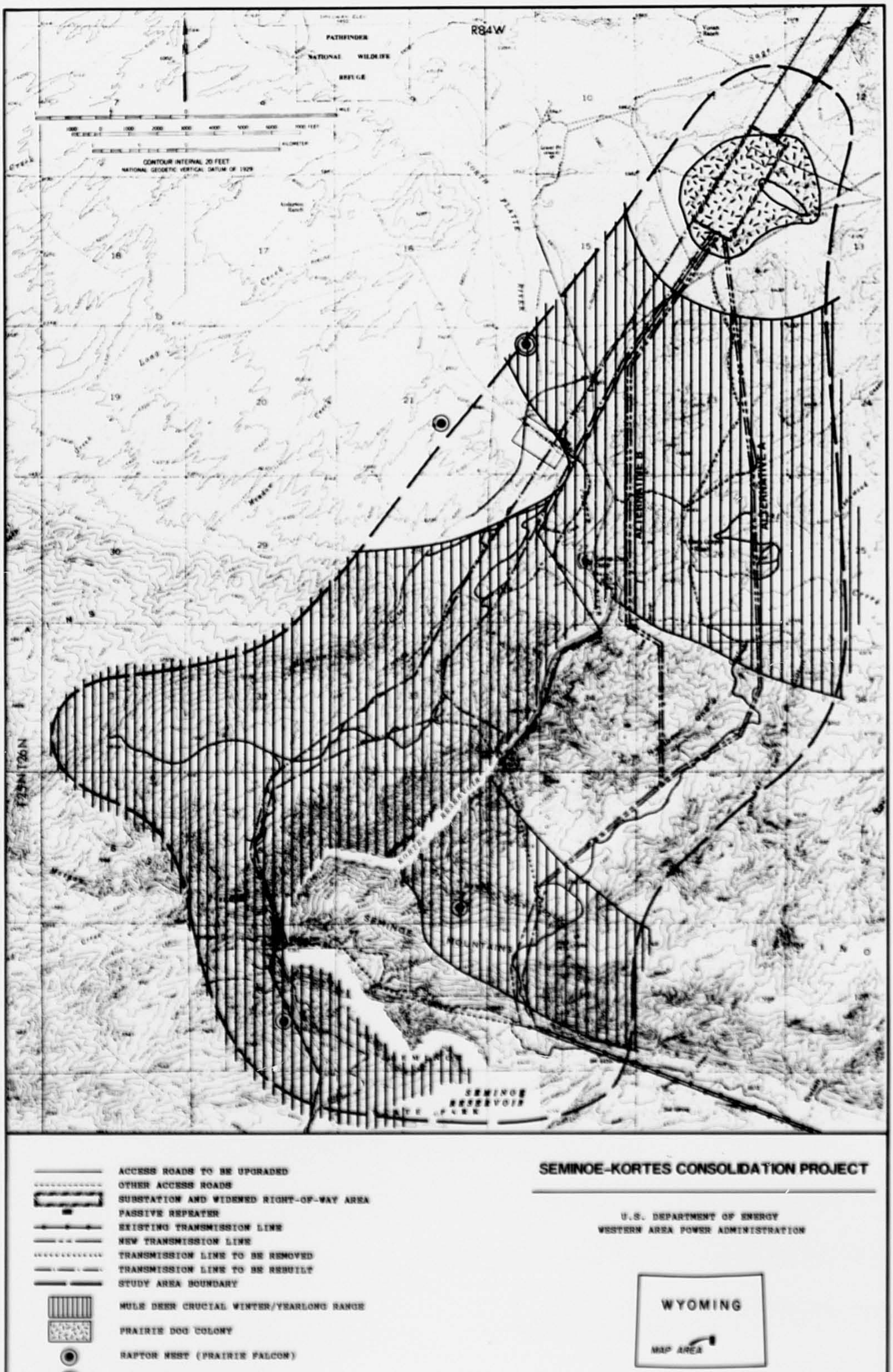

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Figure 3.2 Mule Deer Crucial Winter/Yearlong Range, Prairie Dog Colony, Raptor Nests, and Bald Eagle Perch, Seminoe-Kortes Consolidation Project, Wyoming, 1990.

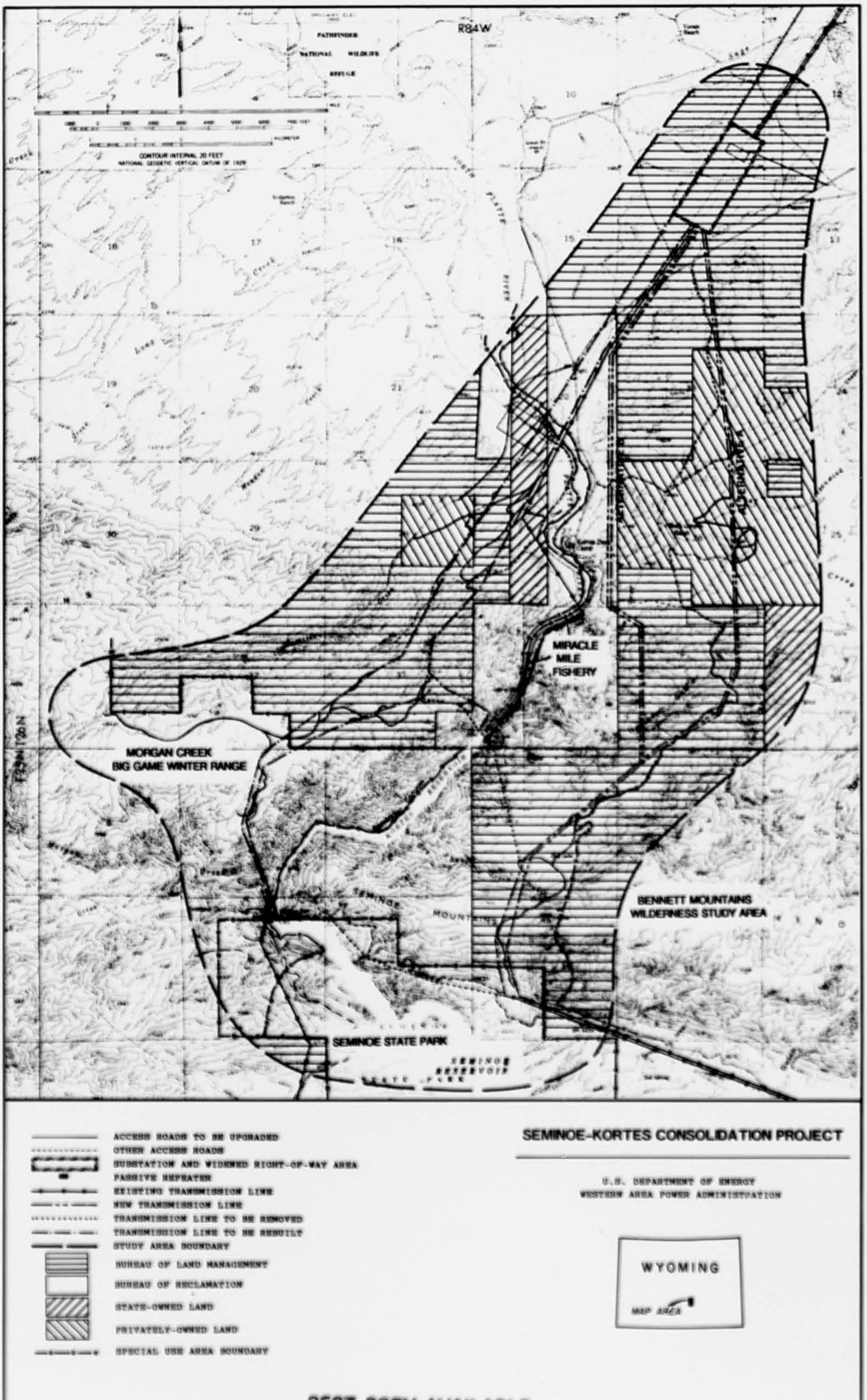

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Figure 3.3 Land Ownership and Special Use Areas, Seminoe-Kortes Consolidation Project, Wyoming, 1990.

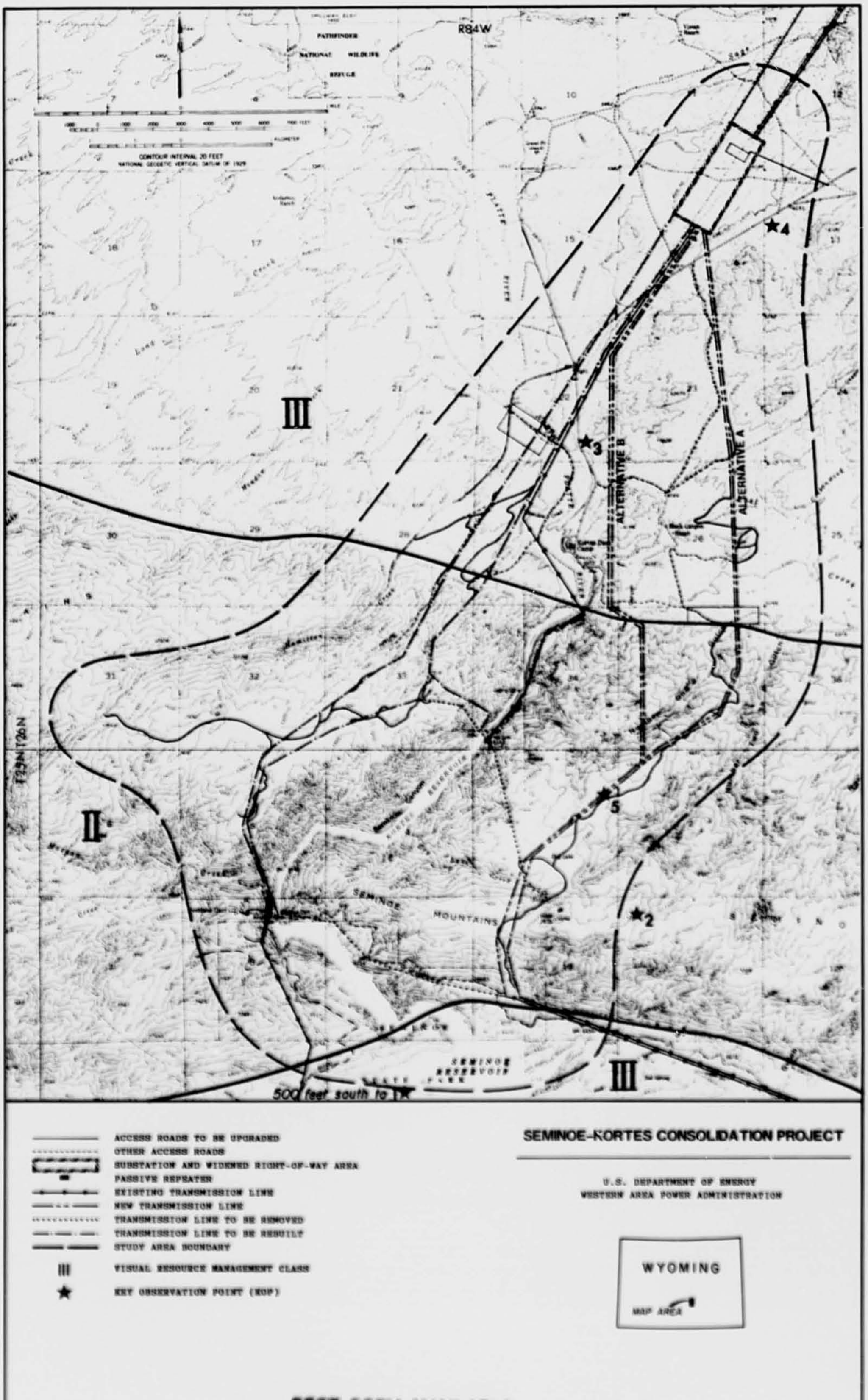

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Figure 3.6 Visual Resource Management Classes, Seminoe-Kortes Consolidation Project, Wyoming, 1990.