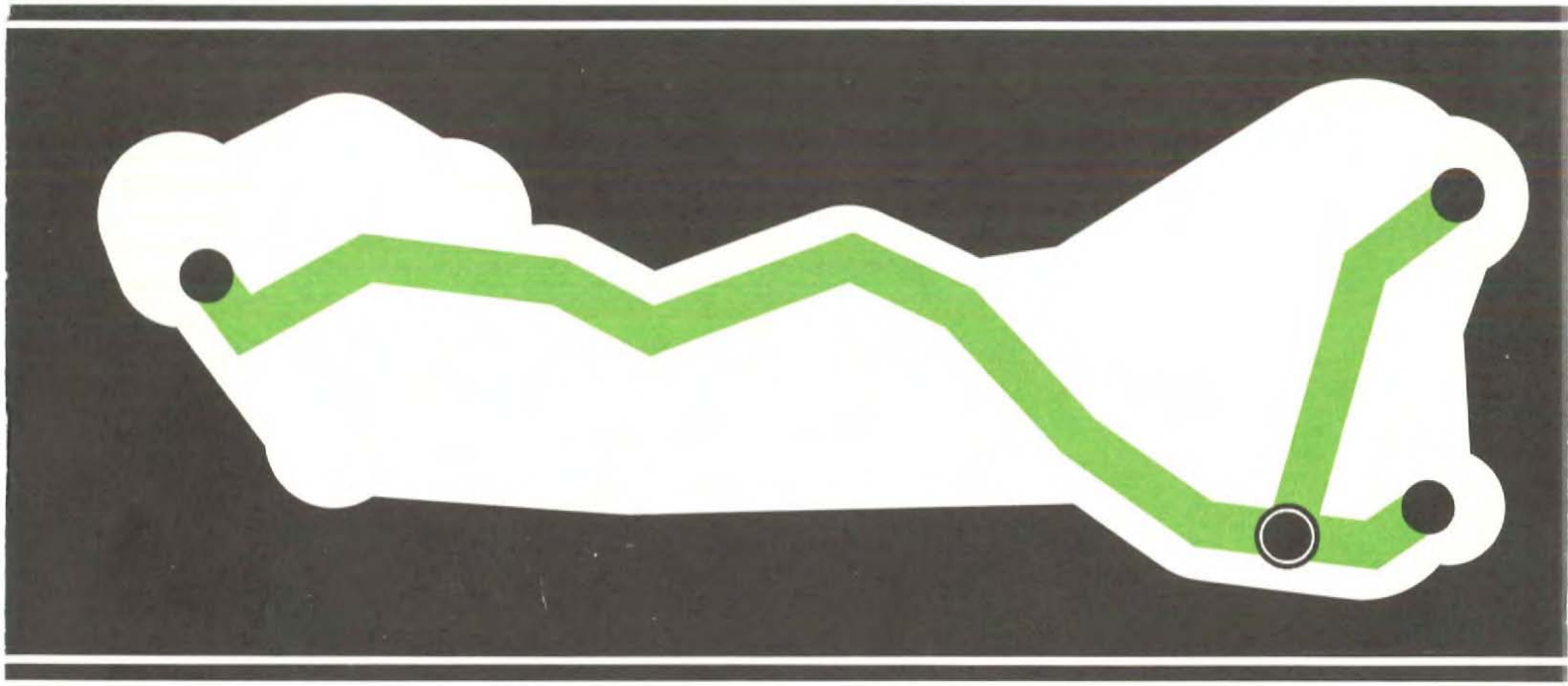
DOE/EIS • 0101 • F

Thermopolis • Alcova • Casper

Transmission Line Project Wyoming

Final Environmental Impact Statement



US Department of Energy
1984

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COVER SHEET

Thermopolis-Alcova-Casper
Electrical Transmission Project

( ) Draft (X) Final

Lead Agency

U.S. Department of Energy, Western Area Power Administration

Cooperating Agency

U.S. Department of the Interior, Bureau of Land Management

Abstract

This EIS assesses the environmental effects of constructing 156.8 miles of 230-kV or 230/345-kV transmission line between Thermopolis and Alcova, and between Alcova and Casper. Approximately 105.2 miles of the new 230-kV or 230/345-kV line will either replace two existing but deteriorated 69-kV lines or parallel an existing 115-kV line. The remaining 51.6 miles of line will be constructed on new corridor. In addition, approximately 50.0 miles of 69-kV line will be reconstructed at 69/115-kV between Arminto and Casper. Other minor elements of the project include construction of short 34.5-kV and 69/115-kV connecting lines, and a new substation near Alcova. The purpose of the project is to bring the regional transmission system into compliance with National Electric Reliability Council criteria and to reduce energy losses associated with overloading of the existing system. Alternatives assessed include no action, delay, reduction in the quality of electrical service, alternative transmission technologies, alternative design, and alternative routes. Significant impacts include short-term soil disturbance and increased erosion, potential disturbance of sensitive habitats for sage grouse, bald eagles and other raptors, and increased visual impacts.

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PREFACE

The Environmental Impact Statement for the Thermopolis-Alcova-Casper Transmission Line Project was released in February 1984 as a two volume Draft EIS. The main volume contains the following principal sections:

- o Purpose and Need
- o Scoping Process and Project-Related Studies
- o Alternatives Including the Proposed Action
- o Affected Environment
- o Environmental Consequences

Appendices include a regional analysis of Western's overall study area -- Yellowtail, Montana, to Ault, Colorado (of which the Thermopolis-Alcova-Casper area is the central segment); Western's energy conservation policies; the preferred corridor identification process; and detailed tabular results of the impact analysis.

A second volume contains a series of data/constraint maps covering the entire Thermopolis-Alcova-Casper study area, the basis for the network of alternative corridors selected, detailed link maps showing these corridors, and tables listing and explaining each significant impact along the corridors.

Public hearings on the project were held in March 1984 in Thermopolis, Riverton, and Casper.

Comments from agencies and the public were received in April 1984 and were incorporated into this FEIS.

This document contains the following:

- o Summary of the FEIS and DEIS
- o Changes and Additions to Each Chapter and Appendix in the DEIS
- o Comments and Responses

The main substantive changes between the DEIS and the FEIS are the abandonment of the North Platte River Corridor as the preferred route between Alcova and Casper (due to a newly adopted BLM policy to drop that area as a designated utility corridor), and a reconsideration of some impact values due to: the above policy change, new concerns relative to wildlife, and the fact that committed mitigation measures are now able to be more precisely defined.

This single volume FEIS must be read in conjunction with the two volume DEIS. Limited additional copies of the DEIS are available from Western Area Power Administration, if needed. Copies are also on file at BLM offices and libraries in and near the project area.

Copies of this FEIS have been sent to all agencies, organizations, and individuals listed in Chapter 7 of the DEIS and to all agencies, organizations, and individuals who have since requested copies.

Summary

SUMMARY

A. INTRODUCTION

The Western Area Power Administration (Western) is proposing to construct, operate, and maintain a new 230-kV transmission line between Thermopolis and Alcova, and a new 230/345-kV transmission line between Alcova and Casper. The project area is shown on Figure S.1 (Revised) in this FEIS. The proposed action is shown on Figure S.2 (Revised) in this FEIS. Since the release of the Draft Environmental Impact Statement (DEIS), the preferred alternative for the Alcova-Casper segment of the project has been changed from the existing North Platte River Corridor (Alternative 1B) to a new corridor located north of the Oregon Trail Road (Alternative 8C). The preferred alternative for the Thermopolis-Alcova segment of the project is the same as was described in the DEIS.

This environmental impact statement was prepared in compliance with the National Environmental Policy Act (NEPA) and the regulations of the Council on Environmental Quality and the Department of Energy, which is responsible for approval of the proposed action. The Bureau of Land Management (BLM) is a cooperating agency on the project and is also the Federal review agency responsible for granting rights-of-way (ROW) across public land.

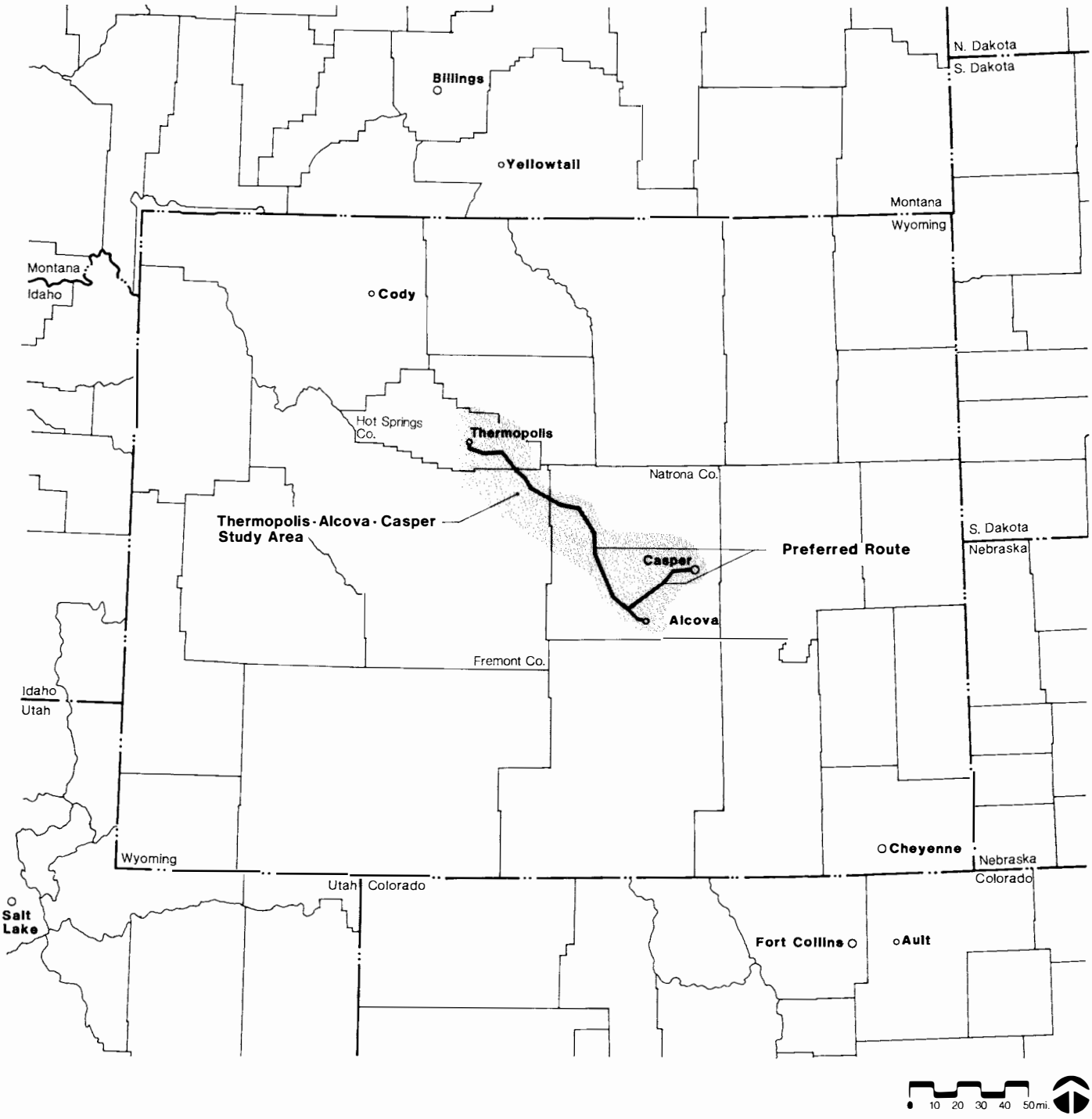
B. PURPOSE AND NEED

1. Thermopolis-Alcova

The existing Western system consists of a 115-kV line from Thermopolis to Boysen to Alcova, and a 69-kV line between Thermopolis and Casper. During periods of heavy power transfer, the 115-kV line approaches its thermal limit of 106 MW; transmission power losses during these peak periods can be 15 to 20 MW. The Thermopolis-Boysen-Alcova 115-kV line is also one of the weaker links in the overall transmission system between Yellowtail, Montana, and Ault, Colorado, and is one of the first lines to trip for system disturbance. As such, it is a primary contributor to instability of the regional transmission system.

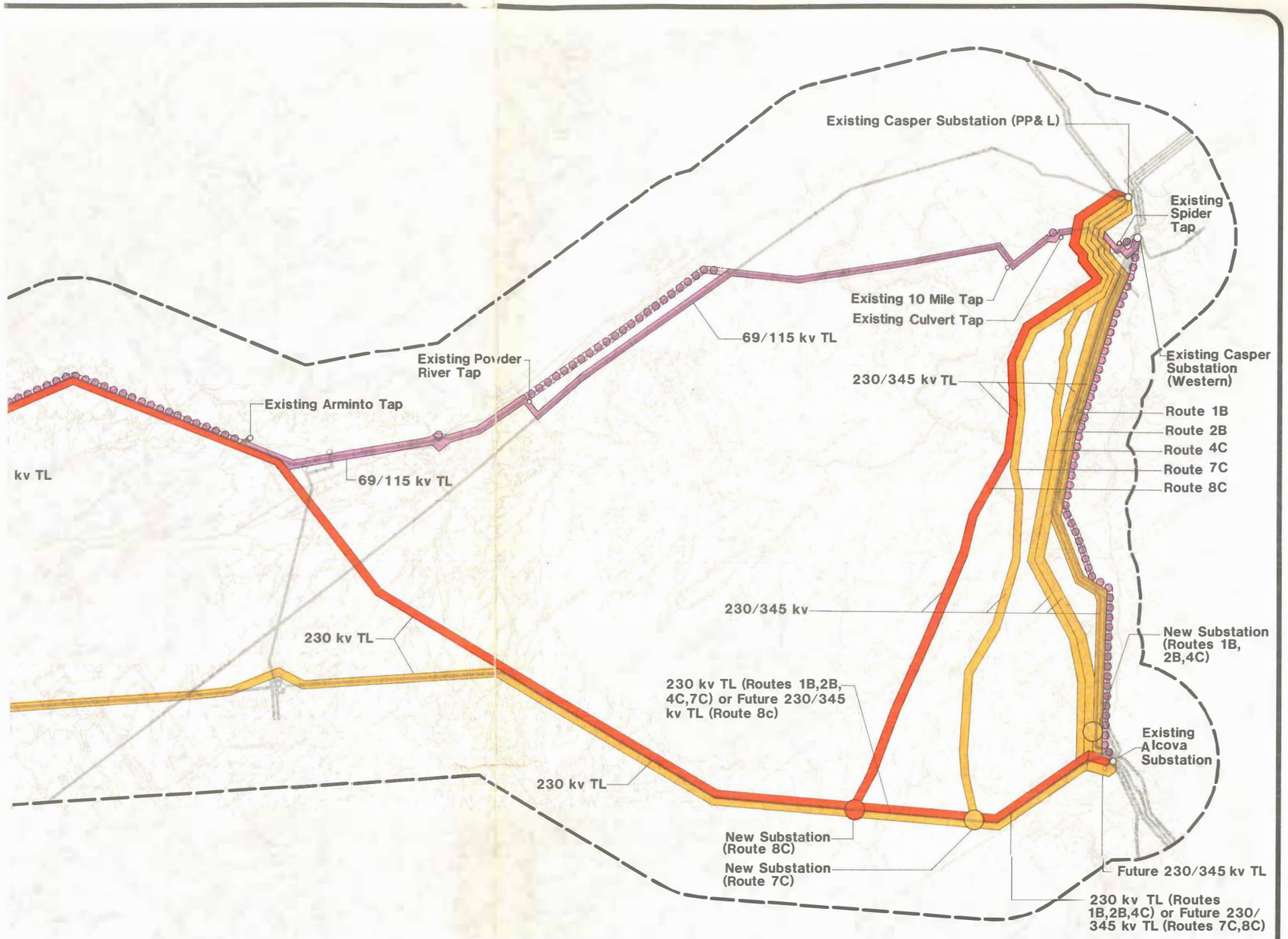
Also, the 69-kV line which serves numerous customers of Western, Pacific Power & Light Company (PP&L), and Tri-State is over 44 years old and is subject to numerous outages because of lack of direct-strike lightning protection and structure failures. Replacement of the line will reduce the high maintenance costs and increase system reliability to the required level.

However, replacing the 69-kV line at the same voltage would not provide the additional capacity required. Western proposes to replace the line with a 230-kV line which would provide the needed capacity for load growth in the area, alleviate the major load outage problems, reduce local transmission losses by 90 percent, improve reliability to the overall utility system in the area, provide voltage support to the underlying 115-kV and 69-kV systems, and increase transfer capability to the north and south.



Location Map

Revised Figure S.1



Preferred Routes

Primary Alternative Routes

New or Reconstructed 69/115 kv Line

Removal of 69 kv Line

New 34.5 kv Line

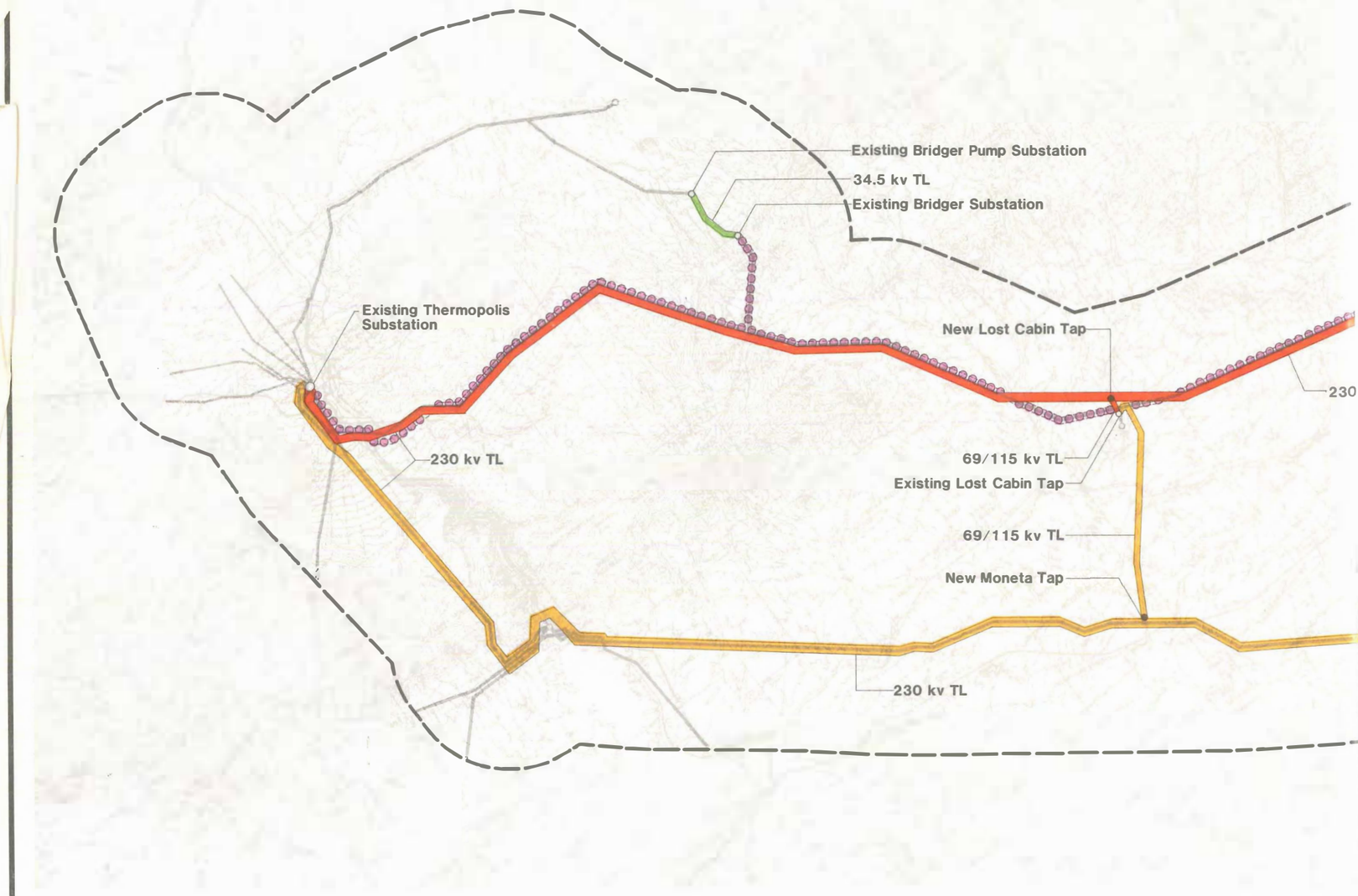
Existing Transmission Line

Existing Substation, Tap, or Powerhouse

The Proposed Action

Preferred and Primary Alternative Routes

Revised Figure S. 2



U.S. Department of Energy

Thermopolis - Alcova - Casper Area Electrical Transmission System

5 4 3 2 1 0 5 10 15 Kilometers

5 4 3 2 1 0 5 Miles 10

North

2. Casper-Alcova

PP&L also has an immediate need for additional 230-kV capacity in southwest Wyoming to meet the expected 1987-88 winter peak loads. Realizing that reinforcement of either the southwest Wyoming or the Bighorn Basin transmission system is mutually beneficial to PP&L, Tri-State, and Western, additional joint studies were conducted. Results of these joint studies indicated that a joint 230/345-kV transmission line between Alcova and Casper would be of mutual benefit to all participants.

The Alcova-Casper line (linking a new Western substation near Alcova to PP&L's existing Casper Substation) would provide a link in PP&L's transmission system to serve the southwest Wyoming area's increasingly heavy winter peak loads. The Alcova-Casper line would also be used to transfer surplus base-loaded PP&L generation to the 345-kV transmission system at Jim Bridger Power Plant during off-peak load periods.

Construction of the Alcova-Casper line will also provide needed capacity to the Alcova area from the Casper 230-kV system for Tri-State and Western. This line will also replace Western's deteriorated 48-year-old 69-kV line between Alcova and Casper. The line would be constructed for conversion to 345-kV when the need arises.

C. SCOPING MEETINGS

As part of the EIS development process, Western held public scoping meetings at the following locations:

	Place	Date	Time
1.	Museum Cultural Center 700 Broadway Thermopolis, WY	September 21, 1981	7:00 p.m.
2.	Central Wyoming College Highway 26 Riverton, WY	September 22, 1981	7:00 p.m.
3.	Natrona County Library 307 East 2nd Casper, WY	September 23, 1981	7:00 p.m.

Comments by attendees of the public scoping meetings, written comments, and informal meeting comments were analyzed to identify issues of concern. A summary of those concerns expressed is presented in Table S-1.

D. ALTERNATIVES INCLUDING THE PROPOSED ACTION

Three general alternatives were considered for meeting the stated need: no action, alternative transmission systems and technologies, and the proposed action with routing alternatives.

TABLE S-1
DETERMINATION OF THE SIGNIFICANCE OF ISSUES IN THE EIS

Issue	Concern Expressed in Public Scoping	Concern Due to Context and Intensity of Potential Impacts	Potential Level of Effort and Coverage in the EIS
Air Quality			
Regulatory Compliance	-- -- --	Moderate	Significant
Particulates	-- -- --	Low	Nonsignificant
Solid Waste			
Regulatory Compliance	Moderate	Moderate	Significant
Transport	Low	Moderate	Significant
Water Quality			
Regulatory Compliance	Moderate	Moderate	Significant
Dredging & Sedimentation	Moderate	Moderate	Significant
Construction Runoff/ Erosion	Moderate	Moderate	Significant
Chemical Pollution	Moderate	Moderate	Significant
Land Use			
Land Use Planning	High	High	Significant
Off-site Requirements	Low	Moderate	Significant
On-site Requirements	Moderate	Moderate	Significant
Change in Land Use	High	High	Significant
Indirect Effects	-- -- --	Low	Nonsignificant
Floodplains/Wetlands	Moderate	Moderate	Significant
Ecological			
Faunal Habitat	High	High	Significant
Floral Habitat	High	High	Significant
Endangered Species	High	High	Significant
Regulatory Compliance	High	High	Significant
Socioeconomics			
Economics	Moderate	Moderate	Nonsignificant
Social Effects	Moderate	Moderate	Nonsignificant
Cultural Resources			
Identified Sites	Moderate	High	Significant
Indirect Effects	Moderate	High	Significant
Public Welfare			
Electromagnetic Effects	Moderate	Moderate	Nonsignificant
Noise	Moderate	Moderate	Nonsignificant
Miscellaneous			
Construction, Design, etc.	Moderate	Moderate	Significant
Alternatives	Moderate	High	Significant
Electricity Rates/ Reliability	Moderate	Moderate	Significant

The no-action alternative has been interpreted in this environmental impact statement to mean that no new transmission or generating facilities would be constructed by Western. Western would, however, attempt to meet the stated need by treating existing wood pole structures with wood preservative, replacing structures as they give indication of structural failures, and replacing hardware as it deteriorates.

While such remedial measures might prolong the life of the existing 69-kV lines, they would constitute virtually rebuilding the lines in a piecemeal fashion without improving the reliability of Western's system. Outages from lightning strikes would continue at a high rate. Therefore, the no-action alternative would not meet all the conditions of the stated need.

Western encourages energy conservation, which refers to the elimination of wasteful or unnecessary uses of energy. Since electrical load growth occurs even under the most favorable conservation scenarios, it cannot be considered as an alternative action for meeting the stated need.

Another alternative for meeting the stated need would be for Western to use other existing or planned transmission systems or new technologies. However, no projects exist or are planned by other utilities that could meet Western's needs. Therefore, this is not a viable alternative.

A direct current (DC) transmission system was considered as a possible alternative to an alternating current (AC) system, but a DC system with the power-transfer-capability of a 230-kV AC system would cost approximately two to three times as much as a 230-kV AC system with, on balance, no significant environmental benefits. Underground systems were also evaluated but eliminated because of technical complications, economic and environmental costs, and accessibility, although some aesthetic impacts would be avoided.

After investigating the above alternatives, Western concluded that the most reasonable alternative for meeting the stated purpose and need would be with an overhead AC transmission line constructed using improved design standards.

E. DESCRIPTION OF THE PROPOSED ACTION

Western proposes to construct, operate, and maintain two new transmission lines in central Wyoming. Both lines would be initially constructed as single circuit, 230-kV overhead lines. One line would extend between Thermopolis and Alcova and the second between Alcova and Casper. This second line will be designed for potential conversion to 345-kV.

As described and illustrated in Chapter 3, Section F, and Figure 3.1 in the DEIS, various alternative locations for the two proposed lines were examined. Between Thermopolis and Alcova, the northern of the two primary alternative routes, much of which follows the route of the existing Western 69-kV line, is the preferred alternative. This route is 122 miles long. Between Alcova and Casper, the preferred alternative is located generally to the northwest of the Oregon Trail Road and follows a newly designated BLM utility corridor. It is 36 miles long.

In addition, Western proposes to remove two existing but deteriorated 69-kV lines:

1. The 28 mile long Alcova-Casper 69-kV line would be removed entirely.

2. Approximately 68.4 miles of the Thermopolis-Casper 69-kV line would be removed, the segment which extends from Thermopolis to Arminto. Between Arminto and Casper, however, the existing 69-kV line must be kept in service in order to maintain taps at Arminto, Waltman, Powder River, Ten Mile, Culvert, and Spider. Approximately 50 miles of the 69-kV line will therefore be rebuilt between Arminto and Casper.

Removal of the existing 69-kV line between Thermopolis and Arminto leaves a tap at Bridger Substation without service. This will be reestablished by a new 3-mile, 34.5-kV line from Bridger Pump Substation to Bridger Substation.

Construction of a new 230-kV line between Thermopolis and Alcova and of a new 230/345-kV line between Alcova and Casper will require the construction of a new substation near Alcova. The existing Western substation at Alcova is not designed to handle 230-kV, and the area needed for expansion is not available at the existing site. The new substation will be located about 13 miles northwest of Alcova. Note that, as shown on Figure S.2 (Revised) in this FEIS, the proposed new 230-kV line from Thermopolis will extend east of this new substation, to the existing substation at Alcova, and that the portion between the two substations will be designed for potential conversion to 345-kV.

All the elements of the proposed action, as described above, are shown on Figure S.2 (Revised) in this FEIS.

The alternative versions of the major elements of the project are also illustrated in detail on link maps that appear in the Maps and Tables Volume of the DEIS. The preferred Thermopolis-Alcova alternative (progressing from Thermopolis) appears on the following link maps:

1, 2a, 2b, 2c, 2d, 2e, 7, 9, 10a, 10b, 12, 14, 16-18, 5

Note: A revised version of Link Map 2a, showing an adjustment to the route, appears in this FEIS.

The preferred Alcova-Casper alternative (progressing from Alcova) appears on the following link maps:

11a, 11b, 25, Subroute C, 39

Note: A revised version of Link Map Subroute C, showing an adjustment to the route, appears in this FEIS. This new version of Subroute C consists of: a new link (an extension east of Link 25), Link 29, Link 31, and Link 35/37.

F. AFFECTED ENVIRONMENT

Physical Resources

Soils of the study area are characteristic of intermountain semiarid basins and adjacent mountain foothills and uplands. Soil depths range from typically shallow on bedrock controlled surfaces, to deep on stream bottom alluvial land. Soils are loamy to clayey, are well drained (except for wetland soils), and usually have secondary accumulations of salts at depth within their profiles. The topsoil, or organic matter enriched upper portion of the soil, is typically only a few inches deep. Inherent erosion potentials for water and wind are typically moderate or high.

The study region is an area of very low seismic activity. This factor, therefore, has no influence in the location of transmission lines or in the design of their support structures.

Most of the study area is located within the Wyoming Basin physiographic province. The characteristic landform within this region is flat to rolling plains, broken by occasional areas of badlands and isolated bluffs and buttes.

Climatic factors vary widely across the study area, primarily as a function of elevation and topography. Most of the region is arid, averaging between 8 and 12 inches of annual precipitation. This increases to approximately 20 inches in the higher elevation areas. Most precipitation occurs in the months of April, May, and June.

The length of the growing season also varies widely, but typically lasts from late May or early June to late August or early September. Winters are severe and make winter construction difficult, and at times virtually impossible.

The North Platte and Wind/Bighorn Rivers are the major drainage systems within the study area. The Wind/Bighorn is the same river; the name changes from Wind to Bighorn at the "Wedding of the Waters" where the river emerges from the Wind River Canyon. The majority of drainages within the study area are small, intermittent streams which flow only during the spring and early summer or after periods of intense rain. Most carry heavy sediment loads when water is flowing in the channel.

Biological Resources

The study area is dominated by sagebrush, grass, and greasewood-saltbush vegetation types.

No plant species currently listed as threatened or endangered (U.S. Fish and Wildlife Service 1982) is known to occur in the study area.

Important wildlife and aquatic habitats that have been identified for the study area include bald eagle winter concentration areas, golden eagle and other raptor nests, potential black-footed ferret habitat in prairie dog towns, critical mule deer, pronghorn and elk winter ranges, sage grouse leks and critical wintering areas, waterfowl breeding and concentration areas, Class I, II, and III streams, and major reservoirs.

Threatened or endangered wildlife species that may be present in the area are bald eagle, peregrine falcon, and black-footed ferret. Bald eagle winter concentration areas occur at several locations. No active peregrine falcon nests are known to occur in the study area, and no critical peregrine falcon habitat has been identified; however, peregrines migrate through the region and potential nesting habitat occurs in the Wind River Canyon area. Potential black-footed ferret habitat is found in the prairie dog towns scattered throughout the area; however, none of the prairie dog towns are known to contain black-footed ferrets.

Land Use

The majority of the study area is rangeland. Irrigated lands are not widely distributed within the study area and are concentrated within two areas: a broad band served by the Casper Canal, which extends between Alcova and the Casper vicinity; and the Bighorn River Valley near Thermopolis. The vast majority of the study area is rural. Urban development is concentrated in the Casper and Thermopolis vicinities and at isolated small communities such as Lost Cabin, Arminto, Powder River, Waltman, and Alcova.

Most of the study area has a low level of recreational use. Developed recreation areas are concentrated in the North Platte River Valley between Casper and Alcova, and in Boysen State Park. The majority of recreational uses in these areas are water-based and occur at Boysen Reservoir, Alcova Reservoir, and along the North Platte River.

Areas with a high potential for dispersed recreational uses include the Copper Mountain Wilderness Study Area (WSA), Lysite Badlands, and Bessemer Mountain Recreation Management Area.

State, local, and federal agencies have recommended or adopted a variety of policies which influence the location of new transmission line facilities within the study area. The most direct and the most frequently stated policy guidelines strongly encourage the use of existing corridors to the maximum practical extent.

Cultural and Paleontological Resources

The Thermopolis-Alcova-Casper study area is situated within the Northwestern Plains culture area, which is part of the larger Great Plains culture area. The archaeological record of this area reflects the presence of hunting and gathering groups over a period of approximately 11,000 years. These prehistoric people based their subsistence primarily upon the procurement of seasonally ripening plant products and hunting.

The study area includes a large portion of the Wind River Basin and extends into the Bighorn Basin on the north. Both of these areas are paleontologically important and have the potential for containing significant fossil deposits.

Historic sites within the study area are concentrated in the vicinity of the North Platte River between Casper and Alcova. Sites which have been proposed for inclusion on the National Register of Historic Places include the Bessemer Bend area on the North Platte River and the Willow Springs/Prospect Hill area, which includes well-preserved wagon ruts along the Oregon Trail.

Visual Resources

All lands within the study area were classified using the BLM's Visual Resource Management System (VRM). This system classifies land into one of five classes, with Class I having the highest resource value and Class V the lowest.

A majority of the study area is in Class IV (low) resource values. This is largely due to the extensive areas of remote, low scenic quality rolling sageland of low general concern.

VRM Class III (moderate resource value) lands occur in a scattered pattern throughout the study area. Representative areas include: the Oregon Trail corridor, outlying areas around Casper, outlying portions of the North Platte River/ Highway 220 corridor, the Lysite or Moneta Badlands, and portions of the southern Bighorn Mountains. These areas contain a combination of generally moderate scenic quality and user concern and/or volume.

There is somewhat less area classified as VRM II (high resource value). These areas include lands of high scenic quality, such as the Wind River Canyon and Red Canyon area south of Thermopolis, as well as areas of moderate scenic quality which in combination with high user volume and/or attitudes result in a Class II designation. Such areas include: the North Platte River, Alcova Reservoir, Emigrant Gap Ridge, Goldeneye Reservoir, Pine Mountain, Hell's Half Acre, and Boysen Reservoir.

G. ENVIRONMENTAL CONSEQUENCES

Detailed maps and tables which show the location and provide a description of all significant impacts are presented in the Maps and Tables Volume of the DEIS. Overall levels of impacts are shown in Table S-2 (Revised) in this FEIS. Impact ratings have been revised in the FEIS to account for new information and comments received during the review period. Of special significance in revising impact ratings was the BLM's decision to phase out the existing North Platte River utility corridor. This decision and other factors which influenced impact analysis are described in Chapter 5, Environmental Consequences. For the locations of the preferred and alternative routes, refer to Figure S.2 (Revised) in this FEIS.

Thermopolis-Alcova System

Physical Resources

Impacts to physical resources primarily involve soil disturbances resulting from construction activities. These impacts would be short term and localized, but significant in areas of sensitive soil conditions. Overall, the preferred alternative could result in very high and high impacts to physical resources along 12.2 and 22.2 miles of line, respectively. These impacts diminish after mitigation, and the long-term operations phase of the project would result in 121.6 miles of low impact and 0.7 mile of moderate. The primary alternative has a lower level of impact than the preferred route, and would result in 10.4 miles of very high and 9.1 miles of high construction impacts and no very high or high operation impact.

No significant impacts to geology, climate/air quality, or water resources were identified for either the preferred or primary alternative.

Construction activities will result in short-term, localized increases in sediment production and minor increases in dust, particularly during periods of strong winds.

Biological Resources

Construction of the preferred alternative could result in very high and high impacts along 3.2 and 8.2 miles of line, respectively, between Thermopolis and Alcova. An additional 1.4 miles of very high impact could result during operation.

Four golden eagle nests could be impacted at high to very high levels during construction. In addition, approximately nine buteo nests would be impacted at high levels and seven at moderate levels along the preferred route. These impacts are associated with potential disturbance to nesting activities if construction occurs during this critical period. Construction of the preferred alternative could moderately impact sage grouse lek and nesting areas over a distance of approximately 14.2 miles. Again, this impact is associated with potential disturbance to breeding and courtship activities if construction occurs during these periods.

Approximately 1.8 miles of the preferred alternative would cross or pass within about 1/16 mile of prairie dog towns. Prairie dog towns provide potential habitat for the endangered black-footed ferret. Prior to construction, these towns, and perhaps others up to one-half mile from the route, must be surveyed.

The primary alternative has a similar level of impacts on biological resources. Construction would result in 2.7 miles of very high and 11.3 miles of high impacts. These impacts are associated with potential tree removal at stream crossings, potential disturbance to nesting eagles and other raptors, and construction near prairie dog towns which provide potential habitat for black-footed ferrets. Construction impacts drop during operation to 0.8 mile of very high and 0.1 mile of high. The very high operation impacts are primarily associated with the loss of riparion vegetation at stream crossings.

Land Use

Both the preferred and primary alternatives have an overall low level of impacts on land use. Impacts occur only in the urban areas near Thermopolis and Alcova and where new ROW is needed. Few impacts on agricultural lands were identified.

Construction of the preferred alternative would result in 0.7 mile of high and 0.7 mile of moderate impact. The 0.7 mile of high impact is associated with crossing cultivated lands near Thermopolis. Operation phase impacts are 0.1 mile of high and 2.3 miles of moderate. These impacts result from proximity to residences, and potential conflicts with urban land uses near Thermopolis and Alcova.

The primary alternative route has an even lower level of impacts on land use. Construction phase impacts would total 0.2 mile of high and 0.4 mile of moderate. Operation impacts include 0.3 mile of high and 4 miles of moderate. Impact types are similar to those described for the preferred alternative.

No known Areas of Critical Environmental Concern (ACEC's) are affected by the project.

Cultural Resources

Known archaeological sites of an undetermined National Register status (high resource value) may be directly impacted through physical disturbance. Impact levels at these locations are high. Moderate construction impacts (vandalism during construction) could occur to other sites.

Construction and operation of the preferred alternative would result in 0.1 mile of very high and 0.7 mile of high impact on known cultural and paleontological resources. The number of sites and expected level of impacts may increase following completion of a Class III (100%) survey.

The preferred alternative crosses the Bridger Trail at a location where it may have integrity (i.e., ruts). Potential impacts have been rated very high at the trail crossing.

The Oregon-California-Mormon Trail (very high resource value) and the Mexican Pass and Birdseye Pass Stage Roads (high resource value) all intersect the primary alternative. However, in each situation these historic trails follow existing roadways, and no evidence of ruts or other forms of physical integrity has been identified. Construction and operation of the primary alternative has a lower overall level of impact in known cultural resources, resulting in 0.1 mile of high impact.

Visual Resources

Visual impacts along the preferred alternative are relatively low overall due to the extensive lands of low resource value (VRM Class IV) that would be crossed. Also, the line would replace an existing line along which there is generally sufficient access for construction. As a result, landform and vegetation disturbance would be low, but the new, larger structures would result in a moderate degree of visual contrast.

Exceptions to these low impacts occur where there are sensitive viewpoints, where there are deviations to the existing alignment, where access is not sufficient, or where resource values are high.

A total of 14.9 miles of high visual impact would occur along the preferred alternative, less than two miles of which would be construction related. The remainder would be operation related, where the structures would be visible from sensitive viewpoints in high value areas. These areas include the Thermopolis area, portions of the Buffalo Creek area, and the Alcova area. Moderate visual impacts would be more extensive, totaling 53.7 miles, of which operation would again be the primary cause (50.4 miles). These occur primarily in areas of new alignment. Moderate impacts also occur along the Buffalo Creek Road and at the crossing of Poison Spider and Oregon Trail Roads.

Visual impacts are also relatively low on the primary alternative. The vicinity of Wind River Canyon/Boysen Reservoir is the most concentrated area of high impacts. Impacts here are due to a combination of high visibility from both fixed and highway recreation viewpoints, the need for new access over a portion of this area, and a deviation in alignment from the existing ROW. In addition, high impacts would occur along a portion of the alternative in view from Thermopolis, Highway 20, and the Mexican Pass historic route.

Moderate visual impact areas specific to this alternative include the Owl Creek Mountains (north and south faces in view from Thermopolis and Boysen Reservoir) and the Lysite or Moneta Badlands.

High impacts would be slightly less (0.4 miles) with the primary alternative, while moderate impacts would be significantly less (19.4 miles vs. 53.7 miles). This is primarily due to the smaller amount of new corridor that this route would require.

Alcova-Casper System

Physical Resources

The preferred alternative (8C) would result in very high and high localized construction impacts to soils and other physical resources along 3.5 and 4.6 miles of line, respectively. The operation phase will result in primarily low impacts.

Of the alternatives considered, those that utilize the existing North Platte River corridor, e.g., primary alternatives 1B and 2B, have the lowest level of physical disturbance because of the existing access road along most of the corridor.

No significant impacts on geology, climate/air quality, or water resources would occur.

Biological Resources

Construction of the preferred alternative (8C) would result in 1.3 miles of high impacts and 11.9 miles of moderate impact. The high impacts are primarily associated with disturbance to riparian areas, and the moderate impacts result from potential disturbance to sage grouse. Long-term impacts associated with the operations phase include 1.3 miles of high impact, again associated with the loss of riparian vegetation, and 8.8 miles of moderate impact, primarily resulting from a potential collision hazard to sage grouse.

Primary Alternative 1B has the highest level of impacts on biological resources. The high rating results from its distance through bald eagle winter concentration areas along the North Platte River and the potential for collisions with the transmission structures. Primary Alternative 4C has the lowest level of biological impacts, due to its avoidance of both the North Platte River bald eagle winter concentration areas, and the sage grouse leks located in the vicinity of the Oregon Trail Road.

Land Uses

The preferred alternative (8C) has a low level of impacts on land use, resulting in 1.6 miles of high and 0.6 mile of moderate impact from construction. These impacts result from the crossing of cultivated lands south and east of Casper and proximity to several residences which will experience increased noise from construction activities. The remaining 33.4 miles of line result in either low impact (0.3 mile) or none (33.1 miles). Long-term impacts associated with the operations phase are 0.2 mile of very high and 1.3 miles of high. The 0.2 mile of very high impact results from proximity to a residence and rifle range, and the potential

limitations easement restrictions could have on future land uses. The 1.3 miles of high operation impact are primarily associated with locating structures within cultivated lands.

Primary Alternatives 1B and 2B have the highest level of impacts on land use because they encounter more cultivated lands and urban development than the other alternatives, and the utility corridor in which they are located is proposed to be eliminated.

Cultural and Paleontological Resources

The preferred alternative (8C) would result in 1.1 miles of very high and 0.5 mile of high impact during both construction and operation. These potential impacts are associated with crossing known paleontological areas and the potential Willow Springs-Ryan Hill National Register District along the Oregon Trail.

Primary Alternatives 1B and 2B, which utilize the existing North Platte corridor and existing access roads, have the lowest level of impact on known cultural resources.

Visual Resources

The preferred alternative (8C) would result in 0.8 mile of high impact from construction and 13.4 miles of high impact during operation. High impacts result from the fact that the transmission facilities would be located in a new corridor and would be seen from a variety of residences and roads over a distance of approximately 13 miles between the crossing of the Oregon Trail Road and Casper.

Primary Alternative 1B has the highest level of visual impacts due to the fact that the existing transmission line corridor will be phased out and the new line would be seen from sensitive viewpoints along Highway 220 and the North Platte River. Primary Alternative 2B has the lowest level of visual impacts due to its generally low level of visibility from roads and residences.

TABLE S-2 (Revised)

SUMMARY OF OVERALL IMPACTS (in miles)

THERMOPOLIS-ALCOVA SYSTEM

	Impact Rating	Construction	Operation
Physical Resources			
Preferred Alternative	VH	12.2	0
	H	22.2	0
	M	55.3	0.7
	L	32.6	121.6
	N	0	0
Primary Alternative	VH	10.4	0
	H	9.1	0
	M	75.1	4.0
	L	34.2	124.8
	N	0	0
Biological Resources			
Preferred Alternative	VH	3.2	1.4
	H	8.2	0.8
	M	34.0	5.3
	L	76.9	26.0
	N	0	88.6
Primary Alternative	VH	2.7	0.8
	H	11.3	0.1
	M	28.3	5.6
	L	86.6	12.1
	N	0	110.3
Land Use			
Preferred Alternative	VH	0	0
	H	0.7	0.1
	M	0.7	2.3
	L	3.3	23.3
	N	117.4	96.4
Primary Alternative	VH	0	0
	H	0.2	0.3
	M	0.4	4.0
	L	3.5	15.4
	N	124.8	109.2

TABLE S-2 (Revised)
Page 2 of 6
SUMMARY OF OVERALL IMPACTS (in miles)

	Impact Rating	Construction	Operation
Cultural Resources			
Preferred Alternative	VH	0.1	0.1
	H	0.7	0.6
	M	3.6	1.0
	L	1.4	0
	N	116.3	120.4
Primary Alternative	VH	0	0
	H	0.1	0
	M	1.2	0
	L	0.9	0
	N	126.7	128.9
Visual Resources			
Preferred Alternative	VH	0	0
	H	1.8	13.1
	M	3.3	50.4
	L	17.4	40.2
	N	99.6	18.4
Primary Alternative	VH	0	0
	H	1.7	12.8
	M	0	19.4
	L	5.4	41.7
	N	121.8	55.0
ALCOVA-CASPER SYSTEM			
Physical Resources			
Preferred Alternative (8C)	VH	3.5	0
	H	4.6	0
	M	17.8	2.1
	L	9.7	33.4
	N	0	0
Primary Alternative 1B	VH	1.2	0
	H	0.9	0
	M	13.6	0
	L	15.6	31.2
	N	0	0

TABLE S-2 (Revised)

SUMMARY OF OVERALL IMPACTS (in miles)

	Impact Rating	Construction	Operation
Primary Alternative 2B	VH	2.3	0
	H	2.0	0
	M	12.8	1.8
	L	13.9	29.2
	N	0	0
Primary Alternative 4C	VH	5.0	0
	H	3.9	0
	M	13.9	2.4
	L	7.9	28.2
	N	0	0
Primary Alternative 7C	VH	1.6	0
	H	7.2	0
	M	15.3	0.3
	L	10.9	34.8
	N	0	0
Biological Resources			
Preferred Alternative (8C)	VH	0	0
	H	1.3	1.3
	M	11.9	9.3
	L	22.4	12.4
	N	0	12.6
Primary Alternative 1B	VH	0.2	0.2
	H	12.6	2.9
	M	2.4	8.8
	L	16.0	2.0
	N	0	17.4
Primary Alternative 2B	VH	0.2	0.2
	H	7.7	2.3
	M	2.2	4.7
	L	20.9	5.7
	N	0	18.1
Primary Alternative 4C	VH	0	0
	H	3.0	1.4
	M	3.7	3.5
	L	23.9	10.0
	N	0	16.0

TABLE S-2 (Revised)
Page 4 of 6
SUMMARY OF OVERALL IMPACTS (in miles)

	Impact Rating	Construction	Operation
Primary Alternative 7C	VH	0	0
	H	2.2	2.1
	M	12.4	12.0
	L	20.3	12.8
	N	0	8.2
Land Use			
Preferred Alternative (8C)	VH	0	0.2
	H	1.6	1.3
	M	0.6	2.9
	L	0.3	31.0
	N	33.1	0.1
Primary Alternative 1B	VH	0.3	0.3
	H	2.2	2.0
	M	1.0	5.0
	L	1.4	23.5
	N	26.4	0.5
Primary Alternative 2B	VH	0.3	0.3
	H	1.5	1.2
	M	0.5	5.0
	L	1.4	24.0
	N	27.3	0.5
Primary Alternative 4C	VH	0	0
	H	1.8	1.5
	M	0.3	4.9
	L	0.1	24.1
	N	28.4	0.1
Primary Alternative 7C	VH	0	0.2
	H	2.1	1.9
	M	0.6	2.9
	L	0.1	30.0
	N	32.2	0.1
Cultural Resources			
Preferred Alternative (8C)	VH	1.1	1.1
	H	0.5	0.5
	M	2.0	0
	L	0.8	0
	N	31.1	33.9

TABLE S-2 (Revised)
Page 5 of 6
SUMMARY OF OVERALL IMPACTS (in miles)

	Impact Rating	Construction	Operation
Primary Alternative 1B	VH	0	0
	H	0.1	0
	M	1.6	0
	L	0.1	0
	N	29.5	31.2
Primary Alternative 2B	VH	0	0
	H	1.7	0
	M	0.2	0
	L	0.1	0
	N	29.0	30.9
Primary Alternative 4C	VH	0	0
	H	1.6	0
	M	0	0
	L	0	0
	N	29.0	30.6
Primary Alternative 7C	VH	1.7	0
	H	0.6	0
	M	0	0
	L	0.3	0.1
	N	32.4	34.9
Visual Resources			
Preferred Alternative (8C)	VH	0	0
	H	0.8	13.4
	M	6.3	5.3
	L	1.5	16.9
	N	26.9	0
Primary Alternative 1B	VH	0	0
	H	0.5	19.9
	M	1.2	8.9
	L	0	2.4
	N	29.4	0
Primary Alternative 2B	VH	0	0
	H	0.5	9.6
	M	2.1	11.5
	L	0.8	9.8
	N	27.5	0

TABLE S-2 (Revised)
Page 6 of 6
SUMMARY OF OVERALL IMPACTS (in miles)

	Impact Rating	Construction	Operation
Primary Alternative 4C	VH	0	0
	H	3.6	11.8
	M	5.8	9.7
	L	1.2	9.1
	N	20.0	0
Primary Alternative 7C	VH	0	0
	H	0.8	20.9
	M	12.3	5.5
	L	1.5	8.7
	N	20.4	0

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List of Figures and
List of Tables**

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LIST OF TABLES

Purpose &
Need

Chapter 1

CHANGES AND ADDITIONS TO DEIS
CHAPTER - 1 PURPOSE AND NEED

Page 1-1

Add the following after the fifth paragraph:

> The overall context of the project is illustrated by the following map/ diagram: Interconnected Transmission Systems, July 1983. This shows all transmission systems, both public and private, in Wyoming, Colorado, and portions of adjacent states.

Page 1-4

Add the following at the end of the second paragraph:

> If a pump/storage generating plant is built in the Seminoe/Alcova area, upgrading of the line would occur in the 1990 - 2000 time frame. If a pump/storage plant is not constructed, upgrading would be delayed beyond the year 2000.

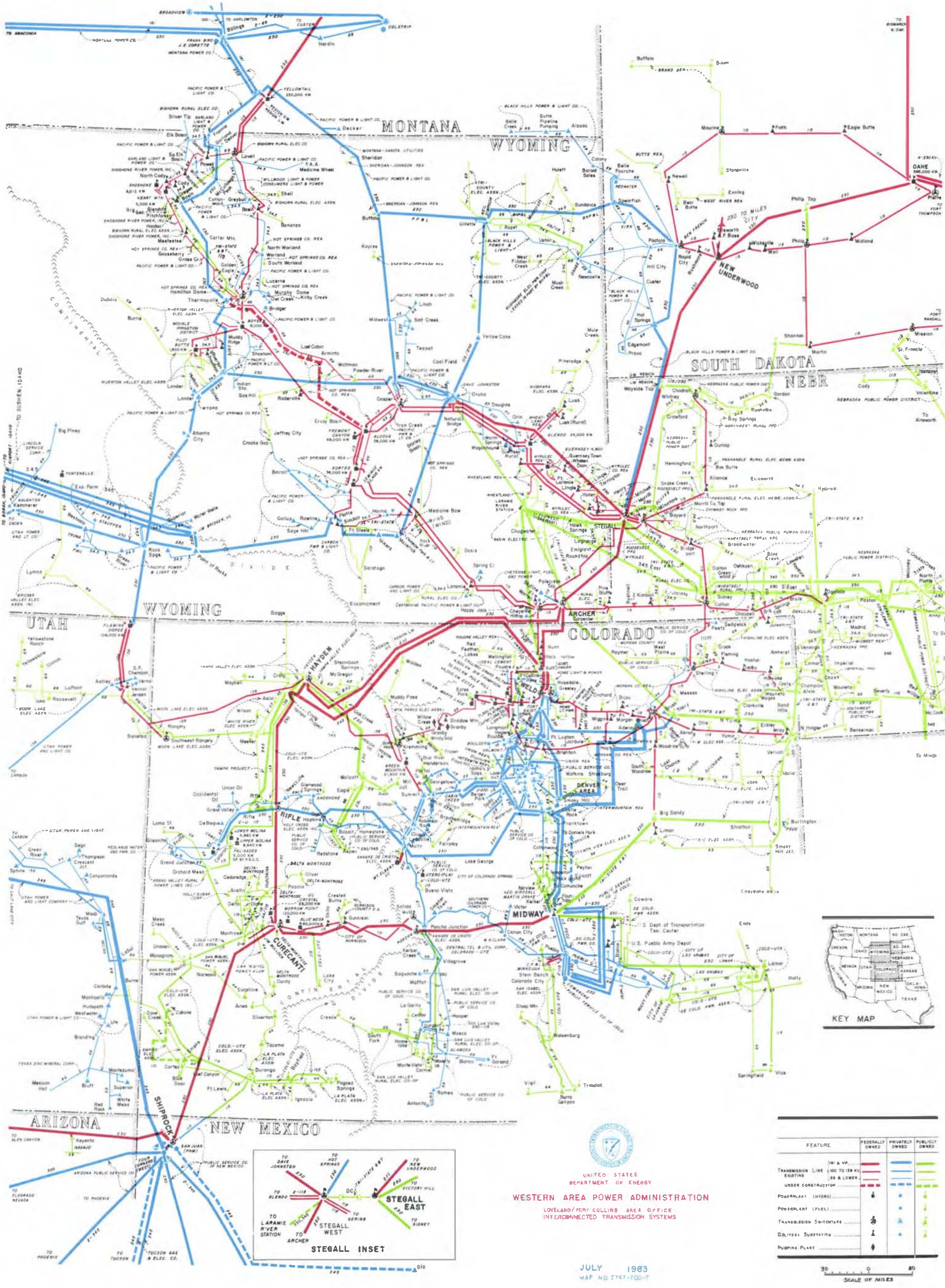
Page 1-4

Change list of Federal agencies with authorizing actions to read:

Bureau of Land Management	Issues permits to cross BLM land.
Corps of Engineers	Issues Section 404 Permits pursuant to the Clean Water Act.
U.S. Fish & Wildlife Service	Consultation on endangered species.
Bureau of Reclamation	Issues permits to cross Bureau of Reclamation lands (at Boysen Dam).

Scoping Process & Project-Related Studies

Chapter 2



MONTANA
WYOMING
SOUTH DAKOTA
NEBR
UTAH
COLORADO
ARIZONA
NEW MEXICO
STEGALL INSET
STEGALL EAST
STEGALL WEST
KEY MAP
UNITED STATES
DEPARTMENT OF ENERGY
WESTERN AREA POWER ADMINISTRATION
LOVELAND/FORT COLLINS AREA OFFICE
INTERCONNECTED TRANSMISSION SYSTEMS
JULY 1983
FEATURE
FEDERALLY OWNED
PRIVATELY OWNED
PUBLICLY OWNED
TRANSMISSION LINE EXISTING
161 & UP
100 TO 138 KV
69 & LOWER
UNDER CONSTRUCTION
POWERPLANT (HYDRO)
POWERPLANT (FUEL)
TRANSMISSION SWITCHYARD
DELIVERY SUBSTATION
PUMPING PLANT
SCALE OF MILES

CHANGES AND ADDITIONS TO THE DEIS
CHAPTER 2 - SCOPING PROCESS AND PROJECT RELATED STUDIES

Page 2-3

Add Item A.6 Public Hearings:

6. Public Hearings

Public hearings, to receive comments on the project and its Draft Environmental Impact Statement (which had been made public), were held as follows:

	Place	Date	Time
1.	Holiday Inn Thermopolis, WY	March 13, 1984	7:00 p.m.
2.	Central Wyoming College Highway 26 Riverton, WY	March 14, 1984	7:00 p.m.
3.	City Council Chambers Casper, WY	March 15, 1984	7:00 p.m.

The persons attending the hearings are listed in Appendix D. Transcripts of the hearings are available for reference at the offices of Western Area Power Administration, Loveland, Colorado 80539, and Golden, Colorado 80401.

At this time, separate meetings were held with the Hot Springs County Planning Department and the Bureau of Land Management in Worland, Wyoming, and in Casper, Wyoming.

Alternatives Including the Proposed Action

Chapter 3

CHANGES AND ADDITIONS TO THE DEIS
CHAPTER 3 - ALTERNATIVES INCLUDING THE PROPOSED ACTION

Pages 3-8 to 3-22

Replace Sections G and H with the following:

G. ALTERNATIVE DESIGN CHARACTERISTICS

Consideration of the previously described alternative technologies and other alternatives compelled Western to conclude that overhead AC transmission lines were the only reasonable way to answer the stated need. Various alternative voltage levels and structures were examined, as described below.

1. Voltage Levels

The power that a line can transfer is related to its voltage: the higher the voltage the greater the power transfer capability. Power transfer requirements (see Chapter 1 in the DEIS) dictate the need for a 230-kV capacity between Thermopolis and Alcova and a 230-kV initial capacity between Alcova and Casper. The Alcova-Casper line will be designed for future upgrading to 345-kV.

The next lowest and highest of the standard voltages were clearly not suitable for either of the above two major elements of the system. 115-kV lines would be inadequate, and 345-kV would be excessive for the Thermopolis-Alcova line and initially excessive for the Alcova-Casper line. For the required rebuild of the existing 69-kV line from Casper to Arminto, 69-kV was the only feasible voltage, because of the existence of the six taps that the line must supply and that require 69-kV power. This line, although energized at 69-kV, will be built to standards (structure height and strength, and ROW width) that allow for eventual conversion to 115-kV.

Similarly, a short spur line must be built at Lost Cabin as part of the preferred alternative for the Thermopolis-Alcova system. This will reestablish the supply to the Lost Cabin tap after removal of the deteriorated 69-kV line between Thermopolis and Arminto. This new line must be 69-kV for the same reason as above, and will also be built to allow eventual conversion to 115-kV.

With either the preferred alternative or primary alternative between Thermopolis and Alcova, a short segment of 34.5-kV line must be built to maintain supply to Bridger Pump Substation.

2. Structure Types

Figure 3.2 in the DEIS, ROW Conditions and Structure Types, shows the full range of alternative structure types that were originally under consideration for use in each segment of the preferred and primary alternative routes of the proposed system (including the relatively minor, lower voltage actions). Cost studies have now been completed by Western and a much more limited range of structure types, or in some cases a single type, can now be defined for the elements of the

project. These structure types are illustrated on Figures 3.3 and 3.4 (Revised) in this FEIS. The candidate structure type for each element of the project (preferred routes) are as follows:

- o Thermopolis-Alcova 230-kV line
  - Type H revised
  - Type J revised (J will definitely be used at the crossing of the Bighorn River south of Thermopolis)
- o Alcova-Casper 230/345-kV line
  - Type H revised (a special horizontal circuit configuration type will be used at the crossing of Emigrant Gap Ridge, west of Casper. This may be a lattice steel type)
- o Arminto-Casper 69/115-kV line
  - Type B
  - Type C
  - Type E (used only in one segment, about one-half mile long, immediately southwest of Western's Casper Substation with one circuit left empty)
- o Spar line from New Lost Cabin Tap to Existing Lost Cabin Tap
  - Type B
  - Type C
- o Bridger Substation to Bridger Pump Substation
  - Type A

Steel structure types E, H (revised), and J (revised) will be either a neutral dull nonspecular grey color (painted or galvanized) or "Corten" steel, which has an integral, dull dark reddish-brown iron oxide finish. The "Corten" structures are proposed to be used on the Thermopolis-Alcova route from the south end of Link 1 to about the southeast end of Link 10a. Conductors and all other metal parts of all structure types will have a dull nonspecular type finish.

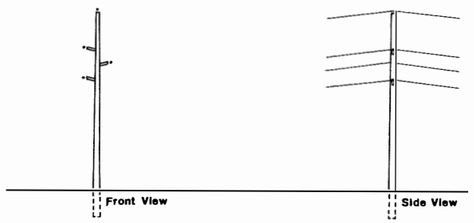
Western will consult with concerned agencies during the detail design phases of the project in order to determine any special requirements for structure type and color on specific segments of the project elements.

Note that the impact assessment in the DEIS was predicated on use of the worst case structure type (lattice steel) for the major project elements. Now that other structure types are proposed, these assessments may generally be considered slightly more conservative than they were formerly, especially with some land use and most visual impacts.

Average Height: 48'
Height Range: 39'-75'
Average Span: 300'
Maximum Span: 375'
R.O.W. Width: 30'

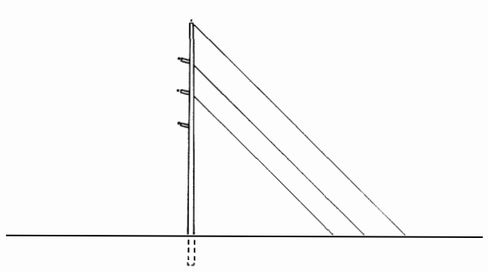
0' 5' 10' 20'

Structure Type **A.**
34.5 KV (1 cct.)
Single Wood Pole



Structure Type **Aa.**
34.5 KV (1 cct.)
Wood Pole
Angle Structure

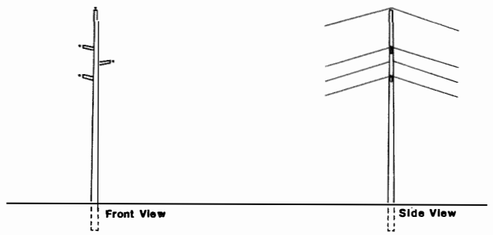
0' 5' 10' 20'



Average Height: 52'
Height Range: 43'-79'
Average Span: 300'
Maximum Span: 375'
R.O.W. Width: 40'

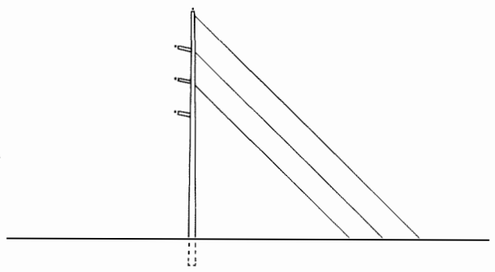
0' 5' 10' 20'

Structure Type **B.**
69/115 KV (1 cct.)
Single Wood Pole



Structure Type **Ba.**
69/115 KV (1 cct.)
Wood Pole
Angle Structure

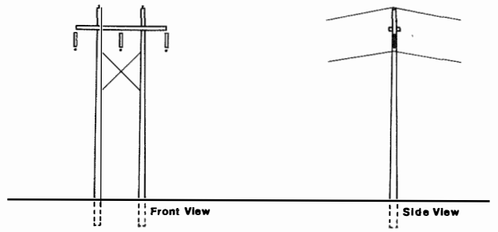
0' 5' 10' 20'



Average Height: 52'
Height Range: 43'-79'
Average Span: 700'
Maximum Span: 875'
R.O.W. Width: 75'

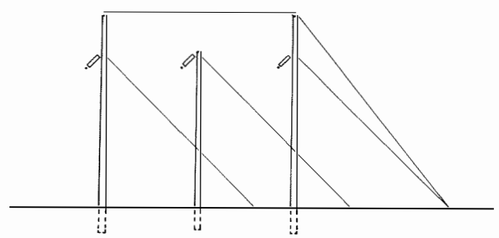
0' 5' 10' 20'

Structure Type **C.**
69/115 KV (1 cct.)
Wood H-Frame



Structure Type **Ca.**
69/115 KV (1 cct.)
Wood Pole
Angle Structure

0' 5' 10' 20'



U.S. Department of Energy

Thermopolis · Casper · Alcova Area
Electrical Transmission System

Structure Types

Wood Pole and Wood H-Frame

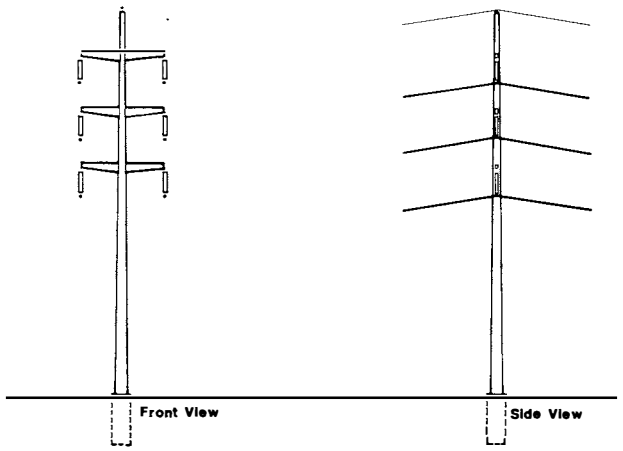
Revised Figure 3.3

Average Height: 82'
Height Range: 62'-98'
Average Span: 800'
Maximum Span: 1000'
R.O.W. Width: 70'

0' 5' 10' 20'

E.

Structure Type
69/115 KV (2 cct.)
Single Steel Pole

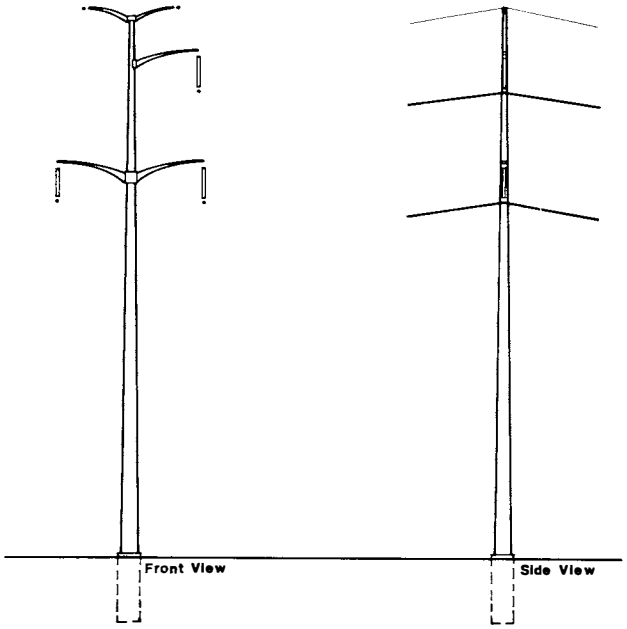


Average Height: 115'
Height Range: 85'-135'
Average Span: 1200'
Maximum Span: 1375'
R.O.W. Width: 165'

0' 5' 10' 20'

H. Revised

Structure Type
230/345 KV (1 cct.)
Single Steel Pole
(230 KV line
convertable to 345 KV

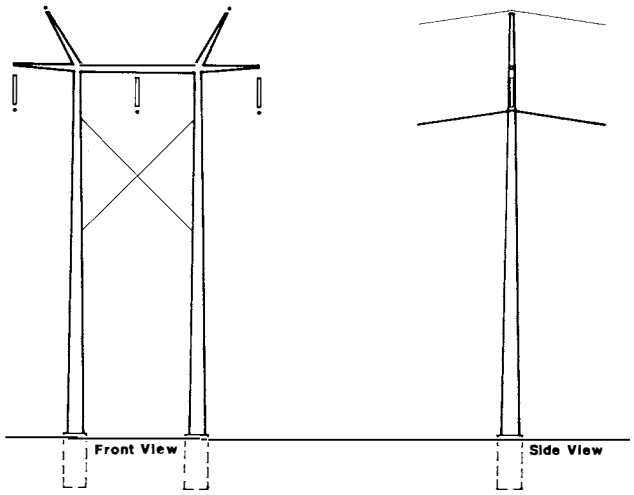


Average Height: 91'
Height Range: 65'-110'
Average Span: 1200'
Maximum Span: 1375'
R.O.W. Width: 165'

0' 5' 10' 20'

J. Revised

Structure Type
230 KV (1 cct.)
Steel H-Frame



U.S. Department of Energy

Thermopolis·Casper·Alcova Area
Electrical Transmission System

Structure Types

Steel Pole

Revised Figure 3.4

a. Construction Using Single Wood Pole Structures

This structure type is the standard design for 34.5-kV lines. It has the advantages of economy, simplicity, and unobtrusiveness. It will be used for the short 34.5-kV line between Bridger Substation and Bridger Pump Substation (Type A, Figure 3.3, revised).

This type could also be used for the project's 69/115-kV lines in congested urban areas where its narrower required width of ROW (as compared to the more usual H-frame type) may be easier to obtain. Similarly, it may be used in certain locations where the line skirts the edge of a cultivated area, to minimize impacts to agricultural land uses. It should be noted that the span is very short with this type, and structures occur approximately twice as frequently as with wood H-frame (Type B, Figure 3.3, revised).

b. Construction Using Wood H-Frame Structures

This structure type is commonly used for single circuit 69/115-kV lines in undeveloped or relatively thinly developed terrain where space for the wider ROW required by this type is likely to be available. The type may be used for all 69/115-kV lines that are part of the project except as described in (a) above (Type C, Figure 3.3, revised). This structure type is generally less visually obtrusive than other structures because of the smaller size, and the fact that the existing lines it will replace or be constructed next to usually are of wood H-frame construction.

c. Construction Using Steel Single Pole or H-Frame Structures

This structure type (Types E, H, and J, Figure 3.4, revised) is traditionally used where visual quality is important and the line is close to the viewers as, for example, in urban areas, or when a line is adjacent to a recreation area.

Type E is sometimes used for 115-kV lines and is common in the situations described above. It is proposed for a short segment of double circuit 69/115-kV line in Casper. Type J (revised) is proposed for most of the preferred 230-kV route between Thermopolis and Alcova. Type H (revised) is proposed for parts of the Thermopolis-Alcova preferred route and for essentially all of the Alcova-Casper preferred route.

H. THE PROPOSED ACTION

1. Description of the Proposed Action

Western proposes to construct, operate, and maintain two new transmission lines in central Wyoming. Both lines would initially be single circuit, 230-kV overhead lines. One line would extend between Thermopolis and Alcova and the other between Alcova and Casper. Several relatively minor associated actions by Western are part of the project. These include: removal and reconstruction at 69/115-kV of the existing deteriorated 69-kV line between Arminto and Casper, removal of the existing 69-kV lines between Thermopolis and Arminto and between Bridger Tap and Bridger Substation, removal of the existing 69-kV line between Alcova and Casper, construction of a new 34.5-kV line between Bridger Substation and Bridger Pump Substation, and construction of a new substation near Alcova. All these major and minor elements of the project are shown on Figure S.2 (Revised) - The Proposed Action, in the Summary of this FEIS.

The proposed Alcova-Casper 230-kV line will be designed to facilitate future upgrading to 345-kV single circuit. Most of the Thermopolis-Alcova line will be built using structures that are not designed for conversion to 345-kV.

As described in Section 3.F and illustrated on Figure 3.1 in the DEIS, various alternative locations for the two proposed lines were examined.

Between Thermopolis and Alcova, the preferred alternative first follows the existing Western 69-kV transmission line, then heads southeast for 16 miles on new ROW to Western's existing 115-kV line, which it parallels into Alcova. The preferred alternative has somewhat higher impacts than the primary alternative in two resource categories, cultural and visual, and a similar level of impacts in the physical, biological, and land use resource categories. A complete discussion of impacts was presented in the DEIS, and revised impacts are described in Chapter 5 and Appendix F of this FEIS. However, the preferred alternative will cost approximately $2.2 million less to construct than the primary alternative. Given this lower cost and the relatively low level of impacts for both alternatives, the route which generally follows the existing 69-kV alignment was selected as the preferred alternative. The preferred alternative is approximately 122 miles long.

The preferred Alcova-Casper alternative starts at a new substation (to be named Spence Substation) located on the Thermopolis-Alcova line about 13 miles northwest of Alcova. From the substation it proceeds northeast on new ROW, approximately parallel to, but about two miles distant from, the Oregon Trail Road. It then crosses the Oregon Trail Road and Emigrant Gap Ridge, and turns east into Casper where it follows existing 69-kV corridors north and then east into PP&L's Casper Substation.

The preferred alternative for the Casper-Alcova segment (8C) was selected because it avoids the adverse impacts associated with the existing North Platte River corridor. Several agencies and individual citizens, e.g., Department of Interior agencies and the Corps of Engineers, have strongly recommended phasing out the North Platte River corridor, and the BLM proposes to establish a new utility corridor north of the Oregon Trail Road. The preferred alternative is located within the new corridor. Written comments received on the DEIS are included in Chapter 8.

As described in Chapter 5 of this FEIS, the BLM has proposed to phase out the existing North Platte River corridor. As a result of this action, impacts were reassessed for those alternatives which are located within the existing corridor. The reassessment was based on the assumption that a new transmission line located in the North Platte River corridor would become the only line in that corridor within the next 15 to 20 years. This reassessment resulted in increased impacts for those alternatives located within the river corridor and identification of Alternative 8C as the preferred alternative. The results of the revised impact analysis are presented in Chapter 5 and Appendix F of this FEIS.

The preferred alternative is approximately 36 miles long.

Of the five routes which include the preferred and primary alternatives, Alternatives 2B and 4C would cost the least to construct. Alternative 1B would cost approximately $350,000 more; the preferred route (8C), $900,000 more; and 7C, $1,000,000 more than Alternatives 2B and 4C.

Construction of a new 230-kV line between Thermopolis and Alcova and a new 230/345-kV line between Alcova and Casper will require the construction of a new substation near Alcova. The existing Western substation at Alcova is not designed to handle higher voltages, and the area needed for expansion is not available at the existing site. The preferred site for the proposed new substation is about 13 miles northwest of Alcova. The substation will be named Spence Substation.

In addition, Western proposes to remove two existing but deteriorated 69-kV lines:

1. The 28 mile long Alcova-Casper 69-kV line would be removed entirely;

2. Approximately 68.4 miles of the Thermopolis-Casper 69-kV line, the segment which extends from Thermopolis to Arminto, will be removed. Between Arminto and Casper, however, 69-kV service is necessary in order to maintain taps at Arminto, Waltman, Powder River, Ten Mile, Culvert, and Poison Spider. Approximately 50 miles of the 69-kV line will therefore be rebuilt between Arminto and Casper. It will be rebuilt to standards of structure height and ROW width that will allow future conversion to 115-kV, but will initially be operated at 69-kV.

Removal of the existing 69-kV line between Thermopolis and Arminto leaves two taps, at Lost Cabin and Bridger Substation, without service. Assuming that the Thermopolis-Alcova 230-kV line is built along the preferred route, service to the existing Lost Cabin Tap will be reestablished by constructing a tap on the proposed 230-kV line north of Lost Cabin with a connecting spur line (0.87 miles long). This spur line will also be built to standards that allow future conversion to 115 kV. Service to Bridger Substation will be reestablished by building a new 3 mile, 34.5-kV line from Bridger Pump Substation. This action will permit the removal of the existing 4.9 miles of 69-kV line that formerly connected Bridger Substation to the old 69-kV Thermopolis-Casper line.

All of the elements of the project are shown on Figure S.2 (Revised) in this FEIS. On the map, the preferred routes for both the Thermopolis-Alcova and the Alcova-Casper systems are color-coded red. The primary alternative routes are color-coded orange. The location of the 69-kV removal and rebuild between Casper and Arminto is shown in purple and that of the new 34.5-kV line between Bridger Substation and Bridger Pump Substation in green.

The proposed schedule for the project is as follows:

- Thermopolis to New Alcova Substation 230-kV line
  - Detailed design and ROW acquisition - complete August 1985
  - Construction - March 1985 to March 1987
- New Alcova Substation to Casper 230/345-kV line
  - Detailed design and ROW acquisition - July 1984 to March 1986
  - Construction - February 1986 to September 1987

- o Arminto to Casper 69/115KV line
  - Detailed design and ROW acquisition - 1987 to 1988
  - Construction - December 1988 to January 1990
- o Bridger Substation to Bridger Pump Substation 34.5-kV line
  - Detailed design and ROW acquisition - November 1984 to January 1985
  - Construction - February 1985 to May 1985
- o Tap and Substation Conversions at Thermopolis, Casper, Lost Cabin, Arminto, Powder River, 10 Mile, Culvert, and Poison Spider
  - Detailed design and land acquisition - complete December 1985
  - Construction - April 1985 to September 1987
- o New Alcova Substation to Existing Alcova Substation 230/345-kV line
  - 1990's
- o New Alcova Substation
  - Delayed until the late 1980's or early 1990's

2. Transmission

a. Design Characteristics

Electrical and physical characteristics of the proposed facilities are shown in Table 3-1, Transmission Line Design Characteristics, in the DEIS.

(1) Electrical Design

Western designs, constructs, operates, and maintains transmission lines to meet or exceed the requirements of the National Electrical Safety Code, 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 buildings will be grounded as necessary to prevent hazard, in accordance with NES codes.

(2) Physical Design

The transmission structure is the most visually obvious element of a transmission line. The project structures consist of wood, concrete, or steel poles arranged singly (single poles) or in pairs (H-frames). Wood and concrete poles are generally placed in holes augered in the ground and then backfilled with earth or rock. Steel poles are often placed in a similar manner, except concrete is used for backfill material. Near the top of each structure is an arrangement of cross arms or similar structural elements which function to hold the line conductors above the ground and away from the structure. In some lower voltage structures the insulators serve this function also. Insulators are suspended from the cross arms; and the conductors, which provide the medium for the transfer of electrical energy,

are hung from the ends of the insulators. The conductor consists of strands of reinforcing steel cable encased by aluminum strands. Insulators and hardware used on the line will be standard design and should provide nearly corona-free operation. One or two overhead ground or shield wires, depending on circuit configuration and voltage, are installed at the top of the structure to provide protection to the conductor from direct lightning strikes.

Figures 3.3 and 3.4 (Revised) in this FEIS are scale illustrations of each structure that may be used. The Figures also show heights, spans, and required ROW widths.

In addition to the standard tangent structures, the structure illustrations show special variants of each of the wood single pole and H-frame structures. These are used at angles of more than a few degrees in the line. Structures similar in appearance to the angle variants are also used in situations where spans longer than the maximum that can be accepted by the standard structures are required, or are advantageous. Such structures are also used at intervals along the line where they are known as "dead-end" structures whose function is to prevent occurrence of the very rare progressive "domino" type failure of standard structures.

No angle or other special structures are illustrated for steel structure types because such structures are generally similar in design and proportion to the standard ones, only more bulky, with heavier structural members and, in the case of angle structures, longer cross arms. Structures may be guyed to carry the larger angle loads.

Figures 3.3 and 3.4 (Revised) in this FEIS give average spans for each structure type. The maximum figure does not mean that no longer spans can be used on a given transmission line. The use of special guyed, or otherwise strengthened, structures enables much longer spans to be achieved. A line can span as much as 0.5 mile across a deep canyon or from top to bottom of a steep slope, if the configuration of the topography is such that the progressively greater sag of the conductors does not reduce their ground clearance below the required minimum.

b. ROW Needs

A transmission line ROW is a purchased land right that gives the right to locate and maintain a transmission line on private land, or on land managed by a public agency. The width of the ROW is dictated by the electrical clearance requirements of electrical safety codes to provide protection from electrical hazards to adjacent buildings and other structures, and by the need for working space for maintenance activities.

The amount of ROW needed depends upon the structure type selected and the amount of existing ROW available for use by the new line. A new 230-kV line that is in a new corridor or parallel to an existing line will require a ROW with a width of between 105 and 165 feet. In those cases where a new 230-kV line will replace an existing line, new ROW requirements generally range between 55 feet (if a wood H-frame is used) to 115 feet.

Lower voltage lines require less ROW. Reconstruction of the existing 69-kV line between Arminto and Casper will require from 0 to 25 feet of additional ROW

where it is constructed on the existing ROW. Where a 69/115-kV line is located on a new alignment or parallel to an existing line, between 40 and 75 feet of ROW will be needed, depending upon the type of structure that is used.

The 34.5-kV line will require a ROW of approximately 30 feet in width. The widths of ROW required by lines of various voltages are shown on Table 3-1 in the DEIS.

Additional ROW, generally 25-feet wide, will be acquired for construction and maintenance access ways when, for the reasons explained in c.(2) below, the access way cannot be accommodated in the transmission line's ROW.

All land rights will 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 will be paid fair market value for rights acquired to their property. Every effort will be made to acquire these rights by direct purchase; however, if the necessary rights cannot be acquired by a negotiated agreement, eminent domain proceedings will be instituted to obtain these rights. All transmission line easements acquired will provide for the payment of damages caused by the construction of the line. Land for substation sites will be purchased in fee simple.

c. Construction

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

- o Surveying
- o Access road construction
- o ROW clearing
- o Construction yard/wire handling site clearing and grading
- o Structure site clearing and grading
- o Materials hauling
- o Foundation excavation, forming and placing of foundation concrete
- o Structure assembly and erection
- o Groundwire and conductor stringing
- o Cleanup and seeding

The approximate number of personnel and equipment required for construction of the Thermopolis-Alcova and Alcova-Casper lines are shown in Table 3-2 in the DEIS. The work crew size figures are for a 230 or 230/345-kV lattice steel structures. With the now proposed single pole or H-frame steel structures, the work crews would tend to be at the low end of the ranges given, especially for materials hauling, forming and placing of foundation concrete, structure assembly, and structure erection. Thus, the approximate peak work force, assuming that the other teams are at the high end of the range, and that helicopter work is going on simultaneously, would be about 92.

Construction of the Thermopolis-Alcova line is expected to begin in March 1985 and to require two years. The Alcova-Casper line is planned to begin in February 1986 and to require 1 1/2 years.

Any short lengths of non-typical structure types along the two main lines will be constructed using methods very similar to the above.

For the relatively minor elements of the project action -- the 69/115-kV and 34.5-kV construction -- the basic steps will be the same, but they will require fewer personnel and will be accomplished with smaller, lighter, or less specialized equipment. The 69-kV removal will be a very minor operation, requiring one crew and simple equipment.

(1) Surveying

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

(2) Access

Access along the ROW will be required for the construction, operation, and maintenance of the proposed transmission system. Access by heavy construction vehicles and equipment will be required to the site of each structure, but not necessarily along the entire length of the ROW between structures.

Wherever possible, access to each structure and along the ROW will be by existing roads and trails. Where the new lines will be built parallel to existing lines, road or trail access already exists to almost all of the potential sites of new structures. Sometimes these roads or trails are within the existing ROW and sometimes they detour from them. In some locations, particularly where crossing steep slopes, broken terrain and drainageways, the existing roads and trails will require improvement (grading, widening, and culverting of drainage-way crossings) to allow passage of the required equipment.

Where no roads or trails exist, and where the terrain is gentle enough (below 12-15 percent slope), access will be by overland travel, preferably along the ROW. Where this occurs, a trail will develop without being deliberately constructed. Where the terrain along the ROW is steeper than 12-15 percent, access to structure sites will 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 will be constructed. New construction will be within the existing ROW where possible, but where this would result in increased cost or environmental impact, outside of it. Where these access ways must be outside the regular transmission line ROW, then additional ROW, generally 25-feet wide, will be purchased to accommodate the access way.

In many cases, new access trails will be short spurs leading from existing roads to structure sites.

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

Gates will be installed in all ungated fences crossing the ROW, and will be kept closed. Locks will be provided.

In general, access trails will be routed to minimize damage to terrain and vegetation. These trails will not only be used for construction, but will also be used throughout the life of the transmission lines for operation and maintenance activities. Access trails will be between 10 and 12 feet wide on the running surface and will be outsloped.

The approximate locations of the existing and proposed access trails, both those that will be deliberately constructed and those on more level terrain that will evolve in the course of line construction activities, are shown on the link maps in the Maps and Tables Volume of the DEIS.

For the preferred route in the Thermopolis-Alcova System, deliberate access way construction will be needed only in a few short isolated segments totaling less than a mile. The new corridor between Western's 69- and 115-kV lines (Link 9) can generally be constructed without new access roads/trails because of the gentle terrain along the route. Access improvements will be needed only at isolated locations, such as drainage crossings, and at the crossings of a few minor ridges.

The primary alternative in the Thermopolis-Alcova system also has suitable access for most of its length. The need to construct new access is concentrated in the vicinity of Boysen Reservoir where the route crosses steep terrain at the Wind River Canyon.

If it is assumed that normal methods are used to construct the line over Emigrant Gap Ridge, then Route 8C, the preferred Alcova-Casper route, will require new, deliberately constructed access ways for a length of about 1.6 miles at isolated crossings of wetland and slopes of over 15 percent where there is no crossing by an existing trail within a reasonable distance.

The primary alternative Alcova-Casper routes will require varying lengths of access trail construction, in each case totalling less than a mile, except that Alternative 4C will require over two miles.

(3) ROW Clearing

Trees will be cleared to the minimum extent required to provide suitable access for construction equipment and electrical clearance. When clearing trees for conductor-to-tree clearance, the trees will be removed to the extent necessary to provide adequate clearance. In addition, danger trees will be cleared. These are trees within the ROW which, upon falling, would come within 10 feet of the structure or conductor.

Clearing of other vegetation types will be solely where necessary to provide access for construction equipment.

(4) Construction Yard and Wire Handling Site Clearing

Temporary construction yards of not more than 5 acres will be required at 20 to 30 mile intervals along the routes. These will serve as parking space for vehicles and for equipment and materials storage. Somewhat smaller wire stringing areas will also be required at 2 to 3 mile intervals along all proposed lines. Level locations will be selected for these two types of areas so that little or no earth moving will be required.

(5) Structure Site Clearing and Grading

At each tower site, an area about 65 x 100 feet will usually be disturbed by the movement of vehicles, assembly of structure elements, and other operations.

(6) Construction Materials Hauling

Construction materials will be hauled either directly from the local highway network to structure sites, or first to the construction yards and then to structure sites using the access ways described in (2) above.

(7) Foundation Construction

In general, wood pole structures will be set directly into holes augured in the ground and backfilled. Excess excavation material will be spread evenly around or adjacent to the site. Tubular steel structures require the construction of concrete footings or are embedded in concrete to provide additional support.

(8) Structure Assembly/Erection

Framing crews will assemble the structures and, using a large crane, position them in their foundation excavations or footings. Wood H-frame structures will be assembled basically complete with poles, cross arms, "X"-braces, etc., and lifted into place. Steel pole structures are sufficiently massive to require that they be erected in stages.

(9) Groundwire and Conductor Stringing

Reels of conductor and overhead groundwire will be delivered to wire handling sites spaced about every 2 to 3 miles along the lines. These sites may have to be cleared of vegetation, and will become disturbed by the movement of vehicles and by other activities. The conductors and groundwires will then be pulled into place from these locations.

(10) Cleanup and Seeding

All structure site pads not needed for normal maintenance will be graded to blend, as near as possible, with adjacent landforms. All waste construction materials and rubbish from all construction areas will be collected, hauled away, and disposed of at approved sites. All disturbed areas will be reseeded to minimize erosion, using species that are consistent with existing vegetation and/or adapted to the site's soil capabilities. Prior to construction, Western will consult with the Bureau of Land Management (during development of the required Plan of Operations for BLM lands), other appropriate agencies including, if necessary, the Soil Conservation Service, and individual landowners to determine details of the application of these and other site-specific mitigation measures, which may include advance stockpiling of topsoil in areas of anticipated severe disturbance, respreading to the topsoil after completion of construction, and, as with all disturbed areas, seeding with appropriate species. Site-specific mitigation measures may also include minimizing new access way construction and topsoil disturbance.

The intent will be to restore all construction areas as near as feasible to their original condition. Any damaged gates, fences, and erosion control structures will be repaired.

(11) Safety Program

Western will require the 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 will 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. Western will also establish provisions for taking appropriate actions in the event the contractor fails to comply with the approved safety program.

d. Operation and Maintenance

(1) Operation

(a) Operation Voltages

Some of the lines proposed in this project have a double voltage designation, i.e., 69/115 kV and 230/345 kV. These lines are intended to be built to standards of structure size and ROW width that allow operation of the higher of these voltages, although initially they will be operated at the lower levels.

(b) Use of the ROW

Although permanent structures are not allowed within the ROW, any land use activity that does not interfere with the operation and maintenance of the line can continue. Normal farming activities can continue if reasonable care is taken to prevent damage to transmission line structures from farm machinery. The maximum heights of farm machinery that can be safely operated beneath lines of the proposed voltages are listed in Table 3-1 in the DEIS.

(c) Operational Control

The day-to-day operation of the line is 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, as for example in the structural failure of a conductor, to ensure safety.

(2) Maintenance

(a) Maintenance of Electrical Equipment

Western's preventive maintenance program for transmission lines includes routine aerial and ground patrols. Aerial patrols are conducted approximately six times per year, particularly after wind, ice, or lightning storms, when damaged conductors, insulators, and structures are usually detected.

Ground patrols are usually conducted once a year to detect equipment needing repair or replacement. Whenever possible, ground patrols and subsequent repair activities are scheduled during times when there is likely to be a minimum of crop or property damage. Maintenance may include repairing frayed and damaged conductors, inspection and repair of steel towers, inspection and replacement of

wood poles and crossarms, replacing damaged and broken insulators, and the application of preservative to wood poles and crossarms. In addition to maintaining the structures, conductors, and ROW, Western will 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 will involve prompt movement of crews to repair damage and replace any equipment. If crop damages result from the repair activities, Western representatives will meet with the owner/operator to arrange for compensation.

(b) Vegetative Management

Every five years, trees that have grown enough to endanger operation of the line are trimmed or topped. Herbicides may be used at structures on the transmission line ROW to prevent undesirable weed growth. Herbicides used by Western are those registered with the Environmental Protection Agency in compliance with the Federal Pesticide Control Act of 1972 and other federal pesticide acts. Application of herbicides with Atrazine as an active ingredient to prevent undesirable plant growth is the primary weed control measure at Western power facilities in Wyoming. Application would be made at three-year intervals during the summer months. Vegetation may also be mowed around substations and taps to minimize fire hazards and to enhance appearance.

Other than at structure locations, ROW will not be chemically treated unless necessary to comply with the permit requirements of public agencies. Because of the semi-arid, and hence sparsely vegetated, nature of the project area, very minor and infrequent measures will suffice to control vegetation.

e. Abandonment

(1) Proposed Lines

At the end of the useful life of the proposed project (40-50 years depending on structure used), its elements will be either replaced or abandoned. In either case, the old guard wires, conductors, insulators, and hardware will be dismantled and removed from the ROW. Wood poles will either be pulled from their foundation excavations or be cut off a minimum of 18" below the ground surface. Steel pole structures will be similarly dismantled and removed.

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

Cranes, large trucks, and pickup trucks will be required for efficient removal of the transmission lines, as well as earthmoving equipment in a few of the steeper areas.

After removal of lines from their ROW, the land will again be available for the same uses as adjacent lands. If Western did not wish to keep the ROW for future transmission line use, Western would relinquish interest in the easement, returning all rights to the owners of the underlying fee title.

(2) Existing 69-kV Lines

Certain 69-kV lines, or segments of lines, are proposed to be abandoned as part of the proposed action. The procedures will be exactly as above for the proposed lines. However, since some portions of the ROW of these lines will be reused for the new lines, whether of the same or of higher voltages, those portions at least of the existing lines will have to be removed in advance of construction of the proposed lines. It is anticipated that the specifications for construction of the new lines will also contain information covering removal and salvage of the existing 69-kV line.

In those line segments where a 69-kV line is being removed, no adjacent line exists and no new line is to be constructed, Western will arrange to leave a few 69-kV poles in place in locations to be indicated by Game and Fish personnel during consultation held at the time of the detail design of the project.

3. Substations, Taps, and Transformers

A new substation is required in the vicinity of Alcova. It will be built to accommodate the following initial connections:

- a 230-kV line from Thermopolis
- a 230-kV line from Casper
- a 230-kV connection to the existing Alcova Substation

The proposed substation will be similar in appearance to the substation illustrated in Figure 3.5 in the DEIS. The area within its fence will measure about 500 x 500 feet (about 6 acres). Additional land will be acquired to provide for potential future expansion.

Structures within the proposed new substation are anticipated to be approximately 70 feet maximum in height and include buses, transformers, switches, circuit breakers, and a control building.

A suitable site for the substation exists at the point where the preferred route for the Alcova-Casper line meets the Thermopolis-Alcova line. This is about 13 miles northwest of Casper. The site is shown on Figure S.2 (Revised) in this FEIS and in more detail on Link Maps 10b, 11a, and 12, in the Maps and Tables Volume of the DEIS.

a. Construction

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

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

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

b. Operation

The electric substation associated with the proposed project will not be manned, but will be operated automatically. Electric equipment within the facilities will be remote controlled from an operations center. The equipment and facility layout will be designed to limit radio and television interference and audible noise. The new facilities will be fenced, locked, and secured. Entry will be restricted to appropriate utility personnel.

c. Maintenance

Maintenance will include equipment testing, and routine and emergency procedures.

d. Abandonment

The facilities would be abandoned if no longer needed. Subsequent dismantling and removal would depend on the nature of the facility, if any, that would replace the substation.

e. Taps

In addition to a new substation at Alcova, the proposed project includes the construction of a new tap at either Lost Cabin (if the preferred route is constructed) or at Moneta (if the primary alternative is constructed). The new tap at either location would generally resemble a miniature substation, less than one acre in extent. The Moneta Tap would be even smaller than the one at Lost Cabin because it would connect a 69-kV line to a 115-kV line, rather than to a 230-kV line, and would therefore require less area.

4. Mitigation

Western's standard mitigation practices which will apply to the proposed project are presented in Table 3-3 (Revised) in this FEIS. Additional site-specific mitigation measures were identified during the analysis of environmental impacts. These measures are described in Chapter 5 and are also listed in the Significant Impact Summary Tables in the Maps and Tables Volume.

TABLE 3-3 (Revised)
Page 1 of 3
STANDARD MITIGATION MEASURES

1. The contractor shall limit the movement of his crews and equipment to the right-of-way (ROW), including access routes and construction yards. The contractor shall limit movement on the ROW so as to minimize damage to grazing land, crops, orchards, or 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, erosion control structures, 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 trails 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, all trees, native shrubbery, and vegetation shall be preserved and shall be protected from damage by the contractor's construction operations and equipment. The edges of clearings and cuts through trees, shrubbery, and vegetation shall be irregularly shaped to soften the undesirable visual impact of straight lines. However, clearings through treed riparian vegetation areas shall be designed to minimize the removal and trimming of trees. Therefore, these clearings will tend to have regular edges.

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

7. Construction roods not required for maintenance access sholl be restored to the original contour and mode impassable to vehicular traffic. The surfaces of such construction roods shall be left in a condition which will facilitate proper drainage, and reseeded to prevent erosion.

8. Construction staging areas locoted on the transmission line ROW shall be arranged in a manner to preserve trees and vegetation to the maximum practicable extent. On abandonment, all storage and construction buildings, including concrete footings and slobs, and all construction materials and debris sholl be removed from the site. The area sholl be regraded as required so that all surfaces drain naturally and blend with the natural terrain, and reseeded to 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 sholl be shaped to provide a notural appearance. Borrow pits and waste piles sholl be reseeded to prevent erosion.

10. Construction activities sholl be performed by methods that will prevent entrance, or occidental spillage, of solid motter, contaminants, debris, and other objectionable pollutants and wastes into streams, flowing or dry watercourses, lokes, and underground water sources. Such pollutonts 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 sholl 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, settling ponds, or by other approved means.

12. Excovated material or other construction materials sholl not be stockpiled or deposited near or on streambonks, lake shorelines, or other watercourse perimeters where they con be washed away by high water or storm runoff or can in any way encroach upon the actual watercourse itself.

13. Waste waters from concrete botching, 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 material. For the purpose of these specifications, settleable material is defined as that 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.

Affected
Environment

Chapter 4

CHANGES AND ADDITIONS TO THE DEIS

CHAPTER 4 - AFFECTED ENVIRONMENT

Most of the revisions in this chapter are minor and, therefore, consist of specific changes to be put in the context of Chapter 4 in the DEIS. This chapter should be reviewed with recognition of the fact that the preferred alternative for the Casper-Alcova segment of the project has been changed. Alternative 8C is now the preferred Alcova-Casper alternative, and the preferred alternative from the DEIS is now referred to as primary alternative 1B.

Page 4-5

Add the following at the end of the first paragraph:

> Within these totals, 0.7 miles of soils on 15 to 30 percent slope and 0.1 miles of soils on slopes greater than 30 percent occur on Emigrant Gap Ridge, an area where the BLM may require that special construction methods be used, as outlined in Chapter 5 of the FEIS, to mitigate impacts to soils resources.

Page 4-6

Add the following at the end of the last paragraph:

> In Natrona County, however, coal reserves have a low probability of being developed.

Page 4-8

Replace the second paragraph with the following:

> No plant species currently listed as threatened or endangered (U.S. Fish and Wildlife Service, 1982) is known to occur in the study area. Rorippa calycina, which is known to occur near the study area, was formerly on the list of species proposed for the "threatened" classification but was recently dropped from the list.

Page 4-10

Add the following at the end of the second paragraph:

> The U.S. Fish and Wildlife Service Guidelines are presently (June 1984) in the process of being finalized. It is possible that prairie dog towns up to one-half mile from the project ROW may be considered to be potential ferret habitat disturbed by the project. At the time of the impact analysis, 1/16 mile was considered to be the limit of potential disturbance. This means that prairie dog towns additional to the ones listed in the Series 5 tables may have to be surveyed. All known colonies observed in the field and within one mile of the ROW are shown on the link maps. A full list of prairie dog towns that must be surveyed will be formulated as the initial task of the consultation between Western and the U.S. Fish and Wildlife Service during the detailed design phases of the project.

Page 4-10

Add the following at the end of the fourth paragraph:

Since production of the DEIS, new wildlife data have been provided by the BLM. The following are the additional very high or high value wildlife resources that may be affected by the preferred alternative for the Thermopolis-Alcova System:

- o 4.5 miles of critical elk winter range. This is located along the Buffalo Creek drainage east of Thermopolis.
- o 7.9 miles of critical pronghorn winter range. These areas are located in the vicinity of Lost Cabin along the Bridger, Cottonwood, Badwater, and Sand Creek drainages.
- o 1.6 miles of critical mule deer winter range. This is located in the Lost Cabin vicinity along the Bridger and Badwater Creek drainages.
- o One additional sage grouse lek and one additional prairie dog town.

The primary alternative route also may affect important wildlife habitats that were not identified in the DEIS. These additional resources include:

- o 0.8 mile of critical mule deer winter range. This is located along Badwater Creek, approximately 7 miles northeast of Shoshoni.
- o 7.7 miles of critical pronghorn winter range. This is located east of Boysen Reservoir, along Badwater Creek east of Shoshoni and along Poison Creek east of Moneta.
- o Three golden eagle nests. These are located along the south rim of the Moneta Badlands.
- o One sage grouse lek which is located approximately four miles south of the Poison Spider Road in the eastern portion of the Rattlesnake Range.

Page 4-10

Add the following at the end of the last paragraph:

Since production of the DEIS, new wildlife data have been generated by the BLM. The following are additional very high value wildlife resources that may be affected by the Alcova-Casper System.

Primary alternative 1B, formerly the preferred alternative, is now known to pass one additional prairie dog town and one bald eagle perch that may be outside the bald eagle winter concentration areas formerly included in the impact comparison.

Following Page 4-10

The following revised version of Table 4-3, incorporating new wildlife data, replaces the version in the DEIS:

TABLE 4-3 (Revised)
SUMMARY OF EXISTING ENVIRONMENTAL DATA - IMPORTANT WILDLIFE HABITATS
Habitats Crossed or Passed by Alternative Routes

	Habitat Type (in linear miles or number)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Thermopolis-Alcova System													
Preferred Alternative	0.6	3	0	1	1.8	3.2	18.8	12	8	0.1	5	4.5	0
Primary Alternative	0.5	6	1	0	2.8	2.4	10.3	17	2	0.1	1	0	0
Alcova-Casper System													
Preferred Alternative (8C)	0	0	0	0	0	2.5	0	0	9	0	1	0	1
Primary Alternative 1B	11.4	0	0	0	0.2	1.2	0	1	0	1.2	0	0	0
Primary Alternative 2B	6.4	0	0	0	0.2	1.2	0	1	0	0.6	0	0	0
Primary Alternative 4C	1.0	0	0	0	0.2	1.2	0	1	0	0	0	0	1
Primary Alternative 7C	0	0	0	0	0	1.8	0	2	8	0	0	0	1

1 Bald eagle winter concentration area, very high value, miles crossed
2 Golden eagle nests, very high value, number passed
3 Class I stream, very high value, number of crossings
4 Class II stream, high value, number of crossings
5 Prairie dog towns, high value, miles crossed
6 Critical mule deer winter range, high value, miles crossed
7 Critical pronghorn winter range, high value, miles crossed
8 Other raptor nests, high value, number passed
9 Sage grouse lek and nesting areas, high value, number passed
10 Waterfowl areas, high value, miles crossed
11 Class III and important Class IV streams, moderate value, number of crossings
12 Critical elk winter range, high value, miles crossed
13 Bald eagle ridge/flyway, very high value, number crossed

Page 4-11

Add the following after the second paragraph:

Recent studies have indicated the Emigrant Gap Ridge, a northwest/southeast trending topographic feature, about seven miles southwest of Casper, is used by bald eagles as a flyway between their winter concentration area on the North Platte River and their communal roost areas on Pine Mountain. The ridge is crossed by Alternatives 8C (the preferred alternative), 7C, and 4C, and terminates at the banks of the North Platte where Routes 2B and 1B pass through the narrow gap between the bottom of the steeper slopes at the end of the ridge and the river.

Bald eagles are also reported to use a flight path between Pine Mountain and Bessemer Mountain, about 13 miles southwest of Casper.

Page 4-14

Replace the fourth paragraph with the following:

The new preferred alternative and Alternatives 7C and 4C now enter Casper by a route that differs from the one shown in the DEIS. This modified route is shown on Link Map Subroute C (Revised) in this FEIS. The change consists of extending the route east from the east end of Link 25 until it intersects the remaining primary alternative routes (1B and 2B). The new route is slightly longer, but makes better use of existing ROW and will fit better into future land use patterns on the southwest fringe of Casper.

All of this new segment, and the remainder of the route into the substation, is within an area of anticipated urban growth. The northeast end of Link 26 is also within this urban growth area.

Page 4-17

Subsection D. Land Use, 4, Transportation and Utilities, is revised as follows:

4. Transportation and Utilities

Numerous ROWs for pipelines, transmission lines, railroads, etc., have already been established within the study area. These are shown in Figures 4.13 and 4.14 and on the link maps in the DEIS.

An additional major pipeline has been constructed in the project area since production of the DEIS. The Frontier Pipeline follows the route of the preferred Alcova-Casper route at the northeast end of Link 25 and the general route of Links 35/37 and 39.

There have been changes in BLM's designated utility corridors in the study area since production of the DEIS. At that time, BLM (Platte River Resource Area) had three designated corridors that affected the project.

The first of these was the North Platte River Valley between Casper and Alcova. This contains two existing Western 115-kV transmission lines and one Western 69-kV line. This corridor, as stated in BLM's Platte River Resource

Area Resource Management Plan/Draft EIS, has been eliminated, with the intent that the existing transmission lines in it be removed and, if necessary, relocated elsewhere when their useful service lives expire (the existing 69-kV line will be removed as part of this action). As is explained elsewhere in this FEIS, this is the basic reason for Western's abandonment of Route 1B as its preferred Alcova-Casper alternative.

The second designated BLM corridor was centered on the Oregon Trail Road. The location of this corridor has been adjusted so that it is at least one mile north or northwest of the Oregon Trail Road. Western's preferred Alcova-Casper alternative coincides with this corridor for most of its length.

The third BLM corridor of relevance to the project is the U.S. Highway 20/26 corridor leading northwest and then west from Casper. This corridor is unchanged and accommodates the Arminto-Casper 69-kV rebuild.

Major highways within the study area which are crossed and/or paralleled by alternative routes are U.S. Highways 20 and 26 and Wyoming Highway 220.

Public airports are located at Thermopolis and Casper, and small airstrips are scattered throughout the study area. Because of height restrictions on structures placed close to airport runways, the location of airports is an important factor to consider in the route development process. Airports and their associated height restriction zones are shown in Figure 4.15 and on the link maps.

The city of Casper is at the time of writing (June 1984) conducting a planning study to locate future highway corridors (arterials and collectors) to the southwest of the city, in the area crossed by the Alcova-Casper preferred alternative. There appear to be no significant conflicts between that route, or the proposed 69-kV Arminto-Casper rebuild, and the proposed highways except that Link 29 may coincide with a short segment of a future arterial. Western will consult with the City of Casper Planning Department during the detail design phases of the project to resolve any siting conflicts that may occur.

Page 4-21

Add the following after the third paragraph:

Since the proportion of the study area that has been surveyed is very small, the distribution of known (recorded) sites does not necessarily give an indication of the distribution of total sites in existence and, hence, of the difference between alternatives.

Pages 4-28 and 4-29

Replace the last paragraph on Page 28 and the first three paragraphs on Page 29 with the following:

The preferred alternative (8C) originates at a point of intersection with the existing Thermopolis-Alcova 115-kV line about 13 miles northwest of Alcova. The first portion of this route (Links 11a and 11b) is located in remote, rolling sagebrush which is primarily designated VRM Class IV. Only

two segments, totaling approximately 3.7 miles, are visible from the Oregon Trail Road and are therefore designated VRM Class III.

Link 25 originates near where the rolling sage landscape gives way to a scattered pattern of agricultural land north of Bessemer Mountain. This area is designated VRM Class III. The route then crosses the Emigrant Gap Ridge area. This 0.8 mile segment is of moderate scenic quality, high visual concern, and is designated VRM Class II. The northeastern portion of this link, and its extension eastwards to connect with Link 29 (approximately 5.5 miles), is in the agriculture dominated landscape west of Casper, a VRM Class III area.

The majority of the remainder of the route passes through land dominated by urban development. These segments of the route are therefore not rated.

Page 4-30

Replace the second, third, and fourth paragraphs with the following:

From 1978 to 1981, declines in employment were evident in the mining and construction sectors, while increases in employment occurred in wholesale trade and some manufacturing. In 1982-83, the average number of persons employed in the construction sector was 965 in Fremont County, 103 in Hot Springs County, and 2770 in Natrona County.

Wages were consistently higher in Natrona County compared to Fremont or Hot Springs counties. Average weekly wages for all sectors in 1983 were $313.91 for Fremont County, $299.62 for Hot Springs County, and $375.00 for Natrona County. The average annual increase in wages from 1978 to 1981 was 9.9 percent in Fremont, 11.3 percent in Hot Springs, and 11.1 percent in Natrona County. From 1981 to 1983, the average annual increase in wages was 4.3 percent for Hot Springs and 0.6 percent for Natrona County. In Fremont County, average annual wages from 1981 to 1983 decreased 0.4 percent.

The unemployment rate in both Fremont and Hot Springs counties has increased 1.1 to 10.8 percent, and 1.6 to 6.1 percent, respectively, from 1980 to 1983. Natrona County has increased from 3.0 percent to 10.3 percent unemployment. These are the highest unemployment rates for these counties since the early 1960's.

Environmental Consequences

Chapter 5

CHANGES AND ADDITIONS TO THE DEIS
CHAPTER 5 - ENVIRONMENTAL CONSEQUENCES

Page 5-1

Replace Section A, Introduction, with the following:

A. INTRODUCTION

The impacts of the preferred alternatives and primary alternatives for both the Thermopolis-Alcova and Alcova-Casper systems and the no action alternative are described in this chapter. Primary alternatives are those alternatives which survived the initial screening process and were retained for detailed analysis. The discussion of impacts focuses on the link maps which are presented in the Maps and Tables Volume of the DEIS. Impacts are described for each of the five resource groups for each alternative. Socioeconomic and health and safety effects, however, are described on a project basis because the impacts in these areas would be similar no matter which alternative route is selected.

The process for determining impacts is described in detail in Appendix F in the DEIS. Detailed results of the impact analysis are given in Appendix G in the DEIS. Impacts in the DEIS were determined on the basis of the standard committed mitigation practices which are listed in Table 3-3 in the DEIS. Tables are presented in the Maps and Tables Volume of the DEIS which itemize all significant impacts for each resource group and present additional information on their type, level, and location, together with site-specific mitigation measures.

Impacts are described as being related to either the construction phase of the project or the operation phase of the project. Construction impacts are primarily short-term impacts which result from the activities associated with building the proposed transmission line. In most cases, impacts associated with the construction phase would diminish with time and in response to the implementation of mitigation measures. For example, construction-related activities which occur during a critical period in a sensitive wildlife habitat may result in a significant impact which persists for a breeding season or as long as the construction activities continue. After construction is completed, however, the level of human activities associated with the project substantially diminishes and the net change to the affected habitat is usually minor. In this example, the net change to the affected habitat which results from the transmission structures, any required access improvements and human activity associated with project operation and maintenance, and potential increased access by recreationists and others, would be considered as operation impacts. Operation impacts are long term and would persist for the life of the project. The terms "operation" or "operation/maintenance" in this report mean: the presence of all the elements of the project (including access trails), the activities necessary to maintain and repair them, and the use of the line to transmit electricity.

The following revised Chapter 5 material presented in this FEIS concentrates on a description of those project impacts which are different from or additional to the initial description provided in the DEIS. For a complete discussion of impacts which have not changed, refer to the DEIS.

Impacts have been re-assessed in this document for several reasons, including the following: (1) the BLM's proposed decision to eliminate the existing North Platte River utility corridor; (2) new information obtained from public and agency comments on the DEIS; (3) Western's commitment to additional mitigation measures, including re-seeding of disturbed areas. Each of these factors and how they influenced impact ratings is described in the remainder of this section.

As was noted on Pages 3-11 and 3-12 of the DEIS, a decision to discourage the siting of additional transmission line facilities within the existing North Platte River corridor would have a significant effect on the results of the impact analysis. Since the time when the DEIS was released, the BLM has proposed eliminating the North Platte River Corridor (Draft Resource Management Plan/Environmental Impact Statement for Platte River Resource Area, 1984). As a result of this decision, it is probable that no additional transmission lines will be constructed in the North Platte River corridor, and the existing transmission lines could be removed and/or reconstructed at another location when they reach the end of their useful economic life.

Of the three transmission lines currently located within the North Platte River corridor, the existing 69-kV line will be removed immediately and the two 115-kV lines will remain in place until they are no longer needed or require reconstruction. The two existing 115-kV lines were constructed in 1949 and 1957. Although it is difficult to predict a transmission line's economic life, Western uses 45 years as a rule of thumb for wood structures. On this basis, one of the existing lines could be potentially removed in ten years (1994) and the other by 2002.

Given the decision to phase out the North Platte River corridor, it is appropriate to re-evaluate the impacts of constructing the proposed new line within the existing corridor. As noted in the DEIS, impacts were intially evaluated on the basis of the proposed new line being one of several in an established corridor that would continue to exist for the indefinite future. However, the BLM's proposed decision to phase out the North Platte River corridor means that a decision to construct Western's proposed 230/345-kV line along the river would result in a transmission line and its associated adverse visual, biological, and land use impacts continuing far beyond the time when the river corridor would otherwise be free of transmission facilities. After the year 2002, the proposed new line could be the only transmission line remaining in the sensitive North Platte River corridor, and it could continue in service until at least the year 2037 (50 years after installation).

Impacts were therefore re-evaluated to account for the probability that the proposed new 230/345-kV line would be the only line in the North Platte River corridor for most of its useful economic life. This re-evaluation resulted in a significantly higher impact rating for the formerly preferred alternative (Alternative 1B) and others located in the river corridor, in three important resource areas: biological, visual, and land use. The results of this re-evaluation are described in the following sections.

New information obtained during the public and agency review period for the DEIS influenced impact ratings in the biological resource category. This new information included the location of additional sensitive habitats, such as winter range for deer, elk, and antelope, as well as additional sage grouse leks and raptor nests.

The impact rating for bald eagles was also increased from none to moderate for the project's operation phase where the transmission line would pass through a

winter concentration area. This impact rating was increased because of concerns expressed about potential bald eagle collisions with the transmission facilities, and the fact that a new line located in the North Platte River corridor could become the only transmission line through this sensitive habitat in the future.

In addition, impacts during the project's operation phase were reduced from high to moderate where a new corridor would be located within a two-mile radius of a known sage grouse lek. Although sage grouse collisions with transmission lines have been observed, the potential hazard is not sufficiently documented to constitute a high or significant impact.

Finally, operation impacts to physical resources have been reduced as the result of committed mitigation measures which include re-seeding of disturbed areas. This additional mitigation resulted in the reduction of most very high and high long-term (operation phase) soils impacts to low. Short-term impacts associated with construction activities remain very high and high where new access is needed and slope/soil conditions are sensitive.

Page 5-2

Replace the third paragraph with the following:

> If certain soils that contain high levels of salinity or alkalinity or both are exposed, soluble salts might, under certain circumstances, be concentrated at the surface, thereby reducing plant growth. The movement of surface particles caused by wind and water erosion would redeposit these salts, thereby raising the soluble salt concentration at the surface in adjacent areas.

Pages 5-2 and 5-3

Replace the last four paragraphs on Page 5-2 and the first three paragraphs on Page 5-3 with the following:

> Areas of high or very high soil erosion potential are located along the preferred alternative on all links except 7 and 12. These and other significant impact areas are shown in Table 5-1 in the Maps and Tables Volume of the DEIS. These areas typically exhibit high or moderate constraint soils with high or moderate water erosion potential on slopes of 15 to 30 percent or greater. Project construction would cause localized high or very high impact to these soils.
>
> No major wetland soil areas exist along the preferred alternative, but 45 very narrow, scattered wetland soil areas are crossed on Links 1, 2a, 2b, 2c, 5, 9, 10a, and 10b.
>
> (2) Other Physical Resources
>
> Flood-prone areas are crossed or approached at several locations, including the Bighorn River and Poison Spider and Badwater Creeks. River crossings would be accomplished with long spans which would generally eliminate the

need to place structures within the hazard zone. Any structures that did have to be placed in an area liable to flooding would be designed to be resistant to flood damage. The structure types used, single pole and H-frame, would not increase flood levels.

No significant impacts to geology, climate/air quality, or water resources were identified. The primary potential impact on water quality is increased sediment associated with soil disturbance and direct disturbance to stream channels at unbridged crossings. These impacts are expected to be minor and short term, because of the already high sediment loads carried by intermittent streams within the study area, and the fact that existing access trails would be used at most stream crossings. Major drainages, such as the Bighorn River, would be crossed without direct disturbance to its channels; construction equipment would use existing bridges.

Soil disturbances associated with construction activities and the movement of vehicles on unpaved roads would also result in increased fugitive dust, particularly during windy periods. These impacts would be minor and short term because of the small area that would be disturbed, the short construction period, and revegetation of disturbed areas.

(3) Summary

Construction of the preferred alternative would result in 12.2 miles of very high and 22.2 miles of high impact. Areas of high or very high impact typically exhibit high or moderate constraint soil with high or moderate water erosion potential on slopes of 15 to 30 percent or greater. Construction activities would result in significant but short term and localized disturbance.

During the operations phase of the project, impacts typically decrease to a low level. The preferred alternative would result in 121.6 miles of low impact and 0.7 mile of moderate impact. Operation phase impacts have been reduced from the levels described in the DEIS as a result of additional committed mitigation measures which will enhance the stabilization and revegetation of disturbed areas.

The impact rating system for soils resources is explained in Appendix F in the DEIS and the revisions to some of the tables from Appendix F in this FEIS.

Page 5-3

Replace the last paragraph with the following:

Treed riparian areas would be impacted at six locations along the preferred alternative (Links 2a, 2b, 2c, 5, 10b) (Table 5-2). These areas typically consist of narrow bands of vegetation crossed by the ROW. Impacts to treed riparian areas are rated very high due to the importance of this habitat to wildlife and the potential removal of trees (a very high value resource) in the study area during construction. Regrowth of trees removed would require a relatively long period. Also, pruning and trimming of trees may be required during operation and constitute additional impacts.

Pages 5-4 and 5-5

Replace the last two paragraphs on Page 5-4 and the first two paragraphs on Page 5-5 with the following:

Increased human disturbance associated with construction and operation/ maintenance activities would also impact bald eagle winter concentration areas, prairie dog towns (potential black-footed ferret habitat), sage grouse leks, critical winter range for big game, and waterfowl habitat. Except in the case of the ferret, the severity of the impact would depend on the time of year project activities are conducted.

Collisions with structures and electrocution pose potential impacts for some birds. The configuration of the poles and spacing of conductors on most of the proposed lines are such that they exceed the spacing normally required to protect raptors from electrocution (Olendorff et al. 1981), thus raptor electrocution should not be a problem. With the smallest structure types (Types A and B, Figure 3.3 (Revised) in this FEIS), however, raptors can risk electrocution by simultaneously contacting a conductor and the ground wire that runs down the pole. Mitigation of this hazard is discussed in Section G of Chapter 5 in this FEIS. Sage grouse, waterfowl, and, to some extent, raptors are susceptible to collision impacts. Potential for collision would be greatest in areas where a line is placed in a new ROW. Additional collision impact would not likely occur where a new line replaces an old one. In areas where a new line would be built adjacent to existing lines, the existing collision hazard would be increased slightly. Noise and electromagnetic fields of energized transmission lines would affect certain birds that may use magnetic fields to orient themselves during overcast periods; however, this impact is expected to be short term, localized, and generally not measurable.

Impacts to wildlife associated with noise and electromagnetic fields are expected to be slight, but not mitigable. Impacts associated with collision may be potentially greater, but are largely mitigable.

No important stream fisheries would be disturbed; the Bighorn River would be crossed using existing bridges, and no construction activities would occur within the stream channel.

Pages 5-5 and 5-6

Replace the last paragraph on Page 5-5 and the first paragraph on Page 5-6 with the following:

Construction activities along the preferred alternative would result in moderate impacts to approximately 17.6 miles of sage grouse lek and nesting areas (Links 2c, 2d, 10a, 12, and 14). These impacts would be primarily short term and would not be significant if construction is avoided from March through May. Transmission line operation would also constitute a moderate long-term impact due to the possibility of collisions and the removal of a small amount of habitat around the tower bases.

The preferred alternative traverses approximately 18.8 miles of pronghorn critical winter range (Links 2a, 2b, 2c, 10a), 3.2 miles of mule deer critical winter range (Link 10a), and 4.5 miles of critical elk winter range (Link 2).

These areas would be impacted at a moderate level by construction activities if they are conducted from December through April. Construction at other times of the year would result in low or no measurable impact. Removal of small amounts of habitat for access trails and tower bases would have a long-term, but insignificant impact.

The preferred alternative also impacts bald eagles and waterfowl at the moderate level at the crossing of the Bighorn River (Link 2a) due to the collision hazard.

Page 5-6

Replace the fifth paragraph with the following:

No impacts to endangered or threatened plants are expected.

Page 5-8

Add the following at the end of the second paragraph:

The alternative, as shown on Link Map 2a (Revised) in this FEIS, was adjusted to avoid a proposed center pivot irrigated area. This adjustment does not appear to increase any other impacts.

Page 5-13

Replace the first paragraph with the following:

Ten areas of high and very high impact are associated with the primary alternative on Links 1, 3a, 3b, 3c, 3f, 10a, 10b, 14, 16-18, and 6 (Table 5-6). These areas have high or moderate constraint soils with high or moderate water erosion potentials on slopes of 15 to 30 percent or greater. As a result, the potential for soil erosion is rated high during construction-related activities. During the operation phase of the project, impacts typically decrease to a low level.

Page 5-13

Replace the fourth and fifth paragraphs with the following:

(2) Other Physical Resources

No significant impacts on geology, climate/air quality, or water resources would occur.

(3) Summary

Construction of the primary alternative would result in 10.4 miles of very high and 9.1 miles of high impact. Areas of high or very high impact typically exhibit high or moderate constraint soil with high or moderate water erosion potential on slopes of 15 to 30 percent or greater. Construction activities would result in significant but short term and localized disturbance.

Operation of the primary alternative would result in 124.8 miles of low impact and 4.0 miles of moderate impact. Operation phase impacts have been reduced from the levels described in the DEIS as a result of additional committed mitigation measures which will enhance the stabilization and re-vegetation of disturbed areas.

The impact rating system for soils resources is explained in Appendix F in the DEIS and the revisions to some of the tables from Appendix F in this FEIS.

Page 5-14

Replace the second and third paragraphs with the following:

Four golden eagle nests (Links 3b, 3c, 3f) may receive high or very high impacts as a result of disturbance by construction activities. Nine buteo nests would receive high impacts; seven other buteo nests may be moderately impacted in Links 3c, 3e, 3f, 6, and 10b.

The primary alternative would moderately impact 3.4 miles of sage grouse lek and nesting area in Link 12, 5.2 miles of critical pronghorn winter range (Links 3b, 3c, 3d, and 10a), and 1.9 miles of critical mule deer winter range (Links 3c and 10a). Types of impacts on the resources listed above are the same as discussed for the preferred alternative.

Page 5-18

Replace Section C. "Alcova-Casper System" with the following:

C. ALCOVA-CASPER SYSTEM

1. Preferred Alternative

a. Impacts on Physical Resources

(1) Soils

The types of soil resource/constraint groups that would be subjected to high or very high levels of impacts along the preferred alternative are the same as those previously defined for the Thermopolis-Alcova alternatives.

Seven areas of high erosion potential, most of which are rather large in extent, are located along Alternative 8C on Links 11a, 11b, and 25 (Table 5-31). These are typically high or moderate constraint soils with high or moderate water erosion potential on slopes of 15 to 30 percent or greater than 30 percent. Impacts to these soils from project construction and operation are high and very high depending on the availability of existing access roads. The impacts, however, would be localized.

Several potential wetland soil areas are crossed on Links 11a, 11b, 25, 28, and 39. These include potential wetland soil areas associated with riparian vegetation zones as well as tracts of irrigated cropland. The impacts to the potential wetland soil areas associated with riparian vegetation are rated high or moderate for the construction phase and high or low for the operation/maintenance phase depending on the availability of existing access roads. Mitigation procedures for

soils on areas other than irrigated cropland were presented previously; mitigation procedures for irrigated cropland are discussed under Land Use.

In summary, construction of the preferred alternative would result in very high and high impacts to soils along 3.5 and 4.6 miles of line, respectively (Table S-2). Operation would result in 33.4 miles of low and 2.1 miles of moderate impact to soils. The overall impact rating is given in Appendix F.

No significant impacts on geology, climate/air quality, or water resources would occur.

Additional impacts would result in areas where the existing 69-kV line is removed. Short-term impacts to soils due to the removal of the line would be similar to those associated with constructing new line; however, a long-term positive effect would be realized to the extent that the access trail on the abandoned ROW is allowed to return to native rangeland.

b. Impacts on Biological Resources

(1) Vegetation

The types of vegetation that would be subjected to moderate or greater levels of impact along the preferred alternative are:

- Riparian with grass, sedge, cattails, or shrubs
- Juniper/conifer

Riparian areas without trees would be impacted along Links 11a, 11b, 25, 28, and 39; juniper/conifer would be impacted along Link 25. Types of impacts and mitigation for those vegetation types are the same as those discussed for the Thermopolis-Alcova system.

(2) Wildlife

Important wildlife resources that would be impacted by the preferred alternative are:

- Bald eagle flyway and roosting area
- Sage grouse lek and nesting areas
- Critical winter range for mule deer

The preferred alternative crosses approximately 0.8 mile of Emigrant Gap Ridge, which is used as a flyway by bald eagles. This crossing represents a moderate long-term (operation) impact due to the potential for collisions. Approximately 8.5 miles of sage grouse lek and nesting areas in Links 11a and 11b would receive moderate impact during construction and moderate impact during operation. Approximately 2.5 miles of mule deer critical winter range (Link 11a) would be moderately impacted. The types of impacts and mitigation for these important wildlife resources are the same as those discussed for the Thermopolis-Alcova system.

(3) Endangered or Threatened Flora and Fauna Species

The previous discussion for the preferred alternative in the Thermopolis-Alcova system applies to endangered or threatened species along this alternative.

(4) Summary

Construction of the preferred alternative would result in 1.3 miles of high impact (Table S-2). Operation would result in 1.3 miles of high impact. Bald eagle winter concentration areas, waterfowl areas, a moderate value stream, riparian, and treed riparian vegetation would also be impacted by removal of the 69-kV line. Short-term impacts to these resources due to removal of the line would be similar to those associated with constructing a new line. Long-term positive effects would be realized to the extent that the access trail on the abandoned portions of the ROW is allowed to return to native vegetation. Positive effects would also occur to waterfowl from removal of the 69-kV conductors that presently cross and recross the North Platte River.

c. Impacts on Land Use

Link 11a, whose total length is in new ROW, crosses only a non-urban area. The only conflict with existing land uses is the crossing of a major pipeline, which results in 0.1 mile of low impact during construction. The operational impact for the entire segment is low (10.0 miles), as no other land use conflicts occur for the new corridor.

Link 11b is entirely new corridor and entirely in a rural area. A crossing of a major pipeline is the only conflict with existing land uses -- 0.1 mile of low construction impact results. During operation, no land use conflicts exist, thus, a low impact occurs for the 10.6 mile total length of the new ROW.

Link 25 is also completely in new ROW. For the majority of its length, the segment is in a rural area where no conflicts with the existing land uses occur. The operational impacts for this condition are low (7.92 miles). As the new ROW enters a potential residential area of Casper at its northern end, the operational impact becomes moderate (0.13 mile). Other significant impacts occur. During construction, the link would have a moderate impact on three structures -- a residence, a clubhouse with its firing range, and a ranch outbuilding. The impacts for the residence and the clubhouse would change to very high with operation; for the outbuilding, the operational impact would be high. A high construction and operation impact likewise occurs for 0.61 mile as the corridor crosses cultivated land.

Link 28, also on entirely new ROW, crosses potential residential or industrial areas of Casper for most of its length, thus creating 1.9 miles of moderate operational impact. In addition, the segment crosses irrigated agricultural land -- 0.13 mile of high impact results for both the construction and operation periods. A low construction impact of 0.09 mile occurs as the link crosses a major pipeline at the southernmost end.

Link 34/41 is in a potential industrial area of Casper for its total length. The segment is in new corridor for 0.28 mile, resulting in moderate operational

impacts for this length. For 0.19 miles at its north end, the segment follows an existing 69-kV PP&L line corridor, thus the operational impact becomes low. No impacts occur during the construction phase of this link.

In addition to the impacts associated with construction of the new 230/345-kV line, the proposed action includes removal of the existing deteriorated 69-kV line. Removal of this line would have an adverse, short-term impact on approximately one additional mile of cultivated land. This occurs where the 69-kV line and two 115-kV lines are in separate locations.

d. Impacts on Cultural and Paleontological Resources

(1) Archaeological Resources

The preferred alternative would not significantly impact any known prehistoric sites (Table 5-34).

(2) Historical Resources

No known historical resources would be impacted by the preferred alternative. The Oregon-California-Mormon Trail intersects or parallels the proposed ROW on Links 11b, 25, and 28, but at no location have ruts or other forms of physical integrity been identified, thus no significant impacts have been assessed.

(3) Ethnological Resources

No known sites or areas of past or present heritage significance for Native Americans were identified in association with the preferred alternative.

(4) Paleontological Resources

Very high to moderate construction impacts have been assessed for two paleontological areas on Link 11a. High to moderate construction impacts have been assessed for two paleontological areas on Link 11b (Table 5-34). For a total distance of 3.7 miles, the preferred alternative crosses or passes within 0.5 mile of paleontological areas. Residual impacts of very high and high have been assigned to two paleontological areas on the preferred alternative on Links 11a and 11b due to the potential for increased access to the localities created by construction of a new maintenance road (Table 5-34). Dependent on the significance of findings during the Class III inventory of the ROW, avoidance and/or monitoring of construction activities at these sites may be necessary.

(5) Summary

The preferred alternative has the highest overall impact rating of all proposed alternatives (Table S-2 and Appendix F). This high impact rating is due to the presence of four known paleontological areas located along Links 11a and 11b.

The existing 69-kV line would be removed between Alcova and Casper regardless of the alternative selected. Only one prehistoric site (high resource value) has been previously recorded within 0.5 mile of this proposed action, and this site would not be signficantly impacted. The removal of the 69-kV line would not

create any new significant cultural impacts, and a Class III inventory for this action would not be necessary (procedure agreed to by representatives of Western, SHPO, and BLM).

e. Impacts on Visual Resources

Link 11a would be located on a new corridor in a VRM Class IV area. Only a small portion of this link would be seen from a sensitive viewpoint. The portion of the route which crosses the Rattlesnake Range would be seen from the Oregon Trail Road and Oregon Trail historic sites. This would result in approximately 1.4 miles of moderate operation impacts. Construction impacts would be low or none throughout this link.

The first 8 miles of Link 11b is similar to 11a in that it is located in a VRM Class IV area and seen only from the Oregon Trail Road and Oregon Trail historic sites for a short segment which crosses a steep ridge. Operation impacts in this 0.75-mile segment are also moderate. The last 2.5 miles are located in a VRM Class III area and are also visible from the Oregon Trail Road and various residences. Operation impacts would be high in this area. Only one short segment (0.25 mile) would require new access which would result in moderate visual impacts.

Link 25 would also occur on a new alignment. It is highly visible and crosses a combination of VRM Class II and III lands. Operation impacts are, therefore, high for the entire link. New access road construction would be required for most of this link. Where this would occur in VRM Class II lands (approximately 0.8 mile), high impacts would result. Where it would occur in VRM Class III lands (6.0 miles), moderate impacts would result.

Link 28 lies in a VRM Class III area which is a mixture of natural, rolling sage and agricultural lands outlying Casper. Landform and vegetation contrasts would be negligible due to the extent of existing roads and farm land in this area. Due to the size of proposed structures on this new alignment, structure contrasts would be strong. Operational impacts would therefore be high throughout.

Link 34/41 is within the Casper urban influence area and has suitable existing access. Construction impacts would, therefore, be negligible. Although this area is heavily influenced by urban development, the proposed structures would be highly evident due to their size. Structure contrasts and visual impacts would, therefore, be moderate throughout the VRM Class III area.

The remainder of the route passes through either VRM Class III lands or lands not rated for visual resources. The Class III lands are on the fringe of the Casper urban area and are seen from a variety of rural residences and roads. Because of generally available existing access, construction impacts would be low. The significant difference in size and character of towers proposed, however, results in moderate structure (operation) impacts.

Operation impacts in the "not rated" area would be low due to the commercial/ industrial nature of the urban development in this area.

2. Alternative 1B

a. Impacts on Physical Resources

(1) Soils

The types of soil resource/constraint groups that would be subjected to high or very high levels of impact along Alternative 1B are the same as those previously defined for the Thermopolis-Alcova alternatives.

Ten areas of high or very high soil erosion potential are located along Alternative 1B on Links 23, 24, and 27 (Table 5-11). These are typically high or moderate constraint soils with high or moderate water erosion potential on slopes of 15 to 30 percent or greater than 30 percent. Impacts to these soils from project construction are rated high and very high, depending on the availability of existing access roads. The impacts, however, would be localized. During the operations phase of the project, soils impacts typically decrease to a low level.

Several potential wetland soil areas are crossed on Links 19/21, 23, 24, 27, and 39. These include potential wetland soil areas associated with riparian vegetation zones as well as tracts of irrigated cropland. The impacts to the potential wetland soil areas associated with riparian vegetation are rated high or moderate for the construction phase and high or low for the operation/maintenance phase, depending on the availability of existing access roads. Mitigation procedures for soils on areas other than irrigated cropland were presented previously; mitigation procedures for irrigated cropland are discussed under Land Use.

In summary, construction of Alternative 1B would result in very high and high impacts to soils along 1.2 and 0.9 mile of line, respectively (Table S-2, Revised, in this FEIS). Operation would not result in any very high or high impact to soils. The overall impact rating is given in Appendix F.

Impacts associated with removal of the 69-kV line were already described under the preferred alternative.

No significant impacts on geology, climate/air quality, or water resources would occur.

b. Impacts on Biological Resources

(1) Vegetation

The types of vegetation that would be subjected to moderate or greater levels of impact along Alternative 1B (Table 5-12) are:

- Riparian with trees
- Riparian with grass, sedge, cattails, or shrubs
- Juniper

A riparian tree area occurs on Link 27 (very high impact). Eighteen non-treed riparian areas are impacted at a moderate level (Links 23, 24, 27, 39). Juniper/conifer on Links 19 and 27 would also be impacted. Types of impacts and mitigation for these vegetation types are the same as those discussed for the Thermopolis-Alcova system.

(2) Wildlife

Important wildlife resources that would be impacted by the Alternative 1B are:

- o Bald eagle winter concentration area
- o Buteo nest
- o Prairie dog towns
- o Critical winter range for mule deer
- o Waterfowl habitat

Approximately 11.4 miles of bald eagle winter concentration area (Links 19/21, 23, 27) would receive high impact during construction. This impact becomes moderate during the construction phase and results from the potential for collisions with the structures.

A buteo nest along the preferred alternative (Link 19) would be moderately impacted, as would 1.2 miles of mule deer critical winter range (Links 19, 21, and 23). Approximately 0.2 mile of prairie dog town must be surveyed prior to construction. The types of impacts and mitigation for these important wildlife resources are the same as those discussed for the Thermopolis-Alcova System.

(3) Endangered or Threatened Flora and Fauna Species

The previous discussion for the preferred alternative in the Thermopolis-Alcova system applies to endangered or threatened species along this route.

(4) Summary

Construction of Alternative 1B would result in 0.2 mile of very high impact and 12.6 miles of high impact (Table S-2). Operation would result in an additional 0.2 mile of very high impact and 2.9 miles of high. Overall impact rating to biological resources is given in Appendix F. Alternative 1B has a higher overall impact on biological resources than the preferred alternative because of the greater amount of bald eagle winter concentration area it crosses.

The impacts of removing the existing 69-kV line have already been described under the preferred alternative.

c. Impacts on Land Use

Impacts described in the DEIS have been revised due to the proposed phasing-out of the existing corridor. Long-term (operation phase) impacts have therefore been assessed on the assumption that a new line would perpetuate existing land use conflicts rather than simply result in a minor change resulting from replacing an existing line with a new line in an established utility corridor.

Significant land use impacts are described in Table 5-13. For the first half mile from the proposed new substation at Alcova (Link 19/21), the route is along a new alignment in an urbanizing area, and results in a moderate operation impact.

Link 23 results in 0.5 mile of moderate and 1 mile of high construction impact. These impacts are associated with conflicts with agricultural lands and recreational use areas. The 0.5 mile of moderate construction impact is associated with construction activities within the Trapper's Route Recreation Area. An additional half mile of low construction impact results from proximity to the North Platte River, where noise and dust may disturb recreationists.

Operation impacts include one mile of high associated with placing structures within cultivated land and 0.1 mile of very high resulting from proximity to a residence.

Link 24 has no construction impacts on land use due to the lack of conflicts with existing land uses. On Link 27, however, the route encounters agricultural lands and other uses which result in impacts. This segment crosses a total of 0.7 mile of agricultural lands, including one parcel which is irrigated with a center pivot system. Crossing the center pivot system results in 0.3 mile of very high construction and operation impact. Crossing the remaining agricultural lands results in 0.4 mile of high construction impact and operation impact.

The route also passes near the Bessemer Bend recreation use area and in close proximity to the river. This results in 1.2 miles of low construction impact because of potential disturbance to recreation activities associated with noise, dust, etc. In addition, the route has 0.1 mile of moderate construction impact because of proximity to a residence and one mile of moderate operation impact associated with potential future residential land use conflicts in the Bessemer Bend area.

Near the end of Link 27, the route enters the Casper urban growth area. Within this zone, the need to acquire additional ROW results in at least a low operation impact and a higher level when specific conflicts can be identified. Within the Casper area, total construction impacts include 0.3 mile of moderate and 0.8 mile of high. These impacts result from potential conflicts with cultivated lands and an active gravel mine. Operation impacts include 3.8 miles of low, 2.0 miles of moderate, and 0.7 mile of high. These impacts are associated with the need to acquire new ROW in an urban setting and potential conflicts with agricultural, mining, and industrial uses. Overall impacts are summarized in Table S-2.

d. Impacts on Cultural and Paleontological Resources

(1) Archaeological Resources

Alternative 1B would not significantly impact any known prehistoric sites (Table 5-14); only one previously recorded site lies within 300 feet (on Link 27). This site has been evaluated as not eligible for the NRHP, and no further mitigation measures should be required for this site other than relocating and recording associated with a Class III inventory.

(2) Historical Resources

The Oregon-California-Mormon Trail parallels and intersects this alternative. Based upon a recent and extensive study of the trail by the National Park Service (1981), however, no portions of the trail which would be impacted were identified as having physical integrity (i.e., ruts). For this reason, no impacts were assessed, but a careful inspection would be made of any location where the trail enters the proposed ROW during the Class III inventory.

Historic properties which would be impacted by Alternative 1B include Goose Egg Ranch/Red Buttes Station (National Register status undetermined) and a parcel of state-owned land which was the site of the Red Buttes Fight (battle site and cemetery). Both Goose Egg Ranch/Red Buttes Station, and the Red Buttes Fight site are located on Link 27. Impacts to Goose Egg Ranch/Red Buttes Station would result from both earth disturbing activities and potential vandalism during construction. The Red Buttes Fight site possesses a very high recreational/interpretive value and, although the location would not be disturbed by any earth disturbing activities, the potential for vandalism during construction has been rated as moderate due to its proximity to the proposed line (approximately 800 feet). Visual resources at this site may also be impacted as described in Section e, below.

(3) Ethnological Resources

No known sites or areas of past or present heritage significance for Native Americans were identified.

(4) Paleontological Resources

A paleontological locality would be impacted (moderate impact rating) on Link 23. Direct construction impacts of this site are not expected; rather, the site would be susceptible to vandalism during construction. No residual impacts were identified, and mitigation would involve monitoring of construction activities.

(5) Summary

Alternative 1B has the lowest overall impact rating of all the proposed alternatives (Table S-2 and Appendix F). Potential high and moderate construction impacts have been assessed for historical properties on Link 27 and a moderate construction impact has been assessed for a paleontological area on Link 23.

e. Impacts on Visual Resources

The majority of this alternative follows an existing corridor of 115-kV wood H-frame lines, except for a small portion in the Casper vicinity.

Landform and vegetation (construction) contrasts are primarily weak due to the existing access.

Visual resource values (VRM Classes) are generally higher in this area than the Thermopolis-Alcova area due to the proximity of important viewpoints and use

areas, such as Highway 220, the North Platte River, Alcova Reservoir, and the outlying areas of Casper. Scenic values are generally higher in the Alcova-Casper study area as well.

The first 0.5 mile of Link 19/21 is in the Alcova VRM Class II area. As with other links in this area, the operation and construction impacts are high. Operation impacts drop to moderate and construction impacts drop to none as the route leaves the Alcova area, between a double hogback ridge formation. Operation impacts then return to high for the remainder of the link due to the need for a substation at approximately milepost 1.5.

Link 23 would have strong structure contrasts, and landform and vegetation contrasts would be nonexistent due to adequate existing access roads. Impacts would be high, however, due to the fact that most of Link 23 would be highly visible from sensitive viewpoints and within a VRM Class III area. A total of 10.3 miles of high operation impacts would result along Link 23 of this alternative.

Link 27 would pass through 5.6 miles of VRM Class II lands, and operation impacts would be high throughout this segment due to the high visibility from the North Platte River and various residences in the area. Of particular concern is the Bessemer Bend area. This area has significant regional historical significance which has been interpreted for the public through an open-air facility between the North Platte River and the transmission line route.

Beyond this VRM Class II area, the remainder of Link 27 passes through VRM Class III lands. This portion is also intermittently visible from the North Platte River, as well as from Highway 220 and various residences. Visual impacts of the transmission line in this area would be high. An area of high visual impact would also result due to visibility from the Red Buttes battle site which is proposed for designation as a state park. From this location, a small hill largely blocks the view to the existing 115-kV corridor. The proposed lines, being some 45-50 feet higher than the existing, would be visible from both the monument and the cemetery.

Overall visual impacts are summarized in Table S-2 and are also shown in Appendix F.

3. Alternative 2B

a. Impacts on Physical Resources

(1) Soils

The types of soil resource/constraint groups that would be subjected to high or very high levels of impacts along Alternative 2B are the same as those previously defined for the Thermopolis-Alcova alternatives.

Eight areas of high or very high soil erosion potential are located along Alternative 2B on Links 19/21, 24, and 27 (Table 5-16). Several scattered occurrences of high and very high soil erosion potential occur on Link 22 as well. These are typically high or moderate constraint soils with high or moderate water erosion potential on slopes of 15 to 30 percent or greater than 30 percent. Impacts to these soils from project construction are rated high and very high, depending on the availability of existing access roads.

Several potential wetland soil areas are crossed on Links 19/21, 22, 24, 27, and 39. These include potential wetland soils areas associated with riparian vegetation zones, as well as tracts of irrigated cropland. The impacts to the potential wetland soil areas associated with riparian vegetation are rated high or moderate for the construction phase and high or low for the operation/maintenance phase, depending on the availability of existing access roads. Mitigation procedures for soils on areas other than irrigated cropland were presented previously; mitigation procedures for irrigated cropland are discussed under Land Use.

In summary, construction of Alternative 2B would result in very high and high impacts to soils along 2.3 and 2.0 miles of line, respectively (Table S-2). Operation would result in 29.2 miles of low and 1.8 miles of moderate impact to soils. The overall impact rating is given in Appendix F. Impacts associated with removal of the 69-kV line were already described under the preferred alternative.

No significant impacts on geology, climate/air quality, or water resources would occur.

b. Impacts on Biological Resources

(1) Vegetation

The types of vegetation that would be subjected to moderate or greater levels of impact along Alternative 2B (Table 5-17) are:

- Riparian with trees
- Riparian with grass, sedge, cattails, or shrubs
- Juniper/conifer

A riparian tree area occurs on Link 27; one other riparian area is impacted at a high level (Link 22), and 10 are impacted at moderate levels (Link 22, 24, 27, 39). Five areas of juniper/conifer on Links 27 and 29 would be impacted along Alternative 2B. Types of impacts and mitigation for these vegetation types are the same as those discussed for the Thermopolis-Alcova alternatives.

(2) Wildlife

Important wildlife resources that would be impacted by Alternative 2B (Table 5-17) are:

- Bald eagle winter concentration area
- Buteo nest
- Prairie dog towns
- Critical winter range for mule deer
- Waterfowl habitat

Approximately 6.9 miles of bald eagle winter concentration area along the North Platte River (Links 19/21, 24, and 27) would receive high impacts during construction because of increased human activities and moderate impacts during operation due to the potential for collision. Moderate impacts along 0.1 mile of Alternative 2B are associated with a buteo nest (Link 19/21) and 1.2 miles of mule deer critical winter range (Links 19/21 and 22). Approximately 0.2 mile of prairie dog town must be surveyed prior to construction. Types of impacts and mitigation for

these important wildlife resources are the same as those discussed for the Thermopolis-Alcova system.

(3) Endangered or Threatened Flora and Fauna Species

The previous discussion for the preferred alternative in the Thermopolis-Alcova system applies to endangered or threatened species along this route.

(4) Summary

Construction of Alternative 2B would result in 0.2 mile of very high impact and 7.7 miles of high impact (Table S-2). Operation would result in an additional 0.2 mile of very high impact and 2.3 miles of high impact. Overall impact rating to biological resources is given in Appendix F. Alternative 2B has a similar level of impacts on biological resources as the preferred alternative. Impacts associated with removal of the 69-kV line were already described under the preferred alternative.

c. Impacts on Land Use

The main difference in land use impacts between Alternative 1B and Alternative 2B occurs just north of the Alcova area. As previously described, Alternative 1B follows the existing corridor (Link 23), whereas Alternative 2B (Link 22) follows an alignment that is generally one mile west of the existing Western corridor. Significant impacts are summarized in Table 5-18.

Link 22 is entirely on new ROW. Over most of its length, this segment is in a non-urban setting and has no conflicts with existing uses. It therefore has mostly a low operation impact (10.6 miles). One exception is the crossing of a small area of cultivated land. This results in 0.2 mile of high construction and operation impact.

The remainder of the route is the same as Alternative 1B. These impacts were already described. The net result is a similar overall level of impacts for Alternative 2B, as compared to the preferred alternative (see Appendix F). Overall impacts are summarized in Table S-2. Impacts of removing the 69-kV line have already been described.

d. Impacts on Cultural and Paleontological Resources

(1) Archaeological Resources

Alternative 2B would not significantly impact any known prehistoric sites (Table 5-19).

(2) Historical Resources

Other than what is described for Alternative 1B on Link 27, no additional impacts have been identified for known historical properties on Alternative 2B.

(3) Ethnological Resources

No known sites or areas of past or present heritage significance for Native Americans were identified in association with Alternative 2B.

(4) Paleontological Resources

A paleontological area on Link 22 would be impacted (high impact rating) by earth disturbing activities and vandalism during construction. No residual impacts to this site are expected. Dependent upon the significance of findings during the Class III inventory of the ROW, avoidance and/or monitoring of construction crews and activities may be necessary at this site.

(5) Summary

The overall impact rating (Table S-2 and Appendix F) for Alternative 2B is lower than for the preferred alternative due to its shorter distance through known paleontological areas.

e. Impacts on Visual Resources

This alternative differs from the Alternative 1B in only one way: Link 23 would be replaced by Link 22.

Along Link 22, structure (operation) impacts begin as moderate due to the VRM Class III designation and the high visibility of the route in this area adjacent to Highway 220. Although more removed from Highway 220, visibility remains high from mileposts 2.7-4.4, and impacts are moderate in this area as well. Construction impacts are moderate in two small segments near the beginning of this link due to the need for new access in this highly visible area.

Visual impacts for this alternative are summarized in Table S-2 and are also shown in Appendix F.

As compared to the preferred alternative, Alternative 2B would result in a slightly lower overall level of impacts because of its lower level of visibility.

4. Alternative 4C

a. Impacts on Physical Resources

(1) Soils

The types of soil resource/constraint groups that would be subjected to high or very high levels of impacts along Alternative 4C are the same as those previously defined for the Thermopolis-Alcova alternatives.

Eleven areas of high erosion potential are located along Alternative 4C on Links 19/21, 24, and 26 (Table 5-21). Scattered occurrences of high soil erosion potential occur on Link 22 as well. These are typically high or moderate constraint soils with high or moderate water erosion potential on slopes of 15 to 30 percent or greater than 30 percent. Impacts to these soils from project construction are rated high and very high, depending on the availability of existing access roads. The impacts, however, would be localized.

Severol potential wetland soil areas are crossed on Links 19/21, 22, 24, 26, 28, and 39. These include potential wetland soil areos associated with riparian vegetation zones, as well as trocts of irrigated cropland. The impacts to the potential wetland soil areas associated with riparian vegetation ore rated high or moderate for the construction phose and high or low for the operation/maintenance phase, depending on the availability of existing access roods. Mitigation procedures for soils on areas other than irrigated cropland were presented previously; mitigation procedures for irrigated cropland ore discussed under Land Use.

In summary, construction of Alternative 4C would result in very high and high impacts to soils along 5.0 and 3.9 miles of line, respectively (Table S-2). Operation would result in 28.2 miles of low and 2.4 miles of moderate impact to soils. The overall impact rating is given in Appendix F. Impacts associated with removal of the 69-kV line were already described under the preferred alternative.

No significant impacts on geology, climate/air quality, or water resources would occur.

b. Impacts on Biological Resources

(1) Vegetation

The types of vegetation that would be subjected to moderate or greater levels of impact along Alternative 4C (Table 5-22) are:

- o Riparian with grass, sedge, cattails, or shrubs
- o Juniper/conifer

Riparian areas without trees would be impacted along Links 19/21, 22, 24, 26, 28, and 39. Juniper/conifer on Links 19/21 and 26 would also be impacted. Types of impacts and mitigation for these vegetation types are the some as those discussed for the Thermopolis-Alcova system.

(2) Wildlife

Important wildlife resources that would be impocted by Alternative 4C (Table 5-22) are:

- o Bold eagle winter concentration area and flyway
- o Buteo nest
- o Prairie dog towns
- o Critical winter range for mule deer

Approximately one mile of bold eagle winter concentration area in Link 19/21 would receive high impacts due to potential disturbance during construction; this impact diminishes to moderate during the operations phose and is associated with potential collisions. An additional 1.4 miles of moderate operation impact results from the crossing of the Emigrant Gop Ridge flyway. Moderate impacts are associated with a buteo nest (Link 19/21) and 1.2 miles of mule deer critical winter range (Links 19/21 and 22). Approximately 0.2 mile of prairie dog town must be surveyed prior to construction. Types of impacts and mitigation for these important wildlife resources are the some as those discussed for the Thermopolis-Alcova system.

(3) Endangered or Threatened Floro and Fauna Species

The previous discussion for the preferred alternative in the Thermopolis-Alcova system applies to endangered or threatened species olong this route.

(4) Summary

Construction of Alternative 4C would result in 3.0 miles of high impact (Table S-2). Operation would result in on additional 1.4 miles of high impact. Overall impacts to biological resources for Alternative 4C are lower than the preferred alternative because of its avoidance of most of the North Platte River bald eagle winter concentration areas, as well as the sage grouse leks that are located in the vicinity of the preferred alternative (Appendix F). Impacts associated with removal of the 69-kV line were already described under the preferred alternative.

c. Impacts on Land Use

Alternative 4C is similar to Alternative 2B. The route follows the same alignment out of Alcova (Links 19/21, 22, 24). However, the route continues to follow an olignment (Links 26, 28, 34/41) west of the existing Western corridor rather than joining and following the existing corridor into Casper, as does Alternative 2B.

Link 26, on new ROW, is on non-urban land for most of its length. Where this is the case, the line would have no conflicts with the existing land use, and operational impacts would be low (7.81 miles). The exceptions are 0.13 mile of moderate operational impact where this segment enters a potential residential area of Cosper, and 0.63 mile of high construction and operation impact where the new ROW crosses irrigated agricultural land.

The remainder of the route (Links 35/37, 39) is, as in Alternative 2B, the some as the preferred alternative, and the impacts have previously been discussed. When compared to the preferred alternative, the net result is a slight reduction in the overall level of impacts. Table S-2 summarizes overall impacts.

d. Impacts on Cultural and Paleontological Resources

(1) Archaeological Resources

Alternative 4C would not significantly impact any known prehistoric sites (Table 5-24).

(2) Historical Resources

No significant impacts would occur to known historical resources along Alternative 4C. The Oregon-California-Mormon Trail intersects Alternative 4C on Links 26 and 28. Based upon the Notional Pork Service study (1981) of the trail, no ruts or other forms of physicol integrity have been identified for the segments of trail which intersect Alternative 4C. For this reason, no impacts were assessed, but a careful inspection would be mode during the Closs III inventory of any location where the trail enters a proposed ROW.

(3) Ethnological Resources

No known sites or areas of past or present heritage significance for Native Americans were identified in association with Alternative 4C.

(4) Paleontological Resources

Link 22 is also a part of Alternative 4C, thus, the impact assessment for the paleontological area on Link 22 is the same as for Alternative 2B. No other known paleontological areas would be impacted by Alternative 4C.

(5) Summary

One significant impact has been assessed for Alternative 4C with the crossing of a paleontological area on Link 22. Only Alternative 1B has a lower overall impact rating than Alternative 4C (Table S-2 and Appendix F).

e. Impacts on Visual Resources

The southern half of Alternative 4C is common with Alternative 2B, and its northern segment is common with the preferred alternative. Only Link 26 has not been discussed.

Link 26 would be on a new corridor, and structure contrasts would be strong throughout. Very little existing access occurs along this segment. Landform and vegetation contrasts would be generally moderate. Operation impacts would be high except for the first mile, which would be moderate as the alignment departs from the existing corridor. Construction impacts would be high in the McNales Creek Ridge - Emigrant Gap Ridge VRM Class II area. The remainder of the route is in VRM Class III lands, and impacts would be moderate wherever new road construction is required.

5. Alternative 7C

a. Impacts on Physical Resources

(1) Soils

The types of soil resource/constraint groups that would be subjected to high or very high levels of impacts along Alternative 7C are the same as those previously defined for the Thermopolis-Alcova alternatives.

Fifteen areas of high erosion potential, most of which are rather large in extent, are located along Alternative 7C on Links 13, 20, and 25 (Table 5-26). These are typically high or moderate constraint soils with high or moderate water erosion potential on slopes of 15 to 30 percent or greater than 30 percent. Impacts to these soils from project construction are rated to be high and very high depending on the availability of existing access roads. The impacts, however, would be localized.

Several potential wetland soil areas are crossed on Links 13, 20, 25, 28, and 39. These include potential wetland soil areas associated with riparian vegetation zones as well as tracts of irrigated cropland. The impacts to the potential wetland soil areas associated with riparian vegetation are rated high or moderate for the construction phase and high or low for the operation/maintenance phase,

depending on the availability of existing access roads. Mitigation procedures for soils on areas other than irrigated cropland were presented previously; mitigation procedures for irrigated cropland are discussed under Land Use.

In summary, construction of Alternative 7C would result in very high and high impacts to soils along 1.6 and 7.2 miles of line, respectively (Table S-2). Operation would result in 34.8 miles of low and 0.3 mile of moderate impact to soils. The overall impact rating is given in Appendix F. Impacts associated with removal of the 69-kV line were already described under the preferred alternative.

No significant impacts on geology, climate/air quality, or water resources would occur.

b. Impacts on Biological Resources

(1) Vegetation

The types of vegetation that would be subjected to moderate or greater levels of impact along Alternative 7C (Table 5-27) are:

- o Riparian with grass, sedge, cattails, or shrubs
- o Juniper/conifer

Riparian areas without trees would be impacted along Links 13, 20, 25, 28, and 39; juniper/conifer would be impacted along Link 25. Types of impacts and mitigation for these vegetation types are the same as those discussed for the Thermopolis-Alcova system.

(2) Wildlife

Important wildlife resources that would be impacted by Alternative 7C (Table 5-27) are:

- o Sage grouse lek and nesting areas
- o Buteo nest
- o Critical winter range for mule deer

Approximately 12 miles of sage grouse lek and nesting areas in Link 13 would receive moderate impact during construction and operation. Two buteo nests in Link 13 would be moderately impacted. About 1.8 miles of mule deer critical winter range in Link 13 would receive moderate construction and high operation impacts. The types of impacts and mitigation for these important wildlife resources are the same as those discussed for the Thermopolis-Alcova system.

(3) Endangered or Threatened Flora and Fauna Species

The previous discussion for the preferred alternative in the Thermopolis-Alcova system applies to endangered or threatened species along this alternative.

(4) Summary

Construction of Alternative 7C would result in 2.2 miles of high impact (Table S-2). Operation would result in an additional 2.1 miles of high impact. Overall impacts to biological resources for Alternative 7C are higher than the

preferred alternative (Appendix F). Impacts associated with removal of the 69-kV line were already described under the preferred alternative.

c. Impacts on Land Use

Alternative 7C is similar to the preferred alternative in its approach and route through Casper (Links 28, 34/41, 35/37, 39). The segment not previously discussed is Links 13 and 20.

Link 13 is in new ROW and a non-urban area for its entire length. No conflicts with the existing rural land uses occur. The operational impact of the new corridor is low for 13.75 miles, the total length of the segment.

Link 20 is entirely in new ROW also. For most of its length, the segment does not conflict with the existing non-urban land uses; 5.73 miles of low operational impacts occur for this condition. An area of conflict does exist as the link crosses irrigated agricultural land; high construction and operation impacts for 0.57 mile are the result.

As stated previously, the remainder of the route is the same as the preferred alternative. The net result when comparing Alternative 7C to the preferred alternative is a slightly higher overall level of impact, as shown in Appendix F.

d. Impacts on Cultural and Paleontological Resources

(1) Archaeological Resources

Alternative 7C would not significantly impact any known prehistoric sites (Table 5-29).

(2) Historical Resources

Alternative 7C crosses the southeastern corner of the proposed Willow Springs-Ryan Hill National Register District for 2.2 miles on Link 13 (Table S-2; Appendix F). Within the proposed district lie the well preserved wagon ruts of the Oregon-California-Mormon Trail which ascend Prospect Hill and the historic Willow Springs site. Neither of these locations would be impacted by Alternative 7C, which is located over 0.5 mile to the southeast. It should be noted that the district boundaries submitted with the initial National Register nomination application for this site have not yet been accepted by the President's Advisory Council on Cultural Resources. According to the Wyoming State Historic Preservation Office and the Bureau of Land Management, Casper District, the district boundaries may be moved closer to the wagon ruts on Prospect Hill (i.e., 0.25 mile on either side of this trail segment). At this time, however, impacts (very high impact rating for construction) have been assessed to this significant culture area according to the currently proposed district boundaries.

No other impacts to known historical properties have been identified along Alternative 7C. Where the Oregon-California-Mormon Trail intersects or parallels the proposed ROW on Links 20, 25, and 28, no ruts or other forms of physical integrity have been identified.

(3) Ethnological Resources

No known sites or areas of past or present heritage significance for Native Americans were identified in association with Alternative 7C.

(4) Paleontological Resources

One paleontological area would be moderately impacted by construction activities for 0.1 mile on Link 13 of Alternative 7C. Dependent upon the significance of findings during the Class III inventory of the ROW, avoidance and/or monitoring of construction activities may be necessary at this site.

(5) Summary

Alternative 7C has the second highest overall impact rating of all the proposed alternatives (Table S-2 and Appendix F). This high rating is due mainly to the fact that Alternative 7C crosses the proposed Willow Springs-Ryan Hill National Register District.

e. Impacts on Visual Resources

All but Links 13 and 20 have been previously discussed under the preferred alternative.

Link 13 would be on a new alignment. Structure contrasts would therefore be strong throughout, and a significant portion would require new access road. Approximately the first five miles, however, would not be visible from ranches, roads, or other sensitive viewpoints. Impacts would be low to none throughout this segment except for approximately the first 0.5 mile which would have moderate operation impacts due to visibility from Highway 220.

Beginning near milepost 5.3, the alignment would become visible from the Oregon Trail Road and remain visible for all but the last 0.4 mile. From milepost 5.3 to 5.9, this alternative is in VRM Class IV lands resulting in moderate operation impacts. The remainder (some 7.5 miles) is in VRM Class III lands and would result in high operation impacts due to its prominence from the Oregon Trail Road and Oregon Trail historic sites. Approximately 5 miles of moderate construction impacts would result in this area due to the need for new access.

The first half of Link 20 would not be visible and would have low impacts. The second half would be visible from the Oregon Trail road, residences, and the Rasmus Lee Road. This route would be on a new alignment crossing an alternating pattern of VRM Class III and IV lands. Visual impacts from operation would be high in the VRM Class III areas and moderate in the Class IV areas. Approximately 0.7 miles of construction impacts would result. These would be moderate and would occur near the end of the link.

Replace Section G. Mitigation with the following. Note that the material included in the Addendum to the DEIS that pertains to cultural resources is incorporated here.

G. MITIGATION

Western's standard committed mitigation measures are listed in Chapter 3 - H, 2, C, (10), and Table 3-3 (Revised) in this FEIS. Impacts were assessed on the basis of these committed mitigation measures.

Locations where additional site-specific mitigation measures will or may be required were identified during the analysis of impacts. These potential additional measures are listed in the Series 5 tables in the Maps and Tables Volumes of the DIES. The tables give, in addition, impacts together with estimates of residual impact levels; i.e., impacts remaining after application of the site-specific mitigation measures.

These site-specific measures, together with others that have been formulated, clarified, or restated in response to agency comments on the DEIS or as a result of ongoing agency consultation, are summarized below. Western would work out details of the application of these measures with the agencies responsible for the resources, or with private landowners during the detailed design phases of the project.

1. Physical Resources

In addition to Western's standard erosion control practices described in Chapter 3 in this FEIS, site-specific measures to mitigate impacts to physical resources include the following:

- o Minimize new road construction.
- o Minimize topsoil disturbance.
- o Stockpile topsoil in area of severe disturbance and respread it after completion of construction.

The need for applying these measures would be limited to isolated areas where steep slopes require access improvements and earth leveling for the safe operation of construction equipment at tower erection sites.

In one instance, additional measures to mitigate impacts to soil resources may be necessary. This is at the crossing by the preferred Alcova-Casper alternative of Emigrant Gap Ridge (Link 25, Mile 4). At this location, the BLM may restrict the construction of new access ways, thus requiring construction using balloon-tired all terrain vehicles and/or helicopter. Similar restrictions might be required at the crossing of the ridge at Link 26, Miles 4 and 5.

2. Biological Resources

Site-specific measures to mitigate impacts to vegetation would include the following:

- o Limited area disturbed to the minimum necessary.
- o Restrict disturbance of vegetation.
- o Selectively remove hazard trees only.

Mitigation for endangered or threatened wildlife species would be designed during formal consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act. Mitigation for other species of concern (e.g., raptors, sage grouse) would be designed during informal consultation with the appropriate federal and state agencies. All mitigation would be designed on a case-by-case basis. The sensitive areas along the selected routes that were identified during the baseline inventory and environmental review process would be re-examined, prior to construction, to ascertain their status. For example, prairie dog towns would be surveyed for black-footed ferrets, in accordance with the U.S. Fish and Wildlife Service guidelines, and raptor nests that might be disturbed by construction activity during the critical season would be checked to determine if there would be nesting activity that year. Impacts would then be assessed and, if necessary, site-specific mitigation measures designed in cooperation with the appropriate agencies.

Site-specific measures to mitigate impacts to wildlife would include seasonal restrictions on construction, minor adjustments in the location of structures, use of horizontal circuit configuration with high visibility orange aviation markers (or similar devices) on the shield wires in areas where raptors or waterfowl may collide with the line, and provision of devices on the pole ground wire to remove the hazard of electrocution to raptors that may exist with low-voltage structures (Types A and B, Figure 3.3, Revised). Where a 69-kV line is removed and not replaced, Western will, if requested, arrange to leave a few structures in place as raptor perches in locations selected by State Game & Fish.

3. Land Use

Site-specific measures to mitigate impacts to land use would include the following;

- o Avoid placing structures within fields.
- o Adjust location of structures.
- o Avoid locating structures within the track of the outermost wheel of center pivot irrigation rig.
- o Before construction, determine potential need to mine sand and gravel areas that would be precluded from mining if construction occurred first.

4. Cultural Resources

Western intends to comply with the requirements of Section 106 of the National Historic Preservation Act, and will do so prior to construction. This compliance

will be achieved by conducting a Class III (100%) cultural resources survey on lands affected by the project, by assessing the eligibility of all cultural resources for inclusion in the National Register of Historic Places, and by application of appropriate mitigation measures as described below. The extent of the lands affected by the project and, therefore, subject to Class III Survey were discussed with BLM and Wyoming State Historic Preservation Office on March 9, 1983, and agreed to be as follows:

- o New 230/345-kV lines; survey 200' centered on the alignment.
- o New or rebuilt 69/115-kV lines; survey 100' centered on the alignment.
- o Removal of existing 69-kV line with no construction; no survey except in any area where existing data indicate that significant cultural resources exist, or are likely to be found, on the ROW.

On completion of the Class III survey, Western will prepare a report that will include: descriptions and evaluations of the cultural and paleontological resources located within the survey area, maps showing the locations of the resources, and recommendations for mitigating impacts to specific significant resources, i.e., those eligible for or enrolled on the National Register of Historic Places. The report, with maps, will be utilized by Western as necessary to adjust the detailed siting, design and construction procedures for the towers, roads, and other elements of the project, including the proposed substation site. Western will prepare a plan to mitigate impacts to significant cultural resources either through avoidance or data recovery in accordance with 36 CFR 800.

When mitigation of impacts to a significant cultural resource, i.e., a site or feature eligible for the NRHP, is by avoidance (as listed in the Class III Survey Report), the specific procedures will include the following:

- o Prohibit blading or other earth disturbing activities associated with construction within and bordering a given cultural site area.
- o Place towers so as to span cultural sites. In the case of large cultural sites where spanning the entire area is not feasible, individual tower locations will be identified and assessed for potential impacts. If necessary, tower placements will be relocated within large sites into areas that are not sensitive to physical impacts.
- o Monitor construction activities as necessary within the vicinity of the site area. Monitoring will be by a qualified professional archaeologist.

If avoidance of a specific site is not feasible due to engineering or resource constraint, two options are available:

- o Re-route the line around the site area, outside of the ROW. For extensive site areas, the re-routed portion of the line would require a Class III survey.
- o Data recovery within site area (i.e., excavation) following a research design agreed to by the State Historic Preservation Officer.

Additional areas outside the transmission line ROW may need a Class III cultural survey. These areas include additional ROW for access ways and for construction yards. In each case, the area subject to disturbance would be surveyed.

The application of the above site-specific mitigation measures would be determined during consultation between Western, the State Historic Preservation Office, and the BLM.

5. Visual Resources

As part of Western's standard mitigation measures, as described in Chapter 3, the finish of all metal parts of all structure types would be dull and nonspecular. "Corten" steel structures are proposed to be used on the Thermopolis-Alcova preferred alternative from the south end of Link 1 to the southeast end of Link 10a. These have a dull, dark reddish brown finish. All other steel structure types would have a dull grey finish, either painted or galvanized.

Measures to mitigate site-specific visual impacts would include the following:

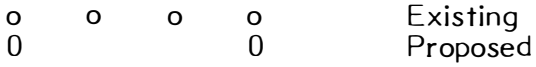
- Selective road placement. Where new access is required for construction, the route of least disturbance will be identified and used. Minimal grading and clearing should be done. The route should generally not parallel the ROW between towers in areas where this measure is prescribed. Rather, in these areas access should be selectively located to reach individual tower sites by independent means over the route of least disturbance. Access disturbance in these areas should be rehabilitated to the greatest degree practicable. This measure would significantly reduce landform and/or vegetation disturbance contrasts.

- Access to tower sites should be done by overland travel without clearing, blading, or grading. This would reduce the extent and duration of landform and vegetation contrasts.

- Towers will be placed so as to avoid sensitive features and/or to allow conductors to span such feature. Western will consult with land management agencies and private landowners to determine sensitive tower placement, and whenever possible, will place towers in the least visible locations. This mitigation is also relevant in certain situations of strong to moderate landform contrast where sensitive tower location can reduce both structure visibility and landform disturbance contrast. Sensitive tower location might mean avoiding skyline situations by placing a tower to one side of a ridge or adjusting tower location to avoid highly visible locations and utilize screening of nearby landforms.

- Towers will be placed so as to allow conductors to cross sensitive features (e.g., highways or rivers) with maximum feasible setback. This would reduce prominence of the structures.

- Standard tower spacing will be modified to correspond with spacing of existing transmission line towers. Modify normal span to correspond with existing towers, not necessarily at every existing location.



- Where visible from sensitive viewpoints, debris resulting from blasting will be removed, providing such recovery will not result in a greater overall degree of visible disturbance. This will reduce visible landform disturbance.

List of Preparers & Contributors

Chapter 6

CHANGES AND ADDITIONS TO THE DEIS
CHAPTER 6 - LIST OF PREPARERS

No changes or additions.

Agencies,
Organizations or
Persons
Receiving a Copy of
this Statement

Chapter 7

CHANGES AND ADDITIONS TO THE DEIS
CHAPTER 7 - AGENCIES, ORGANIZATIONS AND PERSONS RECEIVING A COPY OF THE DEIS

The following additional agencies, organizations, and persons have received a copy of the DEIS:

FEDERAL AGENCIES

Department of Energy

Bonneville Power Administration

Department of the Interior

Bureau of Land Management, Rock Springs, WY
Bureau of Reclamation, Mills, WY

Tennessee Valley Authority

OTHER ORGANIZATIONS AND/OR INDIVIDUALS

Environmental Management Services Company

Harza Engineering Company

Independent Electric Co., Inc.

MSM/SP Group

Meridian Land and Minerals

Miner and Miner

Montana-Dakota Utilities

Northern Plains Resource Council

Ontario Hydro Library

Public Service Electric and Gas Company

Sonosky-Chambers-Sachse-Guido

University of Massachusetts, Department of Landscape Architecture and Regional Planning

Utility Data Institute, Inc.

Senator Malcolm Wallop

Western Research Archaeology

James Wolf

Comments on DEIS and Responses

Chapter 8

CHAPTER 8 - COMMENTS ON THE DEIS

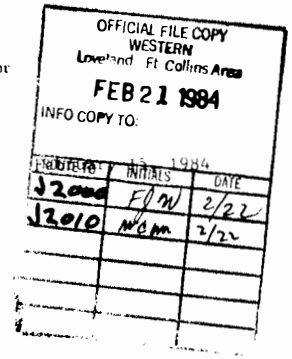
The letters listed below are in the order in which they are dated, except that the letters from Wyoming State Agencies that were sent via the Wyoming Executive Department are grouped behind the cover letter from that department. The letters are followed by a list of comments received and responses given at the Public Hearings on the project, held on the 13th, 14th, and 15th of March.

1 Montana, Office of the Lieutenant Governor
2 U.S. Department of the Interior, National Park Service
3 Ed Marston (High Country News)
4 U.S. Department of Housing and Urban Development
5 U.S. Department of the Interior, Bureau of Reclamation (Denver)
6 U.S. Department of Agriculture, Soil Conservation Service
7 U.S. Department of Transportation, Federal Aviation Administration
8 U.S. Department of the Interior, Bureau of Reclamation (Mills, Wyoming)
9 D. Jackson (Sable Run)
10 B. Gutzke (Sable Run)
11 H. Willson (Sable Run)
12 Hot Springs County Planning
13 Hot Springs County REA, Inc.
14 Rocky Mountain Wind Energy Association
15 Wyoming Executive Department
16 - State Engineer's Office
17 - Wyoming State Highway Department
18 - State Historic Preservation Office
19 - Wyoming Recreation Commission
20 - Department of Economic Planning and Development
21 - The Geological Survey of Wyoming
22 - Public Service Commission
23 - Office of Industrial Siting Administration
24 Department of the Army, Omaha District Corps of Engineers
25 Wyoming Game and Fish Department
26 M. Kinner (Riverfield Subdivision)
27 U.S. Environmental Protection Agency
28 U.S. Department of the Interior, Office of Environmental Project Review
29 Tri-State Generation and Transmission Association, Inc.
30 Big Horn Basin Wyoming, RC&D Project
-- Public Hearing Comments

Letter #1

GEORGE TURMAN
LIEUTENANT GOVERNOR

State of Montana
Office of The Lieutenant Governor
Helena 59620



Western Area Power Administration
Loveland-Ft. Collins Area Office
Attn: J 2010
P. O. Box 3700
Loveland, Colorado 80539

Re: Draft Environmental Impact Statement
Thermopolis-Alcova-Casper, Wyoming Transmission Line Project
Montana State IGR Clearinghouse SAI No. MT840215-360-X

Gentlemen:

The above captioned draft environmental impact statement has been received in our office. In order to provide notification to parties that may be interested in review and/or comment on the DEIS, it will be listed in the next Intergovernmental Review Bulletin issued weekly by this office.

Any inquiries or comment regarding the proposal will be directed to your office. We have asked that comments be submitted to your office by April 6, 1984.

On a temporary basis, until more details are known about federal agencies' procedures under Presidential Executive Order 12372, this Clearinghouse intends to take no further action on this DEIS.

Cordially yours,

M. Agnes Lipperian
Clearinghouse Manager

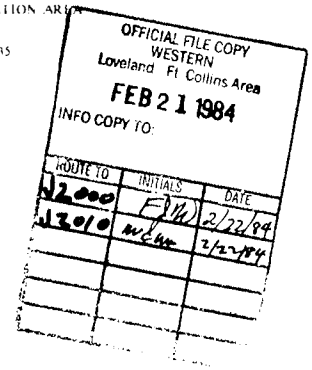
RESPONSES

No response necessary.

Letter #2

United States Department of the Interior
NATIONAL PARK SERVICE
BIGHORN CANYON NATIONAL RECREATION AREA
P.O. BOX 458
FORT SMITH, MONTANA 59035

IN REPLY REFER TO



L76

February 16, 1984

Western Area Power Administration
Loveland-Fort Collins Area Office
Attention: J2010
P.O. Box 3700
Loveland, Colorado 80539

Dear Sir:

We have reviewed the Draft Environmental Impact Statement for the Thermopolis-Alcova-Casper Transmission Line Project in Wyoming. We have no comments as the proposal will not adversely effect Bighorn Canyon National Recreation Area or its immediate environs.

We are returning the Impact Statement to you for your use elswhere.

Sincerely,

William G. Binnewies
Superintendent

cc:
Regional Director, RMR

RESPONSES

No response necessary.

Letter #3

2/18/87

Dear Ms. Peter Ungerman:

I thought your Thermopolis to Casper 230/345-kV line EIS deficient in the following two areas:

A 1) Lack of a regional map showing major generation and transmission, so we could understand how this line fits into the whole;

B 2) The second paragraph on page S-3, dealing with energy conservation, appears nonsensical. Conservation, by reducing the need for power, reduces the need to transmit power. You should treat, fairly, the conservation question.

Ed Mumford

RESPONSES

A - A map/diagram showing all transmission systems, bath publicly and privately owned, in Wyoming, Colorado, and portions of adjacent states, is included in this FEIS. The Thermopolis-Alcova portion of the project is shown as a dashed red line. The Alcova-Casper line (being scheduled for construction later) is not shown, but would appear to the northwest of the three existing lines between Alcova and Casper.

B - Western agrees that conservation decreases the need for transmission lines compared to no conservation. However, electrical load growth occurs even under the most favorable conservation scenarios. Power supplies will almost double even under a two percent annual growth of load.

The portion of Wyoming which will benefit from the project does not receive even the level of reliability and low cost service that most people have taken for granted for years.

The writer can be assured that Western is committed to "treating fairly the conservation question."

Letter #4

U.S. Department of Housing and Urban Development
Denver Regional Office, Region VIII
Executive Tower
1405 Curtis Street
Denver, Colorado 80202

February 22, 1984

Mr. Bill Melander
Western Area Power Administration
PO Box 3700
Loveland, CO 80539

Dear Mr. Melander:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement for the Thermopolis-Alcova-Casper, Wyoming, Transmission Line Project.

Your draft has been reviewed with specific consideration for the areas of responsibility assigned to the U.S. Department of Housing and Urban Development. This review considered the proposal's compatibility with local and regional comprehensive planning and impacts on urbanized areas. Within these parameters, we find this Document adequate for our purposes.

If you have any questions regarding these comments, please contact Mr. Howard S. Kutzer of my staff, at 837-3102.

Sincerely,

Robert J. Matuschek
Director
Office of Community Planning
and Development, 8C

RESPONSES

No response necessary.

Letter #5

United States Department of the Interior

BUREAU OF RECLAMATION
REGIONAL OFFICE, LOWER MISSOURI REGION
BUILDING 20, DENVER FEDERAL CENTER
P.O. BOX 25247
DENVER, COLORADO 80225

IN REPLY REFER TO: LM-150
120.1

FEB 23 1984

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ROUTE TO	SIGNATURE	DATE
J0000	BL	2/24
J2000	FMW	2/27
J2010	WOMM	4/27

Mr. Peter G. Ungerman
Area Manager
Western Area Power Administration
Loveland-Fort Collins Area Office
P.O. Box 3700
Loveland, CO 80539

Dear Mr. Ungerman:

We have reviewed the Draft Environmental Impact Statement for the Thermopolis-Alcova-Casper, Wyoming Transmission Line Project and have determined that the proposed action will have no direct impact on Bureau facilities located in Wyoming.

A Due to the large number of wildlife species indigenous and migrating through the construction area, the timing of actual construction should be such that it takes place during the least critical time during their life cycles.

We have no further comments at this time.

Sincerely yours,

Richard B. Eggen
Regional Environmental Officer

RESPONSES

A - The anticipated impacts to wildlife for each of the alternatives, together with the site-specific mitigation measures proposed, are described in Chapter 5 of the DEIS and listed in the tables included in the Maps and Tables Volume. The wildlife species of concern, where there is a potential for reducing impacts by constructing at specific times of the yeor, include bald eagle, golden eagle, pronghorn antelope, mule deer, sage grouse, and to some extent waterfowl and black-footed ferret. In these cases, as indicated in the tables and as summarized in Chapter 5.G.2, consultation with the appropriate agencies (State Game and Fish Department, U.S. Fish and Wildlife Service and Bureau of Land Management) will take place during the detailed design phases of the project to determine the site-specific mitigation measures required along the selected routes. This consultation would likely include a review of the probable impacts, taking into consideration existing levels of disturbance, topographic screening, and the observed presence of the species at the actual site of the action as determined by field survey prior to construction. Any necessary seasonal construction restrictions will then be agreed between Western and the agency representatives. No construction will begin until the provisions of Section 7 of the Endangered Species Act have been met.

Letter #6

United States Department of Agriculture

Soil Conservation Service

Room 3124
100 East B Street
Casper, Wyoming 82601

February 28, 1984

Mr. Peter G. Ungerman, Area Manager
Loveland-Ft. Collins Area Office
Department of Energy
P.O. Box 3700
Loveland, CO 80539

Dear Mr. Ungerman:

The Soil Conservation Service in Wyoming has reviewed the draft environmental impact statement on the Thermopolis-Alcova-Casper transmission line project and has the following comments:

A 1. In the final plan formulation, care should be taken whenever practical to locate the towers other than on agricultural farmland.

B 2. During construction plan development, appropriate provisions need to be made to assure necessary erosion control measures (both permanent and temporary) are constructed and maintained.

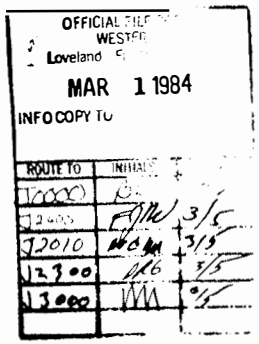
C 3. During construction activities, all existing erosion control measures should be avoided.

D 4. Plans made to revegetate disturbed areas need to assure that grass species utilized are consistent with existing vegetation or adapted to the site's soil capabilities.

E Our agency would be available to provide information concerning recommended erosion control measures and specifications as well as grass varieties and soil capabilities, if desired.

Sincerely,

Frank S. Dickson
State Conservationist



The Soil Conservation Service is an agency of the Department of Agriculture

RESPONSES

A - In the process of locating the alternative routes, cultivated agricultural land was one of the major constraints, and it was avoided wherever possible. Almost all of the few crossings that do occur along the preferred alternative locations for the project elements either follow existing transmission lines, or existing fence lines, or are short enough that the structures can be located on either side of the cultivated area. During the design phases of the project, the precise locations of structures in sensitive areas will be determined after consultations, where possible, with affected landowners.

B - Chapter 3 (H.2.c.(10). and Table 3-3) and Chapter 5 (G - Mitigation) in the FEIS and the introductory material to Tables 5-1, 5-6, 5-11, 5-16, 5-21, 5-26, and 5-31 in the DEIS describe the erosion control measures that will be taken. Prior to construction, Western will consult with the Bureau of Land Management (during development of the required Plan of Operations for BLM lands), other appropriate agencies including, if necessary, the Soil Conservation Service, and individual landowners to determine details of the specific application of these measures.

C - Western will require all its construction contractors to avoid existing erosion control features wherever possible and where damage to these is unavoidable, to restore them to their original condition.

D - The species used in areas to be re-seeded will be suited to the site's soils and consistent with its existing vegetation. The species will be determined in consultation with the Bureau of Land Management, private landowners, and other appropriate agencies including, if necessary, the Soil Conservation Service.

E - See responses B and D above.

Letter #7

U.S. Department
of Transportation
Federal Aviation Administration

Northwest Mountain Region
Colorado, Idaho, Montana,
Oregon, Utah, Washington,
Wyoming

17900 Pacific Highway South
C 68966
Seattle, Washington 98168

MAR 1 1984

Mr. Peter G. Ungerman
Area Manager
Western Area Power Administration
P.O. Box 3700
Loveland, Colorado 80539

Dear Mr. Ungerman:

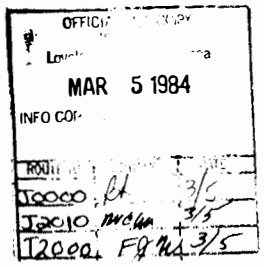
A We have reviewed your draft environmental impact statement (EIS) for the proposed Thermopolis-Alcova-Casper, Wyoming Transmission Line Project and do not foresee any impact on aviation or its activities.

B Naming the airports or landing strips on figure 4.15 and the appropriate link maps would be helpful to the EIS reader. Please note that figures 4.15 and 5.1 show an airport located on link map 3f, however, the airport appears on link map 3e.

Thank you for the opportunity to review your proposed project.

Sincerely,

Joseph W. Harrell
Policy and Planning Officer



RESPONSES

A - No response necessary.

B - The airstrips that occur along the preferred routes of any of the project elements are:

- Link 1 - Thermopolis Airport
- Link 2c, Mile 2 - Fuller Ranch Airstrip
- Link 2c, Mile 8 - Bridger Creek Airstrip
- Links 5 and 6 - Lost Cabin Airport
- Link 3e - Meigh Ranch Landing Field
- 69-kV Rebuilt, Arminto-Casper
  - Hells Half Acre Airstrip (may be inactive)
  - Casper Airport

The Meigh Ranch Landing Field is wrongly located on Figure 4.15 in the DEIS. It should appear at a similar distance from the Boysen to Alcova line but to the west of Raderville, west of the Natrona County line. It is correctly located on Link Map 3e.

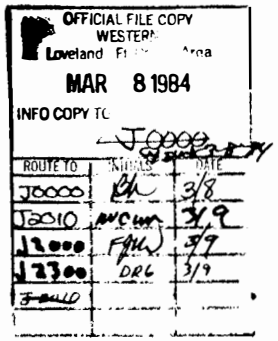
Letter #8

United States Department of the Interior

BUREAU OF RECLAMATION
NORTH PLATTE RIVER PROJECTS OFFICE
P.O. BOX 1630
MILLS, WYOMING 82644

IN REPLY REFER TO: C-420
120.1

MAR 6 1984



Mr. Peter G. Ungerman
Area Manager
Department of Energy
Western Area Power Administration
Loveland-Fort Collins Area Office
P.O. Box 3700
Loveland, CO 80539

Dear Mr. Ungerman:

This office has reviewed the Draft Environmental Impact Statement for the Thermopolis-Alcova-Casper, Wyoming Transmission Line Project and offer the following comments:

A The Alcova-Casper line will involve crossings of the Casper Canal and laterals of the Kendrick Project. These facilities are on lands or easements held by the Bureau of Reclamation and operated and maintained by the Casper-Alcova Irrigation District. Bureau of Reclamation controlled Canal Act rights-of-way extend 50 feet either side of the maximum attainable water level within the canal system. Placement of power line structures or use of canal access roads within the rights-of-way will require contractual approval of this office and consent of the Casper-Alcova Irrigation District.

Removal of any segments of the existing Alcova-Casper 69kV line and construction and subsequent maintenance of the new 230/345 kV line that crosses irrigation facilities must be accomplished without interference to delivery of water or adversely affecting the capability of the Casper-Alcova Irrigation District to perform operation and maintenance activities on the canal system.

If you have any questions or need additional information, please contact Tony Morton of this office at telephone number (307) 261-5664 or Ken Randolph of this office at telephone number (307) 261-5675.

Very truly yours,

David G. Wilde

David G. Wilde
Project Manager

RESPONSES

A - During the detail design phases of the project, prior to construction, Western will coordinate with the Bureau of Reclamation and with the Casper-Alcova Irrigation District to arrange for use of the canal access roads and possible use of canal right-of-way (ROW) for location of structures. At that time, any possible conflict between transmission line construction and canal operation/maintenance activities arising from scheduling or transmission line construction procedures will be identified and resolved. Agreement will also be reached on the required clearance over canals so that the free movement of canal maintenance equipment will not be significantly affected.

Letter #9

State Bank

First State Bank
Fifth and Arapahoe / Thermopolis, WY 82443
307-864-5561

Donald L. Jackson, President

March 16, 1984

Peter Ungerman
Department of Energy
Western Area Power Administration
Loveland-Fort Collins Area Office
P.O. Box 3700
Loveland, CO 80539

Dear Mr. Ungerman,

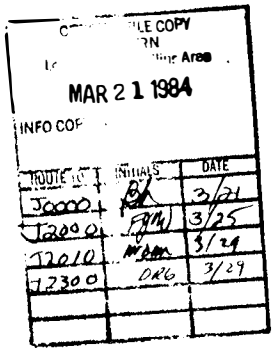
A Thank you for the opportunity to comment on the draft EIS, regarding the environmental effects of the transmission line between Thermopolis and Alcova. I am the developer and land owner, along with 10 other residents, in the Sable Run Subdivision. Discussions with George Dearborn, the Hot Springs County Planner, indicate that the transmission lines were to run below the red bluffs at Sable Run, rather than contiguous to the existing route of the transmission lines. If this were the case, it would destroy the scenic view from Sable Run overlooking the Wind River Canyon. This is a very exclusive Subdivision only because of that view. Therefore, we appeal to you to review this route in that light.

Thank you once again for the opportunity to make these comments.

Very truly yours,

Donald L. Jackson
President

DLJ;vg



RESPONSES

A - The proposed route in this area is shown on the revised Link Map 2a in this FEIS. This route has been adjusted from that shown on Link 2a in the DEIS, and (where west of the river) is now located nearer to the existing 69-kV line. It will not significantly affect Sable Run Subdivision. A route alternative below the red bluffs at Sable Run was briefly considered as one of many possible routing strategies, but did not appear to offer any advantages over various potential routes in the vicinity of the existing line. Therefore, no route below the red bluffs was examined in detail.

Letter #10

March 19, 1984

OFFICIAL FILE COPY
WESTERN
Loveland - Ft. Collins Area
MAR 21 1984
INFO COPY TO:

ROUTE TO	INITIALS	DATE
J0000		3/21
J2000		3/25
J2010		3/24
J2300		3/29

Peter Ungerman
Department of Energy
Western Area Power Administration
Loveland-Fort Collins Area Office
P.O. Box 3700
Loveland, CO 80539

Dear Mr. Ungerman,

Thank you for the opportunity to comment on the draft EIS, regarding the environmental effects of the transmission line between Thermopolis and Alcova. I am a land owner, along with 10 other residents, in the Sable Run Subdivision. Discussions with George Dearborn, the Hot Springs County Planner, indicate that the transmission lines were to run below the red bluffs at Sable Run, rather than contiguous to the existing route of the transmission lines. If this were the case, it would destroy the scenic view from Sable Run overlooking the Wind River Canyon. This is a very exclusive subdivision only because of that view. Therefore, we appeal to you to review this route in that light. A

Thank you once again for the opportunity to make these comments.

Very truly yours,

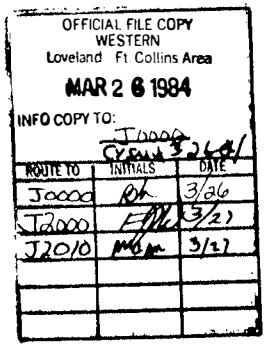
Bruce Gutzke
900 So. 14th
Thermopolis, Wy 82443

BG;vg

RESPONSES

A - The proposed route in this area is shown on the revised Link Map 2a in this FEIS. This route has been adjusted from that shown on Link 2a in the DEIS, and (where west of the river) is now located nearer to the existing 69-kV line. It will not significantly affect Sable Run Subdivision. A route alternative below the red bluffs at Sable Run was briefly considered as one of many possible routing strategies, but did not appear to offer any advantages over various potential routes in the vicinity of the existing line. Therefore, no route below the red bluffs was examined in detail.

Letter #11



March 19, 1984

Peter Ungerman
Department of Energy
Western Area Power Administration
Loveland-Fort Collins Area Office
P.O. Box 3700
Loveland, CO 80539

Dear Mr. Ungerman,

Thank you for the opportunity to comment on the draft EIS, regarding the environmental effects of the transmission line between Thermopolis and Alcova. I am a land owner, along with 10 other residents, in the Sable Run Subdivision. Discussions with George Dearborn, the Hot Springs County Planner, indicate that the transmission lines were to run below the red bluffs at Sable Run, rather than contiguous to the existing route of the trnasmission lines. If this were the case, it would destroy the scenic view from Sable Run overlooking the Wind River Canyon. This is a very exclusive subdivision only because of that view. Therefore, we appeal to you to review this route in that light. **A**

Thank you once again for the opportunity to make these comments.

Very truly yours,

Howard T. Wilson, M.D.
P.O. Box 710
Thermopolis, Wy 82443

HTW;vg

RESPONSES

A - The proposed route in this area is shown on the revised Link Map 2a in this FEIS. This route has been adjusted from that shown on Link 2a in the DEIS, and (where west of the river) is now located nearer to the existing 69-kV line. It will not significantly affect Sable Run Subdivision. A route alternative below the red bluffs at Sable Run was briefly considered as one of many possible routing strategies, but did not appear to offer any advantages over various potential routes in the vicinity of the existing line. Therefore, no route below the red bluffs was examined in detail.

Letter #12

World's Largest Mineral Hot Springs

HOT SPRINGS COUNTY PLANNING
County Courthouse
4th & Arapahoe
Thermopolis, Wyoming 82443
(307) 864-2732

Thermopolis
East Thermopolis
Kirby

March 27, 1984

Mr. Peter G. Ungerman
Area Manager
Department of Energy
Western Area Power Administration
Loveland-Fort Collins Area Office
P.O. Box 3700
Loveland, CO 80539

Dear Mr. Ungerman:

The Hot Springs County Planning Commission wishes to express their support for Thermopolis-Alcova-Casper Transmission Line project.

At the regular March 1984 county planning commission meeting the commission passed a resolution supporting the transmission line project along with the following explanations and suggestions.

A 1. The Planning Commission feels that improving electrical power availability and the delivery structure will benefit both the county and the entire region.

B 2. The planning commission also encourages the U.S. Department of Energy Western Area Power Administration to conform with existing county policies on power line placement as much as is possible. These policies encourage the placement of new power lines within existing corridors as much as is feasible.

Thank you for this opportunity to comment on the proposed power line project.

Sincerely,

Dave Hammond

Dave Hammond
Chairman

RESPONSES

A - No response necessary.

B - Western will continue to coordinate, as appropriate, with the County, via the Planning Department, on details of siting the proposed Thermopolis-Alcova line. The portion of the line that occurs within Hot Springs County is shown on Link Maps 1 and 2b in the DEIS and Link Map 2a (Revised) in this FEIS. These show that most of the route occupies the ROW of an existing 69-kV line (which will be removed). In three cases, the new route deviates from the existing ROW in order to avoid obstacles and avoid or reduce impacts.

Letter #13

HOT SPRINGS COUNTY REA, Inc.

P. O. BOX 630—504 FREMONT STREET / THERMOPOLIS, WYOMING 82443 / PHONE 307-864-3157

March 27, 1984

OFFICIAL FILE COPY
WESTERN
Loveland - Ft. Collins Area
MAR 29 1984
INFO COPY TO:

ROUTE TO	INITIALS	DATE
J0000	LES	3/29
J2000	FOW	3/30
J2010	MWM	3/30

Western Area Power Administration
Loveland - Fort Collins Area Office
P. O. Box 3700
Loveland, Colorado 80539

Attn: Mr. Bill Melander

Gentlemen:

As the Manager of Hot Springs R.E.A., I recently attended the meeting that was held in Thermopolis concerning the environmental impact statement for the proposed electric transmission system between Thermopolis and Alcova.

Because Hot Springs County R.E.A. has a vital interest in the development of this transmission facility, at the meeting of the Board of Directors of Hot Springs County R.E.A. held on March 16, 1984, the enclosed resolution was passed, and I am submitting it to you in our effort to support having this transmission line completed.

Sincerely,

HOT SPRINGS COUNTY R.E.A., INC.

James D. Kirsch

James D. Kirsch
Manager

JDK/rl
cc: Dan MacLeod, Tri-State

Enclosure

RESPONSES

No response necessary.

#13 Cont.

HOT SPRINGS COUNTY REA, Inc.

P. O. BOX 630—504 FREMONT STREET / THERMOPOLIS, WYOMING 82443 / PHONE 307-864-3157

RESOLUTION

BE IT HEREBY RESOLVED that the Board of Directors of Hot Springs County R.E.A., Inc., support the construction of the Thermopolis to Alcova 230 KV transmission line project for the following reasons:

1. Electrical energy is vital to the development of the area which is served by Hot Springs County R.E.A., Inc.

2. Benefits from this transmission project spply directly to a large number of the members of Hot Springs County R.E.A., Inc.

3. The line will replace an older lower voltage line in approximately the same location.

4. Installation of this new line will increase the reliability of central station electric service within our service area.

5. The new line will triple the ability to deliver bulk power to the service area over this transmission facility.

CERTIFICATION

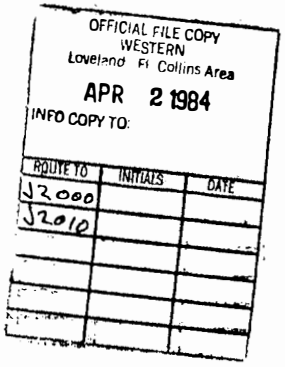
I, Harold Thompson, hereby certify that I am the Secretary of Hot Springs County Rural Electric Association, Inc., and the foregoing is a true and correct copy of an excerpt of the minutes of the Board of Directors meeting held March 16, 1984, at the Hot Springs County R.E.A., Inc., Headquarters Building, Thermopolis, Wyoming.

Harold Thompson, Secretary

Letter #14

Rocky Mountain
WIND
ENERGY
Association

WESTERN AREA POWER ADMINISTRATION



Gentlemen;
It is with deep interest that I reviewed your draft EIS for the Thermopolis-Alcova-Casper, Wyoming transmission line project.
Concerns that were not discussed, that interest me are:

A 1. How much of a rate increase will WAPA pass-thru to PP&L and Tri-States's customers to offset the costs of this project?

B How will this increase be introduced; lump-sum, or gradual?

C During or after completion?

D 2. Has there been any analysis on the effect that the costs passed through to consumers will have on them?

E 3. Since both Tri-State and PP&L's system reliability and profit potential will increase significantly by this project. What amount will be contributed from corporate, not consumer accounts to assist in financing this project?

Your response to these inquiries will be greatly appreciated.

Respectfully,

Pres. RMWEA

Mathew E. Overeem, President

Rocky Mountain

RESPONSES

A - The Western Area Power Administration receives only reimbursable appropriations from Congress; therefore, all costs are repaid by project users. In general, the costs of this project will be recovered in the rates assessed for firm power and transmission service on the Pick-Sloan Missouri Basin Program System.

B - Western conducts rate studies periodically to determine if rates being collected are sufficient to repay Federal investments. If an adjustment is indicated, then a public process is initiated whereby Western proposes to adjust rates for the remainder of the project life. Therefare, the cost of construction programs are amortized over many years.

C - Federal projects are included in repayment studies as soon as they are authorized. Many future water projects, for example, are already included in rates. Similarly, the replacement of all existing transmission lines has long been included in rates as planned for replacements.

D - All rate adjustments are subjected to a rigorous public involvement program. Usually consumer interests assure that customer impacts will be presented during rate cases. Western is prepared to demonstrate that transmission line projects such as the one in question are essential to meet the needs of all power users in the area.

E - Tri-State is very much a paying customer of the Western Area Power Administration. It is a public power organization which regularly distributes capital credits back to its membership; therefore, there is no distinction between the corporate and consumer accounts. PP&L is basically committed to exchange service in the proposed lines for like service for Western on other lines. Western cannot agree that their profit potential is particularly affected by this plan, except that this plan represents the best overall plan for all consumers in the area.

General - Joint planning studies with area utilities indicate that this project is essential to serve future power supply needs in Wyoming as well as in the intermountain area in general. Such joint planning efforts ensure that power supply and transmission requirements for all utilities are met at the lowest cost to consumers of all utilities in the area.

Letter #15

WYOMING
EXECUTIVE DEPARTMENT
CHEYENNE

ED HERSCHLER
GOVERNOR

April 2, 1984

Mr. Bill Melander
Western Area Power Administration
P.O. Box 3700
Loveland, CO 80539

Dear Mr. Melander:

The draft environmental impact statement for the Thermopolis - Alcova - Casper Transmission Line Project has been circulated for state agency review. Copies of agency comments are enclosed for your consideration and use. Several agencies had few or no comments on the draft due to the success of your pre-publication consultation efforts. We greatly appreciate your approach in that regard and encourage continued consultation as the project progresses.

A You will note that the Wyoming Recreation Commission is concerned over the potential use of state parks as temporary housing quarters by the project workforce. The Industrial Siting Administration shares this concern, and is concerned over potential workforce impacts on small communities. These concerns should be B minimized by utilizing locally available labor to the fullest extent possible. A more general concern is the C need for good faith negotiation with affected landowners for rights-of-way alignments, purchases and easements. Every effort must be taken to avoid condemnation threats or proceedings. Close coordination with local governments and D their land use planning bodies will also be necessary to minimize existing or future land use conflicts.

Thank you for the opportunity to review and comment on this document. Please keep me informed of the progress in this effort.

Yours sincerely,

Ed Herschler

RESPONSES

A - Workers employed on the construction of large-scale linear facilities typically expect to drive one hour or more every day to the "show-up" point (which customarily must be on a paved road), where they are met by their employer's transport, and where their work-day begins. The driving time between Thermopolis and Casper, the two largest communities in the region, is a little over 2 1/2 hours. Therefore, Western believes it is unlikely that many workers will seek accommodation outside of these communities, with the possible exception of the brief period when the construction operation is passing through the relatively small region midway between the two cities. It is possible that some workers may seek more convenient accommodation in Hells Half Acre or Shoshoni when construction activities are located in the vicinity of these communities. Potential accommodations for construction workers are tabulated on Page 4-30 of the DEIS.

It is unlikely that significant numbers of workers will want to live in campers or trailers at Boysen, Edness Kimball Wilkins, or any other state park in the region. If any workers did camp at Boysen or another State Park, they would be subject to the some rules governing length of stay and behavior as any member of the public. In any case, the total number of workers is not large; the best estimate possible at this time gives a maximum of approximately 92. It is not possible to give on exact number since this varies with contractors, depending mainly on the specific types of equipment each uses. Also, this total number of workers is divided into crews, each responsible for one or a few of the sequential tasks into which the total construction process is divided. Each of these crews progresses along the route at about 20 miles per month performing its tasks, usually separated by more than 10 miles from the preceding and following crews. Thus, no more than a fraction of the total number of workers will generally be found in any given area at a given time, and the total crew would be distributed over a distance of more than 60 miles. If the Wyoming Recreation Commission identifies and notifies Western of specific problems during the construction of the transmission line, Western will attempt to resolve the problem with its contractors.

For several decades, a typical pattern of employment in most parts of the study area has been oil, gas, and other mineral exploration and extraction. Thus, the small communities between Thermopolis and Alcova are well accustomed to the presence of groups of construction-type workers.

In summary, Western agrees that socioeconomic impacts, not amenable to mitigation by Western, will probably arise from the presence of the project's construction workers at the small communities and state parks in the project area, but believes that these will not be significant, and that most of the effects on the small communities in the study area, as well as on Casper and Thermopolis, will be beneficial, from the extra sales generated. Therefore, Western believes that measures to control the whereabouts of the project work force, either for residence or for recreation outside of work hours, are not necessary.

B - This project, like all of Western's, will be constructed under contracts let by a competitive bidding process. Since bidders are not selected in advance, the successful contractors' sources of additional labor that they require are not known in advance. However, most contractors for this type of work may be expected to hire some of their semiskilled workers and most of their unskilled labor (up to 50 percent of their total work force) locally, and Western will encourage their contractors to do this.

C - Western will certainly negotiate in good faith with all affected landowners. Western's standard procedures for acquiring land rights are outlined on Page 3-15 of the DEIS (third paragraph). As stated on that page, only when the necessary rights cannot be acquired by negotiated agreement, based on offers of fair market value, will Western initiate eminent domain proceedings to obtain them.

D - To date, Western has coordinated closely with all affected government agencies, as is its standard practice, and will continue to do so in the detailed planning and construction phases of the project.

Letter #16

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

State Engineer's Office

BARRETT BUILDING CHEYENNE, WYOMING 82002

March 5, 1984

M E M O R A N D U M

TO: Paul Cleary, Natural Resource Analyst
State Planning Coordinator's Office

FROM: Louis E. Allen, Water Resources Engineer LEA

SUBJECT: State Identifier No. 82-127, Draft EIS, Thermopolis-Alcova-Casper Transmission Line Project, WAPA-DOE, 1983.

I see no problems from this office with the subject project. Upgrading the transmission lines would benefit the development and use of Wyoming's water by providing more, and more reliable, pumping power.

Thank you for the opportunity to review this DEIS. Your referral memorandum is being returned as requested.

LEA/ht

cc: George L. Christopulos
State Engineer

RESPONSES

No response necessary.

Letter #17

THE STATE OF WYOMING

Ed Herschler, Governor
Lano Meneghini, Superintendent and Chief Engineer

Wyoming State Highway Department

P. O. BOX 1708 CHEYENNE, WYOMING 82002-9019

March 9, 1984

EIS Comments
Thermopolis - Alcova - Casper
Transmission Line
State ID 82-127

Mr. Dick Hartman
State Planning Coordinator
2320 Capitol Avenue
Cheyenne, WY 82002

Dear Mr. Hartman:

A| We have reviewed the subject EIS, and see no significant affect to
B| state highways. However, WAPA will have to obtain licenses from the Highway Department for any encroachment on state highway rights of way.

Very truly yours,

William P. King, P. E.
Environmental Services Engineer

WPK/mg

RESPONSES

A - No response necessary.

B - As is indicated on Page 1-4 of the DEIS, Western will obtain permission from the State Highway Department to cross state highways. This will be done during the detailed planning phases of the project, prior to construction, when the exact location of the ROW centerline, and of structures, is being worked out. At most crossings, no structures would be located within the highway ROW, and the crossing agreement would pertain mainly to the clearance of the conductors over the highway and the effects of construction on traffic flow.

Letter #18

WYOMING RECREATION COMMISSION

STATE HISTORIC PRESERVATION OFFICE

REVIEW AND COMPLIANCE

Interdisciplinary Staff Comments

Archeology • History • Historical Architecture • Recreation Planning

TO: Mark Junge, Chief

FROM: Richard Bryant, Compliance Archeologist RB
Dennis Madden, Compliance Historian DM

DATE: March 14, 1984

RE: §DEIS for the Thermopolis-Alcova-Casper, Wyoming Transmission Line Project

A In our opinion, this document's treatment of cultural resource considerations is adequate for this stage of the project and in accordance with the agreement reached between the Western Area Power Administration, Bureau of Land Management and the Wyoming State Historic Preservation Officer on March 9, 1983. Based on
B information available, it appears that use of the Primary Alternative Route for the Thermopolis-Alcova System and Alternate Route C for the Casper-Alcova System would result in the least impact to known cultural resources. We therefore urge usage of these routes for protection of the cultural environment.

C Before we can recommend that clearance be granted, all Class III survey results of the routes eventually selected must be submitted for SHPO review. Any report outlining the findings of field investigations should include evaluations of cultural properties discovered, a complete discussion of project effects to these properties and a mitigation plan for any adversely affected National Register eligible properties.

RESPONSES

A - No response needed.

B - Note that there is no alternative Route "C". It is assumed that Route "3C" is meant.

The National Environmental Policy Act requires that an EIS "utilize (on) . . . interdisciplinary approach which will ensure the integrated use of the natural and social sciences." NEPA also recognizes that cost and technical (engineering feasibility) factors should be considered.

Although the cultural impact score for the Primary Alternative route between Thermopolis and Alcova is lower than that for the preferred route, both scores are low in comparison to the scores for the other resource groups (physical, biological, land use, and visual resources), and may be considered very low when looked at in isolation. Similarly, although the cultural impact score for Route 3C is the lowest of the Primary Alternative Alcova-Casper routes, all five of these have scores that are low in comparison to the other resource group scores, and very low when considered in isolation.

In addition, the nature of cultural resources is such that very full site-specific mitigation is possible, and hence residual impacts can be extremely low. Tables 5-4, 5-9, 5-14, 5-19, 5-24, 5-29, and 5-34 in the Maps and Tables Volume of the DEIS list the site-specific mitigation measures proposed, and the impact levels remaining after application of these measures (residual impacts).

The reasons for the choice of the preferred route between Thermopolis and Alcova are that its overall impacts, though slightly higher than those of the primary alternative, are low, and it will cost approximately $2.2 million less to construct. This is reported on Page 3-11 and F-14 of the DEIS. The preferred route between Alcova and Casper is 8C. This is a change from the preferred that was recommended in the DEIS. The reasons for the change are explained in detail in this FEIS, but, in brief, have to do with BLM's decision to phase out the existing utility corridor that follows the North Platte River valley and designate a new corridor northwest of the Oregon Trail.

C - The Class III Survey is in progress and should be complete before the end of the 1984 field seoson. In compliance with the requirements of 36 CFR 800, Western will request SHPO review of the survey report and will consult with the SHPO in order to determine which cultural resources may be eligible for inclusion in the National Register of Historic Places and the effect of the project on these resources; and to prepare a plan to mitigate any adverse effects on Register-eligible sites.

Letter #19

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

WYOMING RECREATION COMMISSION

1920 THOMES — CHEYENNE, WYOMING 82002

ALVIN F. BASTRON, P.E.
Director
777-7886

March 15, 1984

Mr. Dick Hartman
State Planning Coordinator
2320 Capitol Ave.
Cheyenne, WY 82002

RE: 82-127

Dear Mr. Hartman:

The Draft Environmental Impact Statement (DEIS) for the Thermopolis-Alcova-Casper Transmission Line Project was received in this office February 16, 1984. Thank you for the opportunity to review the report.

A After reviewing this document, the Wyoming Recreation Commission (WRC) agrees with the Western Area Power Administration's conclusion that the most reasonable alternative for meeting future electrical energy requirements would be to construct a new and improved overhead AC transmission line. Although the Commission would favor development along the described preferred route as opposed to the primary alternative route near Boysen Dam, we would support the construction of transmission lines in either location, as long the following concerns are addressed.

B Of primary concern to the WRC would be the impact of this proposed project on existing recreation sites. Boysen State Park is located within the project area. If the primary alternative route is chosen for the Thermopolis-Alcova System, the new transmission line would cross the Wind River directly below Boysen Dam. This scenic area is used extensively by fishermen and is highly visible from the highway. In addition, Upper Wind River Campground is located about 1/2 mile downstream and also receives heavy use. While the new transmission lines would replace existing lines in this area, and consequently would probably not result in greater visual disturbance than what already exists in the area, the short-term effects of construction of the new line would impact recreation. Construction activities would create considerable noise and dust and would detract from the peaceful environment of the park.

RESPONSES

A - No response necessary.

B - It should be noted that the preferred Thermopolis-Alcova alternative does not pass through Boysen. The route under discussion is the primary alternative. The estimated impacts of this route in the Boysen area are illustrated in the impact chart associated with Link Map 3b in the Maps and Tables Volume of the DEIS. This shows high visual impacts from the effects of construction and operation of the line on the recreational land uses in the area. Table S-10 lists and describes these impacts and also the site-specific mitigation measures committed to by Western for this segment of the line. These include: selective construction access road placement and sensitive tower placement, including putting new towers opposite (in step with) existing ones when two lines occupy a common ROW. Western believes this will reduce the construction impacts to the moderate level, and will somewhat reduce the operation impacts, but not below the high level.

Note that, as shown on the Link Map, there is no intent to remove any existing lines in this area, and the new line would in fact be additional to the three that already cross the canyon. Note also that there is a significant existing effect on the natural character of this area, from the rail traffic and heavy road traffic that passes through the canyon, as well as from the existing transmission lines.

C - Workers employed on the construction of large-scale linear facilities typically expect to drive one hour or more every day to the "show-up" point (which customarily must be on a paved road), where they are met by their employer's transport, and where their work-day begins. The driving time between Thermopolis and Casper, the two largest communities in the region, is a little over 2 1/2 hours. Therefore, Western believes it is unlikely that many workers will seek accommodation outside of these communities, except that possibly during the brief period when the construction operation in which specific workers are involved is passing through the relatively small region midway between the two cities, they may seek more convenient accommodation in Hells Half Acre or Shoshoni. Potential accommodations for construction workers are tabulated on Page 4-30 of the DEIS.

It is unlikely that significant numbers of workers will want to live in campers or trailers at Boysen, Edness Kimball Wilkins, or any other state park in the region. If any workers did camp at Boysen or another State Park, they would be subject to the same rules governing length of stay and behavior as any member of the public.

For several decades, a typical pattern of employment in most parts of the study area has been oil, gas, and other mineral exploration and extraction. Thus, the small communities between Thermopolis and Alcova are well accustomed to the presence of groups of construction-type workers.

In summary, Western agrees that socioeconomic impacts, not amenable to mitigation by Western, will probably arise from the presence of the project's construction workers at the small communities and state parks in the project area, but believes that these will not be significant and that most of the effects on the small communities in the study area, as well as on Casper and Thermopolis, will be beneficial, from the extra sales generated. Therefore, Western believes that measures to control the place of residence of the project work force are not necessary.

#19 Cont.

C Regardless of which route is chosen, however, the possibility exists that some project workers may choose to set-up a trailer and live at the park rather than pay for more expensive lodging at outlying communities. This problem could become acute at Boysen State Park, and to a lesser extent at Edness Kimball Wilkins State Park located a few miles east of Casper. The approximate peak work force for this project is estimated to be 122 people (DEIS, p. 3-15). While it is understood that the workforce will be staggered along the length of the chosen corridor and will not stay in one place for a great period of time, it must be recognized that state parks are not intended to serve as temporary housing quarters. Such use creates a shortage of campsites and could result in conflicts with other park visitors. Even though there may appear to be ..."adequate year-round housing and trailer space for the assumed range of construction workers" (DEIS, p. 5-40), the WRC has learned from previous experience that some workers will try to save money and take advantage of the situation by setting up a temporary residence at a state park.

D An additional concern of the WRC would be the possibility of vandalism occurring at developed recreation sites within the project area. Vandalism could become a problem at both Boysen State Park and Edness Kimball Wilkins State Park. Another site which perhaps is even more vulnerable to van-
E dalism would be the Red Buttes Fight Site located along the Alcova-Casper section of this project. This site is currently unmanned and is leased to the City of Casper from the WRC. Although the Western Area Power Administration has admitted to the potential for vandalism at this site (DEIS, p. 5-21), they have not proposed any mitigation measures aimed at alleviating this problem.

F In summary, the Western Area Power Administration must be responsible for any impacts occurring to recreation resources as a result of this project. At the very least, the mitigation plan should include measures designed to prevent the specific problems discussed in this review from occurring. In
G addition, the Western Area Power Administration should also be responsive to additional impacts such as ORV abuse, poaching and other problems which their project may inadvertantly create.

If you have any questions regarding this review, please do not hesitate to contact this office.

Sincerely,

Alvin F. Bastron

Alvin F. Bastron, P.E.
Director

AFB/MF/lr

D - It is possible that a few workers from the project may choose to vandalize facilities at Boysen or Edness Kimball Wilkins State Park, but then so may anyone living in or passing through the project area. Given the existing level of public use and access to these areas, Western believes that any increase in the risk of vandalism attributable to the project construction work force would be so small that it must be considered insignificant. Western will further minimize this risk by stipulating that contractors instruct all workers on the protection of private property and cultural and natural resources.

E - The segment of the line that passes the Red Buttes Fight Site is no longer part of the preferred Alcova-Casper route.

The Red Buttes Fight Site is shown an Link Map 27 in the DEIS. It is about 1,000' to 1,500' feet from the edge of the proposed line opposite mile 8.3 and includes an historical marker and the gravestones of soldiers killed in the fight. The impact chart above the link map shows that it is estimated there will be moderate impacts to the site during construction of the line and none during operation. The construction impact was listed in the Significant Impact tables in the DEIS, specifically in Table 5-14, where the potential impact was described as due to vandalism during construction, and as consisting of pilfering or physical destruction of artifacts or other cultural features. Monitoring of construction crews was listed as a site-specific mitigation measure committed to by Western. Residual impacts (after application of this mitigation measure) were considered to be None (this category can include measurable degrees of impact, but these are so low and insignificant that they are nat considered in the comparison of routes).

As with the concerns expressed in comment D, Western cannot control the whereabouts of the contractors' construction crews after work hours. It is possible that workers may detect the presence of the site while working, return later, and vandalize the historic marker and gravestones there. However, Western considers this so unlikely that the designation of "no residual impact" is the correct one. Note that the site is screened from the view of people along the proposed ROW by a law ridge.

After completion of construction there would be no possible increased impacts on the resource because there is an existing access way at that point on the ROW and hence accessibility, and the opportunity for ongoing vandalism would not be increased.

F - Recreational resources have been considered as one of the strongest and most critical constraints to the location of this transmission system, and impacts to these resources have been avoided wherever possible and mimimized where unavoidable. General mitigation measures, as described in Table 3-3 and feasible site-specific mitigation measures, as described in the Series 5 tables in the DEIS, have been committed to by Western. As a result of these mitigation measures and careful route development, no significant impacts to recreation resources or facilities have been identified for the proposed action.

G - As is its normal practice, Western will put gates in all ungated fences crossing the ROW, and will ensure that all such gates are provided with locks so that land management agencies or individual landowners can prevent any ORV abuse or poaching that might occur as a result of this new access.

Letter #20

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Department of Economic Planning and Development

BARRETT BUILDING CHEYENNE, WYOMING 82002 JOHN NILAND
EXECUTIVE DIRECTOR

MEMORANDUM

Administration 777-7287

Planning Division 777-7286

Industrial Division 777-7285

Water Division 777-7284

Mineral Division 777-7361

Library 777-6430

TO: Ann Redman
FROM: Steve Achter SA
DATE: March 20, 1984
SUBJECT: Thermopolis - Alcova-Casper Transmission Line - DEIS #82-127

I have the following comments relative to the above referenced draft environmental impact statement.

Chapter 4- AFFECTED ENVIRONMENT - G. SOCIOECONOMICS

A Unemployment rates should be updated to more accurately reflect the current situation. Updated figures should be included in the FEIS. Updated employment figures are critical because this is a factor which helps determine where the construction workers are most likely to come from.

Chapter 5 - ENVIRONMENTAL CONSEQUENCES - F. IMPACTS OF SOCIOECONOMICS

B Actual work schedules and the number of construction workers is not given in the DEIS. The FEIS should contain this information.

SA/jp
encls.

RESPONSES

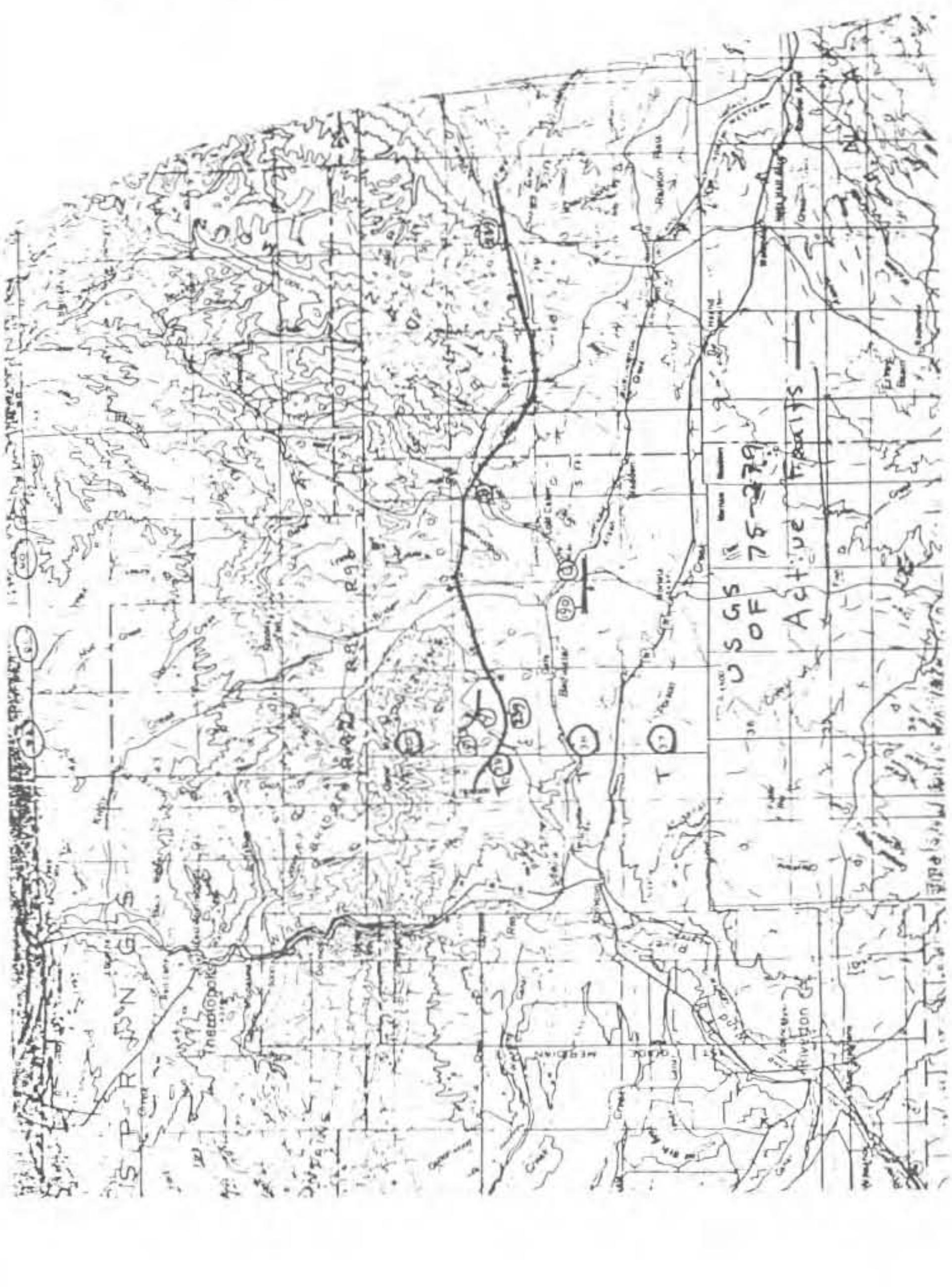
A - Updated unemployment figures are included in Chapter 4 of this FEIS - Affected Environment.

B - A work schedule for constructing most of the elements of the project has now been developed and is included in Chapter 3 of this FEIS - Alternatives Including the Proposed Action.

An estimate of the approximate number of workers required to construct the major elements of the project, namely the Thermopolis-Alcova line and the Alcova-Casper line, was given in Table 3-2 in the DEIS. At the time of the DEIS production, Western was not in a position to define o preferred structure type, and therefore the lattice steel structure, the worst case structure type for construction crew size (and for most impacts), was assumed. Western has now completed cost studies, and has determined that single pole and H-frame steel structures are its preferred type. These require slightly fewer workers than lattice structures (particularly for materials hauling, forming and placing of foundation concrete, assembly, and structure erection), where the number of persons is likely to be near the low end of the range shown on the table. Therefore, the approximate peak work force is likely to be about 92.

An exact figure for construction crew size cannot be given at this stage in the project. Different contractors use different size crews to perform the same task, depending on their preferred scheduling, orgonizational methods, and equipment used. Western's contractors are selected by competitive bidding, and therefore cannot be predicted. Western believes the approximate figure given is adequate for impact assessment purposes.

#21 Cont.


USGS
OF 75-279
Active Faults
Thermopolis
Riverton
R98
R94


R84W
R83W
T32N
Windblown Deposits
(Newly Mapped)
BLACK ROCK MOUNTAIN
SCHALEN TOP BUTTE

Letter #21

Serving Wyoming Since 1933

THE GEOLOGICAL SURVEY OF WYOMING
UNIVERSITY OF WYOMING
BOX 3008, UNIVERSITY STATION
LARAMIE, WYOMING 82071
(307) 742-2054 (307) 721-3920 (307) 766-2286

MAR 23 1984

MEMORANDUM

To: State Planning Coordinator
From: Gary B. Glass, State Geologist
James C. Case, Environmental Geologist
Subject: Thermopolis-Alcova-Casper Transmission Line Project (State Identifier No. 82-127)
Date: March 22, 1984

We have reviewed the Draft Environmental Impact Statement (DEIS) on the Thermopolis-Alcova-Casper Transmission Line and make the following comments:

A 1. The preferred route for the transmission line appears to cross a newly mapped windblown deposit in T. 30 N., R. 83-84W. A map is attached which depicts the location of the deposit. This deposit is not mentioned in the DEIS.

B 2. The preferred route also crosses two suspected active faults. These faults are located in T. 38 N., R. 90-91 W. and T. 39 N., R. 90-91 W. The attached map was xeroxed from U.S. Geological Survey Open File Report 75-279, dated 1975.

If you need further information on these two comments, please contact James C. Case of our staff.

RESPONSES

A - The new information is noted. The portion of the preferred Thermopolis-Alcova line that appears on Link 14 may cross the edge of a small portion of this formation at about mile 1.0. There is an existing access way along that line segment, and the expected levels of impact to physical resources are moderate during construction and low during operation, which, as noted in the introduction to the Series 5 tables, are not considered significant.

B - This information is noted. The Thermopolis-Alcova line crosses one of the faults once in the vicinity of mile 6.0 on Link 2c. The presence of this fault and any possible hazard of seismic shaking that it may generate will be considered during detailed structural design of the elements of the transmission line in this area. Any possibility for vertical or lateral movement of the two sides of the fault, relative to each other, will be assessed (using USGS Open File Report 75-279 and any other available source) and, if such a possibility exists, structures will be located to avoid, if possible, the estimated zone of potential movement. Note that, as reported on Page 4-5 of the DEIS, the study region is an area of very low seismic activity and therefore neither seismic shaking nor fault movement are likely within the lifetime of the project.

Letter #22

THE STATE OF WYOMING

MAR 26 1984

ED HERSCHLER
GOVERNOR

Public Service Commission

CAPITOL HILL BUILDING
320 W. 25TH STREET CHEYENNE, WYOMING 82002

JOHN R. SMYTH
CHAIRMAN
C.E. "NED" JOHNSON
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CHIEF ENGINEER
WILLIAM M. ROONEY
DIRECTOR, MOTOR TRANSPORTATION
WILLIAM L. JOHNSON
DIRECTOR, RATE AND TARIFF

M E M O R A N D U M

TO: STATE PLANNING COORDINATOR

FROM: Robert E. Bocox, Jr., Electrical Engineer RB

DATE: March 22, 1984

SUBJECT: Draft Environmental Impact Statement for Western Area Power Administration Thermopolis-Alcova-Casper Transmission Line Project. State Identifier Number 82-127.

A Review and analysis of the subject matter has been completed and it appears the Western Area Power Administration has adequately addressed the environmental impact aspects of this project and has properly proposed mitigating measures to reduce negative impacts to reasonable levels.

B There is concern within the Public Service Commission that the Western Area Power Administration may be developing a scheme whereby they become the controlling transmission and power broker in this area similar to the Bonneville Power Administration activity in the Pacific Northwest.

C This agency concurs with the environmental conclusions stated in the draft statement and recognizes the need for this or a similar project.

RESPONSES

A - No response necessary.

B - It is not the intent of the Western Area Power Administration (Western) to develop a system so that Western can become the controlling transmission and power broker in the Wyoming area. Western is trying to integrate the needs of other utilities, whenever possible, to avoid the duplication of facilities that cause higher electrical energy costs to the consumer.

Western markets Federal hydroelectric resources and delivers these resources to specified load centers. Western owns, maintains, and operates a bulk transmission system in order to carry out this function. The transmission lines that make up the power system have a limited life and must be replaced at the end of their useful lives. The revenues produced by the marketing of Federal resources and transmission services are used to fund the rehabilitation of these Federal lines.

Western normally asks the utilities in the area to participate in joint transmission planning studies before it decides to replace an old transmission line, such as the Thermopolis-Casper 69-kV line, with an identical new line. Sometimes the joint studies will indicate that an old line such as the Thermopolis-Casper 69-kV line will support the needs of other utilities simply by replacing it with a higher voltage line. Other times the joint studies will indicate that the old line is no longer needed and can be abandoned.

The Rocky Mountain Transmission Planning Study was an outstanding example of an effort by the major utilities in the Rocky Mountain area to identify the joint long-term needs in the Wyoming and Colorado areas. This study identified the Thermopolis-Casper 69-kV line as an old line requiring rehabilitation that could provide a significant benefit to the area utilities if rebuilt at a higher voltage.

In order to satisfy the joint needs of the area utilities, Western has chosen to construct a 230-kV line between Thermopolis and Alcova, and a 230-kV line convertible to 345-kV between Alcova and Casper.

C - No response necessary.

Letter #23

THE STATE OF WYOMING

EXECUTIVE DEPARTMENT

ED HERSCHLER
GOVERNOR

Office of Industrial Siting Administration

SUITE 600 BOYD BUILDING CHEYENNE, WYOMING 82002 TELEPHONE: 307-777-7368

March 26, 1984

Dick Hartman
State Planning Coordinator
Wyoming State Clearinghouse
2320 Capitol Avenue
Cheyenne, WY 82002

Re: Thermopolis-Alcova-Casper Transmission Line Project - Draft Environmental Impact Statement, SIN 84-127

Dear Dick:

The Industrial Siting Administration staff has the following comments regarding the DEIS for the Thermopolis-Alcova-Casper Transmission Line Project:

5F IMPACTS ON SOCIOECONOMICS (pp 5-38 to 5-40)

A The conclusion that transmission line construction would have minimal impact on socioeconomic conditions is totally unsubstantiated. First, no baseline analysis of existing conditions was conducted (Section 4G can hardly be considered a baseline analysis). Secondly, the probable characteristics of the workforce, the size of the workforce, and where the workforce will reside are all unknown at this time according to the DEIS. How then, for example, can the DEIS assume that the construction workforce will not have an impact on law enforcement capabilities (or any other facility or service) of smaller communities in the area of influence (e.g. Hell's Half Acre, Alcova, Shoshoni, etc.)? The final EIS should include workforce projections, an evaluation of probable residency patterns, and an analysis of potential impact on community facilities and services. Otherwise, the conclusion of minimal impact cannot be reached. Also, the Project should coordinate with the Parks Division of the Wyoming Recreation Commission to assure that construction workers will not reside at Boysen State Park for the duration of the construction period.

RESPONSES

A - 1. Work Force Projections, Size, and Characteristics:

An estimate of the approximate number of workers required to construct the major elements of the project, namely the Thermopolis-Alcova line and the Alcova-Casper line, was given in Table 3-2 in the DEIS. At the time of the DEIS production, Western was not in a position to define a preferred structure type, and therefore the lattice steel structure, the worst case structure type for construction crew size (and for most impacts), was assumed. This resulted in an approximate peak work force of 122 persons as shown in Table 3-2. Western has now completed cost studies and has determined that single pole and H-frame steel structures are its preferred type. These require slightly fewer workers than lattice structures (particularly for materials hauling, forming of foundations, and placing of foundation concrete, assembly, and structure erection), where the number of persons is likely to be near the low end of the range shown on the table. Therefore, the approximate peak work force is likely to be about 92 persons.

An exact figure for construction crew size cannot be given at this stage in the project. Different contractors use different size crews to perform the same task, depending on their preferred scheduling, organizational methods, and equipment used. Western's contractors are selected by competitive bidding, and therefore cannot be predicted. Western believes, however, that the approximate peak work force figure given in the DEIS and revised in this FEIS is adequate for the purposes of impact assessment.

Since the contractors who will build the project cannot be predicted, exact estimates of work force characteristics cannot be given, but a few broad generalizations can be made. There are about 10 or 15 contractors spread across the entire western United States who specialize in this type of work. Their labor force will typically be about one-third highly skilled (linemen, electricians, other specialists), one-third semiskilled (equipment operators and truck drivers), and one-third unskilled (laborers). Most contractors would bring in most or all of their skilled workers and some of their semiskilled workers. They would generally hire the remainder, up to 50 percent of the total force, locally.

2. Evaluation of Probable Residency Patterns

Workers employed on the construction of large-scale linear facilities typically expect to drive one hour or more every day to the "show-up" point (which customarily must be on a paved road), where they are met by their employer's transport, and where their work-day begins. The driving time between Thermopolis and Casper, the two largest communities in the region, is a little over 2 1/2 hours. Therefore, Western believes it is unlikely that many workers will seek accommodation outside of these communities, with the possible exception of the brief period when the construction operation is passing through the relatively small region midway between the two cities. It is possible that some workers may seek more convenient accommodation in Hells Half Acre or Shoshoni when construction activities are located in the vicinity of these communities. Potential accommodations for construction workers are tabulated on Page 4-30 of the DEIS.

3. Baseline Analysis of Existing Socioeconomic Conditions and Analysis of Probable Impact on Community Facilities and Services

The regulations for implementing the National Environmental Policy Act require a concentration on significant issues. Western considers that socioeconomic impacts of the project will not be significant for the following reasons:

- The estimated total work force is 92 persons. This is not an unusually large work force.
- The construction work force is divided into 10 or 12 relatively self-contained crews, each responsible for one or more of the activities listed in Table 3-2 in the DEIS. Each of these crews progresses along the route at about 20 miles per month performing its tasks, usually separated by about 5 miles from the preceding and following crews. Thus, the entire work force may be distributed over more than 60 miles, and hence no more than a fraction of the total number of workers will generally be found in any given area at a given time.

Letter #24

DEPARTMENT OF THE ARMY
OMAHA DISTRICT CORPS OF ENGINEERS
6014 U.S. POST OFFICE AND COURTHOUSE
OMAHA, NEBRASKA 68102

REPLY TO ATTENTION OF

Planning Division

April 3, 1984

Mr. Bill Melander
Western Area Power Administration
P.O. Box 3700
Loveland, Colorado 80539

Dear Mr. Melander:

We have reviewed the Draft EIS for the Thermopolis-Alcova-Casper Transmission Line, and our comments are enclosed.

We have addressed Corps permits, flood plains, cultural resources, and the preferred alternative. We note that Corps permit actions may be required under Section 404 of the Clean Water Act. We also note suggested precautions for construction in or affecting flood plains. Continued timely attention to cultural resources is encouraged. Also, we note the apparent advantages of alternative transmission line routes over the preferred route designated in the report.

Thank you for this review opportunity. If you have any questions, please contact Steve Rothe of my staff at FTS 864-4579. We look forward to receiving the final document.

Sincerely,

Gerard E. Mick
Acting Chief, Environmental
Analysis Branch
Planning Division

Enclosure

#23 Cont.

5G MITIGATION (pp 5-40 to 5-41)

B A number of potential impacts to wildlife are identified in Chapter 5 but the Maps and Tables Volume identifies only token mitigation measures that will not significantly reduce the levels of impact. According to the DEIS (p 5-41), mitigation would be designed on a case-by-case basis sometime before the commencement of construction. Any reader of this DEIS should be concerned by this approach. It is not possible to evaluate this DEIS on the basis of promises of additional, unidentified mitigation. There are numerous "standard" mitigation practices that relate to construction activity in proximity to raptor nests, sage grouse leks, bald eagle winter roost sites, etc. At a minimum, the final EIS should address these.

Sincerely,

Richard C. Moore, P.E.
Director

RCM/TC/lh

- For several decades, a typical pattern of employment in most parts of the study area has been oil, gas, and other mineral exploration and extraction. A typical oil or gas well drilling site has a work force of 20 to 25. At any given time in recent years, at least several such sites have been active in and around the study area. Thus, the small communities between Thermopolis and Alcova are well accustomed to the presence of groups of construction-type workers.

In summary, Western agrees that socioeconomic impacts will probably arise from the presence of the project's construction workers at the small communities and state parks in the project area, but believes that these will not be significant and that most of the effects on the small communities in the study area, as well as on Casper and Thermopolis, will be beneficial, from the extra sales generated.

4. Use of Boysen State Park by Construction Workers

It is unlikely that significant numbers of workers will want to live in campers or trailers at Boysen, Edness Kimball Wilkins, or any other state park in the region. If any workers did camp at Boysen or another State Park, they would be subject to the same rules governing length of stay and behavior as any member of the public.

Western will certainly coordinate and cooperate to the fullest possible extent with the Parks Division of the Wyoming Recreation Commission regarding use of Boysen or other State Parks by construction workers. However, Western believes that regulation of a State Park with respect to length of stay and conduct is clearly the ultimate responsibility of the Parks Division.

B - The basic approach to mitigation of impacts to wildlife (as reported in Tables 5-2, 5-7, 5-12, 5-17, 5-22, 5-27, and 5-32) is that ongoing consultation will take place between Western and the agencies primarily responsible for wildlife resources; namely the Wyoming Game and Fish Department, the U.S. Fish and Wildlife Service, and the Bureau of Land Management. In each instance of a significant specific potential impact to wildlife resources that may be caused by the selected project alternative, the appropriate official or officials from these agencies will reach agreement with Western prior to construction on where, when, and how the project will be constructed (and maintained). No construction will begin until the provisions of the Endangered Species Act have been met.

This consultation would likely include a review of the probable impacts at each specific location, taking into consideration existing levels of disturbance, topographic screening, and the observed presence of the species at the actual site of the action as determined by field survey immediately prior to construction. Any necessary seasonal construction restrictions will then be agreed upon between Western and the agency representatives. The wildlife species of concern, where there is a potential for significantly reducing impacts by constructing at specific times of the year, include bald eagle, golden eagle, pronghorn antelope, mule deer, elk, sage grouse, and to some extent waterfowl.

In the case of the black-footed ferret, a detailed survey is proposed of all potential habitat for the species (i.e., prairie dog colonies) within a specified distance of the proposed action. If no ferrets are found, there is no impact on the species. If ferrets are found, the impact of the project will be determined by Western and agency representatives, and mitigation measures will be worked out to reduce the impacts to acceptable levels.

Other measures proposed to mitigate impacts on wildlife include the use of horizontal circuit configuration, with high visibility orange aviation markers on the shield wires, in areas where raptors or waterfowl may collide with the line to reduce that hazard.

Western does not believe that the approach and commitments outlined above are token mitigation, or that they will not significantly reduce the levels of impact.

#24 Cont.

CORPS COMMENTS
Thermopolis-Alcova-Casper Draft EIS
April 1984

1. Permits.

A1 No Section 10 waters are located in the project area.

B Chapter 1, Purpose and Need, Item C, page 1-4, Jurisdictions With Authorizing Actions should be changed to read:

FEDERAL AGENCIES	AUTHORIZING ACTIONS
Corps of Engineers	Issues Section 404 permits pursuant to the Clean Water Act

C The document contains statements that river and stream crossings would be accomplished without the need for placement of structures in the waterway. Crossing of major drainages such as the Bighorn and North Platte Rivers would be crossed by utilizing existing bridges with no structures placed in the flood plain. However, other statements reference wetland soil areas as being adversely affected. In addition, it infers possible placement of fill material in minor stream crossings. This office requests the following be acknowledged in your document:

a. Section 404 of the Clean Water Act regulates the discharge of dredged or fill material in the Nation's Waterways, Lakes and Wetlands. Such activities must be authorized under a Nationwide permit or permitted by an individual Department of the Army permit.

b. Individual or Nationwide permits will be required for filling activities associated with wetlands. These actions would be evaluated on a case-by-case basis.

c. Filling activities on waterways having an average annual flow of less than 5 cubic feet per second (c.f.s.) will generally be considered under the Nationwide permit concept.

d. Individual permits will be required for filling activities on waterways where the average annual flow is greater than 5 c.f.s.

D 2. Flood Plains.

Federal Flood Plain Management criterion basically states that construction which can be damaged by floodwaters or which can obstruct floodflows should not be located in the 100-year flood plain. If this is not practicable, nonresidential construction which can be damaged by floodwaters, such as substations, should be above or flood proofed to above the 100-year flood water surface elevation and should be designed to minimize potential harm to or within the flood plain. If the operation of the constructed facilities is considered critical during flood periods,

RESPONSES

A - No response necessary.

B - The change is noted.

C - Western acknowledges the requirements of Section 404 of the Clean Water Act regulating the discharge of dredged or fill material in the Nation's waterways, lakes, and wetlands. Western will consult with District Corps of Engineers on the specific needs for a permit during the detail design phase of the project.

D - No new substation or tap associated with the project is located in a known floodplain. The specific locations for the transmission structures have not been determined at this stage of the project, but a few of these may unavoidably have to be placed in floodplains. For example, as shown on Link Map 2a, at about mile 1.6, the preferred route crosses the Bighorn River at a point where it has a floodplain sufficiently wide that o structure below the floodline will probably be necessary. Placement of a single transmission line structure within a floodplain is not likely to increase the water surface elevation of the 100-year flood. Any structures placed within the floodplain will be designed to minimize their susceptibility to damage from flooding.

If it is assumed that, on the smaller creeks in the study area where published information on floodplains does not exist, floodplains generally coincide with wetlands, then the following conclusions con be drawn:

Most of the floodplains, as shown on the Link Maps, are narrower than the average 1,200' span between structures. In the following cases, however, the length of the line across a floodplain exceeds or may exceed this distance; therefore, it might be necessory to build one ar more structures in the floodplain:

- o Thermopolis-Alcova Line (preferred route)
  - Link 2C, Mile 12
  - Link 2E, Mile 7
  - Link 5, Mile 0
- o Alcova-Casper Line (new preferred route)
  - Link 11a, Mile 10
  - Link 25, Miles 0,1, 2
  - Link Subroute B, Mile 0
  - Link 39, Mile 0

Based on regional data, the Arminto-Casper 69-kV rebuild and the new Bridger Sub-Bridger Pump Sub 34.5-kV line do not cross any major floodplains; but considering their shorter spans, it is likely that a few of their wood pole structures would have to be placed in minor floodplains.

#24 Cont.

D they should be protected from the 500-year flood. Flood plain construction should not increase the water surface elevation of the 100-year flood more than one foot relative to existing conditions.

The proposed powerlines cross the flood plains of numerous small drainageways and streams. Flood-related problems should not exist with construction of these overhead powerlines if the supporting structures are located as far from the banks of drainageways and streams as possible to minimize the potential for erosion hazards and floodflow obstruction.

E 3. Cultural Resources. The Department of Energy has done a thorough analysis identifying known cultural resources and evaluating their impacts from the various transmission line alternatives. The proposed Class III Cultural Survey and continued coordination with the Wyoming State Historic Preservation Office should achieve an adequate level of protection for significant cultural resources. It is suggested that the survey begin at least 3 to 6 months before construction in order to develop mitigation alternatives when significant sites are encountered.

F 4. Preferred Alternative. The preferred route for the transmission line from Alcova to Casper appears to have several significant impacts not found with alternative routes. It crosses 11.4 miles of bald eagle winter concentration area (Table 4-3 and p. 5-19), and impacts visual esthetics along an 11-mile reach of the North Platte River. These impacts are not caused by the alternative routes; an alternative route seems preferable. Although existing corridors are desirable for new projects, as noted on p. 4-18, would not the removal of the existing 69Kv line help justify creation of a new corridor under one of the alternatives?

Any structure that is placed on known floodplain or in any location likely to be reached by flood waters, will be designed to resist flood damage. The nature of the transmission line structures proposed to be used on the various elements of the project (single pole or H-frame wood or steel structures) is such that they will not obstruct flood flows.

E - The Class III Survey is at present (June 1984) in progress, and should be complete by the end of the 1984 field season, allowing ample time for any necessary mitigating excavation before construction is scheduled to start.

F - Since production of the DEIS, BLM has adopted a policy of phasing out its existing designated utility corridor along the North Platte River Valley between Alcova and Casper, and designating a new corridor generally northwest of the Oregon Trail. The phasing out of the old corridor includes a policy to not rebuild the existing transmission lines in this corridor when their useful service lives expire, but to relocate them elsewhere. This decision radically reduces the suitability of the old corridor as the location for the proposed Alcova-Casper line. Accordingly, Western has made Route 8C (which generally follows the BLM's newly designated utility corridor) the preferred location for this line.

Letter #25

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Game and Fish Department

CHEYENNE, WYOMING 82002

W. DONALD DEXTER
DIRECTOR

April 3, 1984

EIS 800/L6
Western Area Power
Thermopolis-Alcova-Casper
Wyoming Transmission
Line Project

Mr. Peter G. Ungerman, Area Manager
Department of Energy
Western Area Power Administration
Loveland-Fort Collins Area Office
P.O. Box 3700
Loveland, CO 80539

Dear Mr. Ungerman:

Thank you for forwarding copies of this draft environmental impact statement for our review.

A According to the document, the North Platte and Bighorn Rivers would be crossed using existing bridges and no construction activities would occur within the stream channels. This being the case, and if the standard mitigation measures contained in the DEIS are adhered to for other stream crossings, the only impacts to aquatic resources should be minor, insignificant, and short term increases in sedimentation and minor streamside habitat disturbance.

Thank you for the conscientious manner in which your personnel have considered recommendations by our Department to mitigate impacts of the proposed project on the wildlife resource.

Please contact us if we may be of further help.

Sincerely,

Francis Petera

FRANCIS PETERA
ASSISTANT DIRECTOR
OPERATIONS
WYOMING GAME AND FISH

FP:HBM:blg
cc: Game Division
Fish Division
State Planning Coordinator

RESPONSES

A - No response necessary.

Letter #26

Mark S. Kinner
Box 40
Casper, WY 82602

April 4, 1984

Mr. Fred J. Weiss
Assistant Area Manager
Western Area Power Administration
P. O. Box 3700
Loveland, Colorado 80539

Dear Mr. Weiss:

A As I indicated at the meeting on March 15th in the City Council Chambers here in Casper, I would like to strongly recommend that the alternative route 8-C be used when constructing the new 230-KV transmission line between Casper and Alcova.

As mentioned, the existing lines run through the Riverfield Subdivision and would be in the very near vicinity of both existing and proposed homes.

I also feel that the impact of the new line would affect the historical and environmental value of the area.

For reference purposes, I am submitting a copy of the Riverfield Subdivision plat.

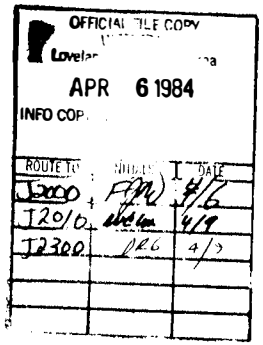
If I may provide any other information, please do not hesitate to contact me.

Very truly yours,

Mark S. Kinner

MSK:cjh

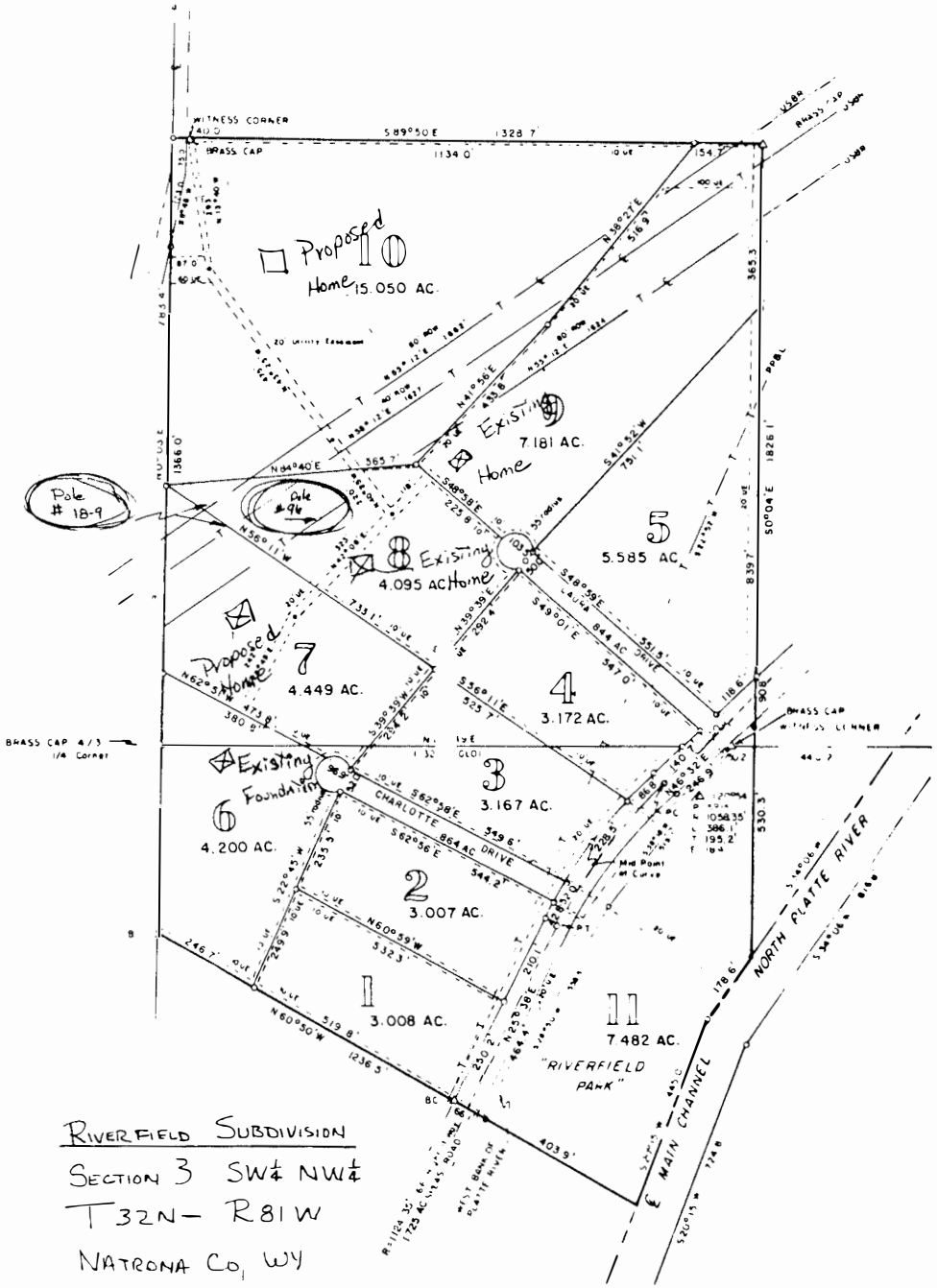
Enclosure



RESPONSES

A - Route 8C is now being proposed by Western as the preferred location of the proposed Alcova-Casper transmission line.

#26 Cont.



RIVERFIELD SUBDIVISION
SECTION 3 SW¼ NW¼
T 32N – R 81 W
NATRONA CO, WY

Letter #27

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
1860 LINCOLN STREET
DENVER, COLORADO 80295

OFFICIAL
Loveland
APR 9 1984
INFO COPY TO ~~JOHN~~ SENT 4-10-84

ROUTE TO	INITIALS	DATE
JOHNSON		4/9
TAYLOR	✓	
VALENTINE	MCM	4/10

APR 5 1984

Ref: 8PM-EA

Mr. Peter Ungerman
Area Manager
Western Area Power Administration
Loveland - Fort Collins Area Office
P.O. Box 3700
Loveland, Colorado 80539

Dear Mr. Ungerman:

The Region VIII Office of the Environmental Protection Agency has reviewed the draft EIS, "Thermopolis - Alcova - Casper, Wyoming Transmission Line Project".

A Based upon the information submitted in the DEIS, we do not anticipate that significant environmental impacts will result from the construction of the project provided you do implement those mitigative measures that were outlined in Table 3-3 and Chapter 5 in the DEIS. However, all work should be
B carried out in a manner designed to minimize potential environmental impacts. This would include those best management practices listed and others such as revegetation of denuded areas to reduce erosion, construction of sediment
C ponds if necessary to prevent sediment runoff entry into the North Platte River (a high priority stream segment in Wyoming currently degraded by sediment loading) and other practices designed to reduce or prevent
D environmental impacts. The DEIS is generally comprehensive and of the seven alternatives proposed, we agree that alternative seven is the most environmentally acceptable.

E You should also be aware that placement of fill material, temporary or permanent, into streams, lakes, or wetland may require a 404 permit. You should contact the U.S. Army Corps of Engineers with any inquiries concerning the need for such authorization.

F According to our guidelines, we have rated this DEIS LO-1. This means we have no objections to the project if alternative seven, the environmentally preferred alternative, is selected. If you have any questions regarding EPA comments, please contact Kenny Norman of my staff at (303) 837-4831 or FTS 327-4831.

Sincerely yours,

John G. Welles
Regional Administrator

RESPONSES

A - The mitigation measures described in Table 3-3 and Chapter 5 will be implemented.

B - Chapter 3 (H.2.c.(10) and Table 3-3) and Chapter 5 (G - Mitigation) in the FEIS and the introductory material to Tables 5-1, 5-6, 5-11, 5-16, 5-21, 5-26, and 5-31 in the DEIS describe the erosion control measures that will be taken. Prior to construction, Western will consult with the Bureau of Land Management (during development of the required Plan of Operations for BLM lands), other appropriate agencies including, if necessary, the Soil Conservation Service, and individual landowners to determine details of the specific application of these measures.

C - Western does not believe it would be necessary to construct sediment ponds except possibly at a few structure sites along that segment of the Alcova-Casper line (Alternatives 1B and 2B) that closely approaches the North Platte River. This occurs only on Link 23, Mile 7.0 and Link 27, Mile 5.2. Note that the proposed line in these locations follows an existing transmission line corridor with an existing access way, and therefore the disturbance that could generate sediment would be restricted to the structures sites and would be very minor. Based on extensive field work in the entire study area, including the North Platte River valley, Western has observed that in the natural undisturbed condition, most small drainageways carry a very heavy sediment load after rain. Western, therefore, believes that any minor increase in this sediment load, caused by disturbance at the few structure sites close to the river banks, could not measurably increase the sediment reaching the North Platte.

Note also that these line segments are no longer part of the preferred Alcova-Casper route because of a decision by BLM to phase out the North Platte River utility corridor.

D - There is no alternative "seven." There is an alternative Route 7C between Alcova and Casper, but this has never been considered as the preferred route. The preferred Thermopolis to Alcova line is shown on Figure S-2 (Revised) in this FEIS. The reasons for the choice of this route are that its impacts, though slightly higher than those of the primary Thermopolis to Alcova alternative, are low, and it will cost approximately $2.2 million less to construct. This is reported on Page 3-11 and F-14 of the DEIS. The preferred route between Alcova and Casper is 8C, as shown on Figure S-2 (Revised) in this FEIS. This is a change from the preferred route that was recommended in the DEIS.

Since publication of the DEIS, BLM has adopted a policy of phasing out its existing designated utility corridor along the North Platte River Valley between Alcova and Casper, and designating a new corridor generally northwest of the Oregon Trail. The phasing out of the old corridor includes a policy to not rebuild the existing transmission lines in this corridor when their useful service lives expire, but to relocate them elsewhere. This decision radically reduces the suitability of the old corridor as the location for the proposed Alcova-Casper line. Accordingly, Western has made Route 8C (which generally follows the BLM's newly designated utility corridor) the preferred location for this line.

E - Western acknowledges the requirements of Section 404 of the Clean Water Act regulating the discharge of dredged or fill material in the Nation's waterways, lakes, and wetlands. Western will consult with District Corps of Engineers on the specific needs for a permit during the design phase for the project.

F - See Response D above.

R - The information is noted.

S - See Response E above.

T - The information is discussed below by Link Map.

1. Link Map 3c (Thermopolis to Alcova line - Primary Alternative): The existence of a golden eagle nest in Section 25 near Mile 7.5 is noted. Impacts would be high for construction and none for operation. During the detail design phase of the project, Western will determine the precise location of this nest and, as with all raptor nests that could be impacted, will consult with the appropriote wildlife agency personnel to determine the seasonal construction restrictions ond other site-specific mitigation measures that may be necessary.

   Four of the prairie dog towns listed are in the area covered by this Link Map. Western believes that the colony in Sections 5 and 8 is the one shown on the Link Map (it also occupies parts of Section 6). The existence of a prairie dog colony in Sections 32 and 33 is noted. During the design phase of the project, Western will determine precise location of this and, as will all colonies that could be impacted, will consult with the oppropriate wildlife agency personnel to determine the timing and details of a survey for black-footed ferrets, and the site-specific mitigation measures necessary if ferrets are found. It is probable that the colony does not come within the zone defined in this study as of concern; i.e., within 330' of the ROW (as noted on Table F-2d in the DEIS). It is noted, however, that this colony and several others shown on the Link Maps, but not listed in the Series 5 tables, may have to be surveyed for block-footed ferrets if colonies within the Department of the Interior's new half-mile buffer zone include this requirement.

2. Link Map 10a (Thermopolis to Alcova line - Preferred and Primary Alternative Routes): The existence of a sage grouse lek in Section 18, opposite Mile 9.6 is noted. This is within two miles of the ROW, and therefore shall be considered. There is an existing transmission line in the affected segments, and so the impact is likely to be moderate during construction and none or very low during operation. Site-specific mitigation measures are to limit the area disturbed to the minimum necessary ond restrict disturbance of vegetation.

3. Link Map 19/21 (Alcova to Casper Primary Alternative Route): Western assumes that the prairie dog colony in Section 7 is the one (or rather several separate ones) shown on the Link Map opposite Mile 2.0 to 2.5. The existence of a prairie dog colony in Section 18 is noted. During the design phase of the project, Western will determine the precise location of this and, os with all colonies that could be impacted, will consult with the appropriate wildlife agency personnel to determine the survey requirements for black-footed ferrets, and the site-specific mitigation measures necessary if ferrets are found.

#28 Cont.

L, M, N that the lines not cross over either of the islands. This segment of the river remains unfrozen in even the coldest of winters providing crucial habitat for waterfowl and critical wintering habitat for bald eagles. Avian collisions with this line are therefore anticipated. To reduce collision potential, we recommend attachment of visable orange aviation markers and spiral vibration dampers at the Bighorn River crossing due to known endangered raptor use of this river corridor. We may recommend these devices in other areas identified during ongoing consultation with Western Area Power Administration (WAPA) and the Endangered Species Office of FWS in Helena, Montana.

O Page 3-16, Paragraph 4
This appears to contradict Table 3-3 (page 3-22), mitigating measure number one. It should be made clear that a class III cultural resource inventory will be done prior to any surface disturbance. (See also paragraphs 6 and 7, page 3-17.)

P Page 3-20 Item (2) We suggest that you consider identifying with Wyoming Game and Fish personnel a few of the poles in the 69Kv line to be left in place for raptor perches.

Q Page 3-23 Table 3-3 Standard Mitigation Measures #6, 7, 8, 9. These mitigation measures indicate that disturbed areas will be only scarified as needed to provide a condition which will facilitate native plant revegetation. Due to the erosive nature of many of the area's soils, we recommend that all disturbed areas be revegetated with native grasses, forbs, and shrubs to facilitate revegetation and prevent erosion.

Chapter 4

R Page 4-6 Item d's constraints on coal in Natrona County should be omitted since this coal has low potential with a low probability of being developed.

S Page 4-8 (see comments for page S-5)

T Page 4-9 Wildlife - Where appropriate, the following should be added to your data:

(a) Prairie Dog Colonies: T. 38 N., R. 91 W., Secs. 32 and 33.
T. 37 N., R. 91 W., Secs. 5 and 8.
T. 30 N., R. 82 W., Secs. 7 and 18.

(b) Golden Eagle Nest: T. 38 N., R. 92 W., Sec. 25.

N - Consultation has token place, and continues, under Section 7 of the Endangered Species Act, between Western, BLM's wildlife specialists and personnel from the U.S. Fish and Wildlife Service Endangered Species Office regarding the potential collision hazard to bald eagles from the presence of the line crossing Emigrant Gap Ridge. This is port of the preferred Alcova to Casper route and is shown on Link Map 27, at Mile 3.8 to 4.4. As a result of this discussian, Western has committed to using a horizontal circuit configuration structure type and high visibility orange aviation markers or other similar devices on the shield wires where the line crosses the ridge, which recent studies have shawn to be a bald eagle flyway connecting Pine Mountain and the North Platte River Valley. These measures are regarded by U.S. Fish and Wildlife Service personnel as reducing the risk of collisions to acceptable levels. Specific details af the application of these measures will be worked out, as part af this ongoing consultation, during the detail design phases of the project.

O - Where access ways, for the reasons given in the fourth poragraph on Page 3-16 of the DEIS, must be outside the regular ROW which accommodates the structures (and above which the conductars are suspended), unless a public roadway is available, additianal ROW will be purchased to accommodate the access way. This additional ROW is generally a 25 foot wide strip, centered on the access way. Such additional ROW will be defined during the detail design phases of the project. As is explained in the third and fourth paragraphs on Page 3-16 af the DEIS, existing roads and access ways, including private ones, will be the first candidates for such additional ROW. Next, areas of less than 12 to 15 percent slape will be sought out. Only in the absence af these twa canditions will additional ROW be acquired that involves blading af an access way, and hence disturbance. In each of these last cases an additional Class III cultural survey will be done before construction. It is expected that instances where this extra survey work is necessary will be relatively rare.

Additional Class III cultural survey work may also be required at the Construction Yards/Wire handling sites that occur at 20 to 30 mile intervals along the routes and are located outside of the ROW. The locations of these will be determined during the detail design phases of the project. Normally, all activities at structure sites will take place within the area covered by the routine Class III cultural surveys.

P - In thase line segments where a 69-kV line is being removed, no adjacent line exists, and no new line is to be constructed, Western will arrange to leave a few 69-kV poles in place, in locations to be indicated by Game and Fish personnel during consultation held at the time af the detail design af the project.

Q - Chapter 3 (H.2.c.(10) and Table 3-3) and Chapter 5 (G - Mitigation) in the FEIS and the introductory material to Tables 5-1, 5-6, 5-11, 5-16, 5-21, 5-26, and 5-31 in the DEIS describe the erasion control measures that will be taken. Priar to construction, Western will consult with the Bureau of Land Management (during development of the required Plan of Operations for BLM lands), other appropriate agencies including, if necessary, the Soil Conservation Service, and individual landowners to determine details of the specific application af these measures.

#28 Cont.

Enclosure 1

DETAILED COMMENTS

Summary

D | Page S-5 The list of endangered species noted in the DEIS within the project area is correct. Your DEIS notes the plant species Rorippa calycina as "proposed" for threatened listing. This is incorrect and you should note that this species currently has no protective status under the Endangered Species Act at this time. Likewise, impacts to the bald eagle, peregrine falcon, and black-footed ferret are recognized in the DEIS and properly associated with riparian/river crossing areas for endangered raptors and prairie dog towns for endangered ferrets. The DEIS adequately identifies the need for ferret surveys on prairie dog towns within powerline corridors. We currently view all prairie dog towns within the project right-of-way plus one-half mile as potential ferret habitat disturbed by linear facility projects.

E |

F |

G |

H | Under Land Use, you should mention that no known Areas of Critical Environmental Concern (ACEC's) will be impacted by this project.

Chapter 1

I | Page 1-1 We would like to see more details of planned projects and the relationship (timing and environmental analysis) to projects in the Yellowtail to Colorado vicinity.

Chapter 3

J | Page 3-10 Please provide approximate dates of when these lines might be energized at the higher voltages.

K | Pages 3-11 to 3-12 Because of the limited extent and high wildlife values of the riparian habitat along the North Platte River, U.S. Fish and Wildlife Service (FWS) supports the relocation of the utility corridor away from the river. However, if the preferred route follows the North Platte River corridor, we recommend that riparian tree areas occurring along Link 27 be avoided.

L | The description depicts two transmission line alternatives that cross islands in the Bighorn River. These islands are publicly owned and are included in BLM's Bighorn River Habitat Management Plan. We recommend that: no transmission towers be placed on either of these islands, that no construction work be performed on these islands with the exception of removal of the old line, and

J - Western proposes to build the following two lines in the Wyoming area:

- o Alcova to Casper.
- o Thermopolis to Alcova.

The Alcova-Casper line will be built so that it can be initially operated at 230-kV and can be easily converted at a later date to 345-kV operation. This line will be converted to 345-kV operotion when and if a pump/storage power station is built in the Seminoe/Alcova area sometime possibly in the 1990-2000 time frame. If the pump/storage plant is not constructed, the upgrade of the line will be delayed to possibly after the year 2000.

The Thermopolis-Alcova line will be permanently operated at 230-kV, and will not be built so that it can be easily converted to 345-kV operation.

K - For the reasons explained elsewhere in this FEIS, the preferred route between Alcova and Casper no longer follows the North Platte River corridor.

L - As is shown in Link 2a (Revised) in this FEIS, the route at the crossing of the Big Horn River south of Thermopalis has been adjusted so that the line passes between the two islands referred to, without crossing either of them. Therefore, no disturbance of the islands will be necessary during construction of the new line. The existing 69-kV line (which is to be removed) also crosses the river between the islands, without a structure on either of them. There will be no effect on the islands from removal of this line. All crossings of the river by contractor's vehicles during line construction and line removal will be by an adjacent bridge. Note that only one of the project alternatives crosses the Big Horn River in this location.

M - Western will fit high visibility orange aviation markers or other similar devices to the shield wires at the Big Horn River crossing south of Thermopolis to reduce the avian collision hazard. The best location for markers is the shield wires, since these are the thinnest, least readily visible element of a transmission line. In fact, most avian collisions with transmission lines are known to occur when birds, flying in low visibility conditions, see the relatively large diameter conductors (1 1/8" diameter with a 230-kV line); rise to pass over them and strike the much thinner, less visible shield wires (Faanes, C.A., U.S. Fish and Wildlife Service). Western sees no advantage in using spiral vibration dampers. These are small devices, at most a few feet long, that are fitted to the conductors at the point where these attach to the insulators. The dampers would not in any way decrease the hazard of bird collisions, since they are fitted adjacent to much more massive, easily visible structures. Western believes that it is not feasible to fit dampers for the entire length of o span between structures because of the very great ice load that could build up under certain weather conditions, with consequent risk of severing the shield wires. The ice load would also require the use of stronger and more expensive structures. During the detail design phases of the project, in consultation with personnel from the agencies responsible for wildlife, Western will investigate the most effective and cost efficient means of increasing the visibility of the shield wires. These means may include spiral dompers near the structures with orange aviation markers and/or more closely spaced, smaller markers for the majority of the span between the structures.

Letter #28

United States Department of the Interior
OFFICE OF THE SECRETARY
OFFICE OF ENVIRONMENTAL PROJECT REVIEW
Room 488, Building 67
Denver Federal Center
Denver, Colorado 80225

IN REPLY REFER TO:
ER 84/216

April 6, 1984

Mr. Peter Ungerman
Department of Energy
Western Area Power Administration
P.O. Box 3700
Loveland, Colorado 80539

Dear Mr. Ungerman:

Enclosed are the consolidated comments from the various agencies within the Department of the Interior concerning your Draft Environmental Impact Statement (EIS) for the Thermopolis to Alcova Transmission Project (DOE/EIS 0101-D). Overall, we felt that the document presented a clearly written, comprehensive analysis of the proposal and alternatives. Particularly appreciated were your staff's efforts, especially William Melander, in coordinating with our Wyoming BLM State and field offices over the past several years. The color graphics used to describe impacts by line segment were excellent.

A We suggest after the DOE and BLM Records of Decision (ROD) have been filed, that WAPA and BLM jointly develop a Plan of Operations for this project. This will provide the site specific monitoring or mitigation necessary to fully implement the project.

B Based upon input received from several agencies, we urge you to consider segment 8C from Alcova to Casper as the preferred alternative which would also conform to the BLM's Platte River Resource Area Resource Management Plan/EIS draft issued March 20, 1984.

C Also as indicated in the DEIS, the primary alternative route via Wind River Canyon and Boysen Reservoir crosses a portion of Bureau of Reclamation (Reclamation) land below Boysen Dam. Routing the line below rather than above the dam minimizes concerns Reclamation would have with installing the line across Boysen Reservoir. Should you select the Wind River Canyon/Boysen Reservoir route, a permit will be required to construct, operate, and maintain the line across Reclamation lands. Specific Reclamation crossing requirements can be addressed at that time.

Our detailed comments are listed in Enclosure 1 by chapter and page, as applicable.

Sincerely,

Robert F. Stewart

Robert F. Stewart

RESPONSES

A - Western will cooperate with BLM in developing a Plan of Operations covering the BLM lands affected by the project.

B - Route 8C, as shown on Figure S-2 (Revised) and Link Map Subroute C (Revised) in this FEIS and Link Maps 11a, 11b, 25 and 39 in the Maps and Tables Volume of the DEIS, is now Western's preferred route between Alcova and Casper.

C - The route that crosses the Wind River immediately below Boysen Dam remains the alternative route between Thermopolis and Alcova, and is therefore not likely to be used. However, if it was ultimately selected, Western would confer with the Bureau of Reclamation in order to obtain a permit for crossing the Bureau lands at the dam.

D - No response necessary.

E - The information is noted.

F - No response necessary.

G - All known colonies observed in the field and within one mile of the ROW are shown on the link maps. A full list of colonies that must be surveyed will be formuloted as the initial task of the consultation between Western and representotives of the agencies responsible for wildlife. This list will be based on the current U.S. Fish and Wildlife Service Guidelines for black-footed ferret surveys.

H - The comment is noted.

I - The transmission timing requirements between northern Colorado and Yellowtail will depend on the load growth in the area. The Thermopolis-Alcova 230-kV line study and the Big Horn Basin study hove identified the following transmission requirements between Ault and Yellowtail, assuming a load growth rate of 5 percent per year.

Studies by Western show that the Thermopolis-Alcova-Casper 230-kV system will actually be needed as early as the summer of 1986, though under the current schedule the entire system will not be complete until the late summer of 1987. The Thermopolis-Yellowtail 230-kV line and the Ault-Alcova 230-kV line will be required by the winter of 1992/93.

An Ault-Yellowtail planning study is currently underway to determine the timing requirements of the Thermopolis-Yellowtail ond the Ault-Alcova 230-kV line segments more accurately.

Separote environmental impact statements will be performed for the Thermopolis-Yellowtail and Ault-Alcova lines as the planning on these projects progresses.

#28 Cont.

T (c) Sage Grouse Lek: T. 32 N., R. 85 W., Sec. 18, NE¼NE¼.

(d) Bald Eagle Perches: T. 32 N., R. 81 W., Sec. 19.
T. 33 N., R. 81 W., Sec. 36.

U (e) Figure 4-10 shows a black-footed ferret sighting on Pine Mountain. This may be in error as we have no knowledge or information on a sighting. Please provide BLM/FWS with any available information.

V Page 4-16 The analysis of visual and recreational resources shows a substantial difference in values between the 8C and most other routes in the Alcova-Casper system.

However, the impacts of the project (Table S-2 and Chapter 5) show only minor differences between 8C and the preferred route. This is rationalized by use of existing corridor vs. new corridor, but we feel this rationale may be overused slightly. The change in structure type (existing wood poles vs. steel pole/tower) could generate a high impact.

W Page 4-17 Paragraph 3
The resource management plan should be referred to as the Platte River Resource Area Resource Management Plan/Environmental Impact Statement (RMP/EIS). Please note that the Oregon Trail Road is also proposed to be eliminated by BLM as a corridor.

X Page 4-18 LAND USE
1. BLM's Draft Platte River RMP/EIS contains three decisions which will affect this project (1) to phase out the river corridor - routes 1B, 2B, 4C, (2) to discontinue use of the Oregon Trail corridor - route 7C, and (3) to establish a new corridor one mile north of the Oregon Trail - route 8C.

These concerns were expressed at the public hearing in Casper where testimony favored that the 8C route be accepted as the preferred alternative. This could reduce or eliminate long term impacts on the scenic, recreation, soil/watershed, and wildlife resources in this area.

Y Page 4-19 Paragraph 2
The areawide map is of a large enough scale that pothunters could locate the sites by using the map. We suggest that the small triangular symbols be deleted from future publications or distributions of the map to protect these areas from unwanted disturbance.

4. Link Map 24 (Alcova to Casper Primary Alternative Route): The existence of the Bald Eagle perch in Section 19 is noted. During the design phase of the project, Western will determine the precise location of this. It may be that it is within the Bald Eagle Winter Concentration Area shown on the Link Map, in which case the requirements for consultation will have been included in the Series 5 tables. If the perch is outside of the above area, Western will be sure that the resource is covered during consultation with the appropriate wildlife agency personnel to determine site-specific mitigation measures necessary.

5. Link Map 27 (Alcova to Casper Primary Alternative Route): Western believes the Bald Eagle perch listed as being in Section 36 is within the Bald Eagle Winter Concentration Area shown on the Link Map, and that therefore the requirements for consultation have already been committed to in the Series 5 tables.

U - The black-footed ferret sighting shown on Pine Mountain in Figure 4-10 in the DEIS was a mapping error.

V - A major basis for the relatively low visual impacts along Route 1B (the former Preferred Alcova-Casper route), despite the high sensitivity (resource value) of the area, is that the difference between the existing and proposed conditions along the route (the degree of change caused by the project) is relatively slight. This is shown in the first stretch on Figure F-5 in the DEIS. The existing condition has two 115-kV lines and one 69-kV line. The proposed condition has two 115-kV lines and one 230/345-kV line. Western believes that the final visual impact scores in the DEIS for Route 1B (186.94) and for the current preferred route, 8C (215.37), are realistic. Route 1B has lower scores because although it affects a highly sensitive area, its degree of change is relatively slight. Route 8C has higher scores because, although it passes through a less sensitive area, its degree of change is great (the placing of a 230/345-kV line in an area formerly without any lines). This conclusion in no way calls into question the suitability of Route 8C as the preferred route, however. It is obvious that the North Platte River corridor, because of its visual and recreational sensitivities, is a poor location for the existing lines. Now that the decision has been made to phase out the corridor and remove the two remaining existing lines when they come to the end of their useful lifespan, the visual and other impacts of the new 230/345-kV line alone in the river corridor must be considered. The visual impacts that would occur in this situation are discussed in Chapter 5 in the FEIS.

W - The information is noted.

X - The information is noted. Route 8C is now Western's preferred alternative for the Alcova-Casper route. Note that Western's Route 7C does not follow the old Oregon Trail Road designated corridor for mast of its length, but generally is located away from the road (sometimes outside the limits of the corridor) to the southwest.

Y - No large-scale distribution of the map showing the cultural sites (Figure 4-17) is proposed. The map does not appear in this FEIS. Western's decision to include this figure in the DEIS was based on discussions with archaeologists who felt that it would be almost impassible for pothunters to find cultural sites using the map.

#28 Cont.

Z Page 4-21 Paragraph 3, item a
This should stress that the sites are known sites and do not necessarily signify the final difference between the alternatives.

Chapter 5

AA In light of comments previously made concerning routes 8C and 7C, we feel that this chapter may require revision of some of the impact analysis presented in the draft EIS.

BB Page 5-2 Soil salinity and alkalinity may concentrate at the surface, but the effect is highly dependent on the texture and availability of subsurface moisture. Redistribution would occur only if the soil surface was friable, and thus susceptible to wind erosion.

CC Page 5-4 (2)
Wildlife, last paragraph, states that "the configuration of the poles and spacing of conductors on the proposed lines are such that they exceed the spacing normally required to protect raptors from electrocution." This appears to be correct for all of the proposed structure types on Figures 3.3 and 3.4 except structure types A and B. We have encountered raptor electrocutions on A and B structure types when a bird contacts a conductor and the pole ground wire simultaneously. We recommend that where these structure types are used, an interrupted (four-inch gap) or shielded pole ground wire be used. We also recommend powerpole construction at the Big Horn River crossing, along the Platte River or over Emigrant Gap Ridge, that provides a horizontal configuration of phase wires to reduce collision hazards to eagles and falcons.

DD

Page 5-40 Included below are comments which recommend or support previously mentioned mitigation (Table 3-3).

EE We recommend that the lines and towers be placed after June 30 and before December 1 of the construction year to avoid crucial wildlife habitat impacts. We also recommend that on public lands, no new roads be generated, and no existing roads or trails be upgraded. If any new roads are constructed, they should be rehabilitated. Construction should not be performed in wetlands and riparian areas and that no spring or streams be disturbed.

FF

GG

HH Standard Mitigation Measure No. 5. We strongly support maximum protection of trees, native shrubbery, and vegetation as stated in Measure No. 5, especially in riparian habitat. We do not recommend that the edges of clearings and cuts through trees, shrubbery, and vegetation be irregularly shaped in riparian habitat if it results in the destruction of more vegetation than is absolutely necessary.

Z - The comment is noted.

AA - Several aspects of the impact analysis and comparison of alternative routes have been revised because of new wildlife data, new concerns (mostly related to wildlife), and, most importantly, the decision by BLM to phase out the North Platte River designated utility corridor. This results in increases in visual impacts and certain biological and land use impacts along those route segments that occupy the river corridor. The revised impacts are explained in Chapter 5 and Appendix F in this FEIS. The results of the new impact analysis are summarized on Figure F.7 in this FEIS and support Western's designation of Route 8C, away from the river corridor, as its preferred Alcova-Casper route.

BB - The information is noted.

CC - During the detail design phase of the project, as part of its coordination with agencies concerned with wildlife values (Bureau of Land Management, Wyoming Game and Fish, and U.S. Fish and Wildlife Service), Western will agree on a type of protection which Western will then provide on the pole ground wire of these structure types to prevent raptor electrocution.

DD - At the Emigrant Gap Ridge Crossing (Link 25, Mile 4), Western will use a special horizontal circuit configuration structure type to reduce the risk of raptor collisions. Due to the BLM's request for minimum surface disturbance here, this may have to be a lattice structure, since that structure type is more feasible to construct in a situation where the type of vehicle that can be used for access is limited.

At the Big Horn River crossing south of Thermopolis (Link 2a, Mile 1.5), Western proposes in any case to use a horizontal circuit configuration, steel H-frame structure type.

The preferred Alcova-Casper route does not use any portion of the North Platte River corridor. In the unlikely event that any of the primary alternative routes that do follow the river corridor should become the preferred route, Western would then use horizontal circuit configuration H-frame structures in the areas of concern.

EE - The anticipated impacts to wildlife for each of the alternatives, together with the site-specific mitigation measures proposed, are described in Chapter 5 of the DEIS and listed in the tables included in the Maps and Tables Volume. The wildlife species of concern, where there is a potential for reducing impacts by constructing at specific times of the year, include bald eagle, golden eagle, pronghorn antelope, mule deer, sage grouse, and to some extent waterfowl. In these cases, as indicated in the tables, consultation with the appropriate agencies (State Game and Fish Department, U.S. Fish and Wildlife Service and Bureau of Land Management) will take place to determine the site-specific mitigation measures required. This consultation would likely include a review of the probable impacts, taking into consideration existing levels of disturbance, topographic screening, and the observed presence of the species at the actual site of the action as determined by field survey immediately prior to construction. Any necessary seasonal construction restrictions and other necessary mitigation measures will then be agreed upon between Western and the agency representatives. No construction will begin until the provisions of the Endangered Species Act have been met.

FF - Wherever appropriate, the project utilizes existing transmission line or other corridors, and therefore the need for new access ways will be limited. Western's procedures relative to construction and maintenance access are detailed on Page 3-16 of the DEIS. Access ways are required, not only for construction, but also for maintenance, and therefore must remain in place for the life of the project. Western believes that only in exceptionally critical situations would it be appropriate to rehabilitate access ways, because maintenance would then often have to be performed by helicopter or using balloon-tired, all-terrain vehicles which would increase the cost of maintenance and the time to correct outages.

Chapter 3 (H.2.c.(10) and Table 3-3) and Chapter 5 (G - Mitigation) in the FEIS and the introductory material to Tables 5-1, 5-6, 5-11, 5-16, 5-21, 5-26, and 5-31 in the DEIS describe the erosion control measures that will be taken. Prior to construction, Western will consult with the Bureau of Land Management (during development of the required Plan of Operations for BLM lands), other appropriate agencies including, if necessary, the Soil Conservation Service, and individual landowners to determine details of the specific application of these measures.

GG - The project avoids wetland/riparian areas wherever feasible. Although wetland/riparian areas are crossed, it is not anticipated that transmission line structures will be placed within such areas. Potential disturbance to wetland areas is primarily associated with the movement of vehicles and equipment during construction. These impacts will be minimized by using existing access ways wherever possible and implementation of the mitigation measures listed in Chapter 3 of the DEIS. The project will conform to applicable state and local floodplain protection standards, as provided in 10 CFR 1022.

No structures are located in or adjacent to streams or springs, but, as with wetland/riparian areas, there are necessarily many crossings of streams by existing and proposed access ways.

HH - Western recognizes that treed riparian vegetation is a special case in which the value of the vegetation itself outweighs the greater visual impact that may result from a minimal, straight-edged clearing for line ROW, and will therefore not cut or trim more than the minimum number of trees when crossing treed riparian areas.

Letter #29

TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION, INC.
12076 GRANT STREET P.O. BOX 33695 DENVER, COLORADO 80233 (303) 452-6111

April 16, 1984

Mr. Peter G. Ungerman
Area Manager
Western Area Power Administration
Loveland-Fort Collins Area Office
Department of Energy
P. O. Box 3700
Loveland, Colorado 80539

Dear Mr. Ungerman:

Tri-State has reviewed the Draft Environmental Impact Statement for the Thermopolis-Alcova-Casper Transmission Line Project, as transmitted to us with your correspondence dated February 20, 1984. The environmental analysis is thorough and presented well.

The regional analysis, as developed in Exhibit C, presents the development of a 230/345 kV transmission system between Yellowtail, Montana and Ault, Colorado which is needed to provide adequate reliability and the capability required for the future. The Rocky Mountain Transmission Planning Study, published in December, 1981, details how the proposed Thermopolis-Alcova-Casper 230 kV line is an integral part of a comprehensive transmission plan. As noted in Chapter 1, Section A, all major electric utilities that have generation and/or transmission facilities in Wyoming area participated in the Rocky Mountain Transmission Planning Study.

The 69 kV line between Thermopolis and Casper is 34-44 years old, and the 69 kV line between Casper and Alcova is 50 years old. Both lines should be replaced since the existing wood pole structures are deteriorated (per the Draft EIS). Tri-State affirms that rebuilding these lines for 230/345 kV operation is necessary to provide increased load serving capability and added reliability to the Big Horn Basin area. We are pleased that Western will rebuild the Casper-Arminto Tap 69 kV line which increases reliability to Tri-State's loads in this area and provides for future increased capability at 115 kV.

A joint study of the Big Horn Basin area was conducted in 1983 by Tri-State Generation and Transmission, Western Area Power Administration, Loveland Fort Collins Area, Wyoming Municipal Power Agency, and Pacific Power and Light. A joint report entitled, Big Horn Basin Study, was completed on January 13, 1984. It was noted in this report that by 1992 the local transmission system required to serve load needed the additional support provided by the Ault-Alcova-Thermopolis-Lovell-Yellowtail 230 kV line. As a follow up to this study, the Big Horn Basin study participants formally initiated the Ault-Yellowtail Joint Transmission Study in August, 1983.

RESPONSES

No response necessary.

#29 Cont.

The purpose of this latter study is to determine the required installation date for the 230 kV line. The study is currently in progress and the initial indications are that additional support is required at Lovell within the 1988-1992 time period.

The draft EIS focuses on the need for the Thermopolis-Alcova-Casper 230 kV line for regional and long range considerations. Given the age of the existing 69 kV facilities, it is responsible utility practice to reconstruct the existing facilities to serve anticipated future needs, increase reliability of service and minimize the overall investment in transmission facilities required. Tri-State and Western jointly have load responsibility in the Big Horn Basin area and joint studies demonstrate the need for additional 230 kV support. Tri-State supports the construction of the proposed project.

Sincerely,

D. E. MacLeod
General Manager

DEM:es/211

cc: Mr. Bill Melander (Western-LFCA)

Letter #30

Big Horn Basin Wyoming
R C & D Project

1302 Rumsey Ave., Cody, Wyoming 82414
May 7, 1984

Peter G. Ungerman, Area Manager
Department of Energy
Western Area Power Administration
Loveland-Fort Collins Area Office
P.O. Box 3700
Loveland, Colorado 80539

SPONSORED BY:

Counties
Big Horn
Fremont
Hot Springs
Park
Washakie

Towns
Basin
Cody
Dubois
Greybull
Lander
Lovell
Powell
Riverton
Thermopolis
Worland

Conservation Districts
Cody
Dubois-Crowheart
Hot Springs
Meeteetse
Nowood
Popo-Agie
Powell-Clark's Fork
Riverton
Shoshone
South Bighorn
Washakie

Mr. Ungerman

A At our Big Horn Basin Wyoming RC&D Council meeting in April of 1984 the council members were informed of the situation in the Thermopolis, Wyoming area of the mingling of the Western Area Power Administration high voltage power lines through densely populated areas of the Town.

B We are all aware that future power line corridors must be able to carry more voltage along the transmission lines while satisfying both economic and environmental criteria.

C Concerns become more prevalent as subdivisions occupy areas adjacent to and underneath existing high voltage power lines.

Apparently there is evidence suggesting that regular exposure to the electric and magnetic fields experienced under high voltage power lines may cause long-term health effects.

D Relocation of transmission power lines into corridors with other existing lines will help the orderly residential development within and near the Town of Thermopolis, Wyoming. This should be coordinated for compliance with the involvement of the town and Hot Springs County Land Use Planning Board.

E The power-line in question runs diagonally, southwest from the sub-station through Section 35, T 43 N, R 95 W and Sections 2 and 11, T 42 N, R 95 W, (See map attached). There is existant a power coorider for three lines along the west boundaries of these sections. An additional line paralleling these existing lines would have very little additional environmental or economic impact.

F Present and long term plans should include powerline corridors to reduce hazards to human lives and maintain the environment of prime development land for residential land use.

Sincerely,
George Blevins
George Blevins, Chairman
Big Horn Basin Wyoming RC&D

cc: Carl Moore, Area Superintendent, WAPA, Cody, Wyoming
Clark Mortimore, Mayor, Town of Thermopolis, Wyoming
George Dearborn, Jr., Planning Director, Thermopolis, Wyoming

RESPONSES

A - As is shown on Link Map 1 in the Maps and Tables Volume of the DEIS, the proposed Thermopolis-Alcova line never approaches closer than about 800' to any area that might be described as densely populated. (Note, however, that the map shows Thermopolis as it was in the summer of 1982).

B - No response necessary.

C - A discussion of the effects on human health of long-term exposure to the electric fields under power lines appears on Pages 5-44 and 5-45 of the DEIS. In summary, the electric field levels of the proposed lines would be less than levels where effects have been reported and below the perception levels for humans. Operational experience over several decades with 230-kV and higher voltage transmission lines has indicated no adverse biological or health effects related to electric field exposure. Therefore, the electric fields of the proposed lines are not anticipated to cause adverse health or biological effects.

D - Western's policy, which is in line with the policy of Hot Springs County and most other regulatory agencies, is to locate new transmission lines in existing utility corridors wherever possible. Examples of agency policies appear on Page 4-18 of the DEIS.

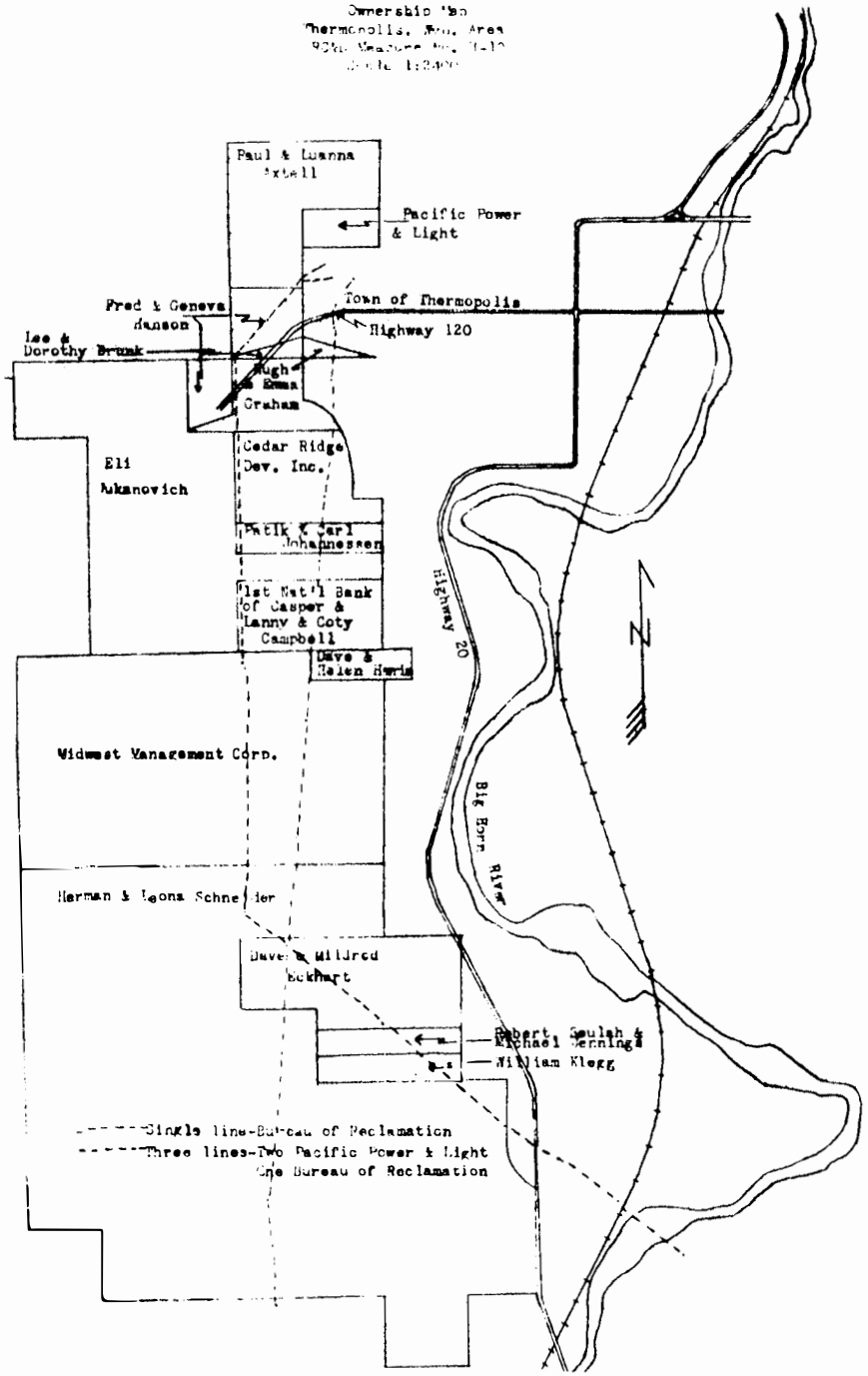
Extensive coordination with the Hot Springs County Planning officials has taken place, and will continue to take place as necessary during detailed design phases of the project.

E - As shown on Link Map 1 in the DEIS, the proposed power line does use the more westerly of the two existing transmission line routes that approach the western edge of Thermopolis from the south. This is a route that contains an existing 69-kV Western line, a 230-kV PP&L line and a minor distribution line. The 69-kV Western line will be removed and replaced with the new 230-kV Western line. The more easterly of the two corridors contains a 115-kV Western line. Since this line was built, residential development has occurred right up to both edges of the ROW, leaving no room for additional lines there. Therefore, this route was never given serious considerotion as the location of the proposed Thermopolis-Alcova line.

The Link Map Legend (on the poge preceding Link Map 1) explains the symbols used on the map to represent various types of transmission line, existing and proposed.

F - See Responses C and D above.

#30 Cont.


Ownership Map
Thermopolis, Proj. Area
Paul & Luanna Axtell
Pacific Power & Light
Fred & Geneva Hanson
Town of Thermopolis
Highway 120
Lee & Dorothy Brunk
Hugh & Emma Graham
Eli Mukanovich
Cedar Ridge Dev. Inc.
Patk & Carl Johannessen
1st Nat'l Bank of Casper & Lanny & Coty Campbell
Dave & Helen Harris
Midwest Management Corp.
Herman & Leona Schneider
Dave & Mildred Eckhart
Robert Goulah & Michael Benning
William Klegg
Highway 20
Big Horn River
N
Single line-Bureau of Reclamation
Three lines-Two Pacific Power & Light
One Bureau of Reclamation

ORAL COMMENTS RECEIVED AT PUBLIC HEARINGS
(March 13, 1984 - Thermopolis; March 14, 1984 - Riverton;
March 15, 1984 - Casper)

Individual/Agency	Comment	Response
Randy Sorenson/BLM	Pointed out that Platte River Resource Area Resource Management Plan proposes to phase out the North Platte River utility corridor; recommended that Alternative 8C be used.	Alternative 8C is the proposed alternative.
Mark Kinner	Expressed concerns about constructing the project through the Riverview Owner Subdivision; recommended that Alternative 8C be used.	Alternative 8C is the proposed alternative.
Dennis Jones	Recommended moving the proposed route approximately 1/4 mile north to avoid a proposed circular irrigation system.	The proposed route was adjusted to avoid conflicts with future irrigation. This adjustment was made near Thermopolis, just east of the Bighorn River crossing. See Revised Link Map 2A in this FEIS.
George Dearborn/ Hot Springs County	Expressed concerns about visual impacts associated with crossing Highway 20, immediately south of Thermopolis.	The proposed route was adjusted to minimize this problem. See Revised Link Map 2A in this FEIS.

Appendices

Literature Cited

Appendix A

CHANGES AND ADDITIONS TO THE DEIS

APPENDIX A - LITERATURE CITED

Faanes, C.A., U.S. Fish and Wildlife Service. 1983. Assessment of Powerline Siting in Relation to Bird Strikes in the Northern Great Plains.

Glossary

Appendix B

CHANGES AND ADDITIONS TO THE DEIS
APPENDIX B - GLOSSARY

No changes or additions.

Regional Analysis of Overall Western System - Yellowtail, Montana to Ault, Colorado

Appendix C

CHANGES AND ADDITIONS TO THE DEIS
APPENDIX C - REGIONAL ANALYSIS OF OVERALL WESTERN SYSTEM - YELLOWTAIL, MONTANA, TO AULT, COLORADO

No changes or additions.

Attendance at
Scoping Meetings,
Planning Meetings and
Public Hearings

Appendix D

CHANGES AND ADDITIONS TO THE DEIS
APPENDIX D - ATTENDANCE AT SCOPING MEETINGS, PLANNING MEETINGS, AND PUBLIC HEARINGS

Page D-2

Add the following:

Hearings

Name	Representing
March 13, 1984 - Thermopolis	
Dennis W. Jones	self
George Dearborn, Jr.	Hot Springs County Planning
John Taylor	Western Powerline Const.
Jim Kirsch	Hot Springs REA
March 14, 1984 - Riverton	
Todd Adams	Riverton Ranger
Don Higgins	self
Kirby	BLM
Bill Bartlett	BLM
March 15, 1984 - Casper	
Robert S. Sawin	self
Leo Coleman	BLM
Royce N. Harbicht	PP&L
G. Hawkey	self
Randy Sorenson	BLM
Max Torbert	Natrona County Planning
William J. & Deanna K. Weaver	Industrial Electric Co.
Mark Kinner	self

Western's Energy
Conservation Policies

Appendix E

CHANGES AND ADDITIONS TO THE DEIS
APPENDIX E - WESTERN'S ENERGY CONSERVATION POLICIES

No changes or additions.

Route Selection Process and Impact Assessment Methodology

Appendix F

CHANGES AND ADDITIONS TO THE DEIS
APPENDIX F - ROUTE SELECTION PROCESS AND IMPACT ASSESSMENT METHODOLOGY

Page F-8

Add the following after the second paragraph:

> Many wildlife impacts are caused by human disturbance, generally during the construction phases of the project. These impacts are strongly influenced by the existing level of disturbance to a wildlife resource. If, for example, a heavily traveled road lies between the location of the project and a specific wildlife resource, little or no increased disturbance from project construction is likely, and therefore low or no impacts are assumed.

Following Page F-8

The following revised versions of Tables F-2a, F-2b, and F-2d replace the versions in the DEIS.

Page F-13 and F-14

Replace Section F, Results, with the following:

F. RESULTS

1. Thermopolis-Alcova

Table F-5 (Revised) in this FEIS summarizes the results of the impact totaling process for the Thermopolis-Alcova routes.

The table takes the total impact score for each link for each resource group from the tally sheet for that link and arranges these total link scores into the two sets of links that make up the two routes (preferred and primary alternative), and presents a total comparative route score for each of the five resource groups. It also shows the length of each route.

2. Alcova-Casper

Tables F-6a through F-6f show, for the preferred alternative and four primary alternatives of the Alcova-Casper system, the same information that Table F-5 shows for the Thermopolis-Alcova system. Tables F-6a, F-6b, F-6c, and F-6e are shown in revised form in this FEIS. Tables F-6d and F-6f are unchanged and therefore are not repeated in the FEIS.

Table F-7 in the DEIS is superseded.

Impact Levels: **Physical Resources**

Revised Table F-2a

environmental condition & impact zone	resource/constraint value: VH, H, M, L	existing transmission lines & access trails (it is assumed an access trail, or better, exists wherever a TL exists)	degree of change caused by construction: H, M, L, N	level of impact from consrtuction: VH, H, M, L, N	degree of change caused by operation/maintenance: H, M, L, N	level of impact from operation/maintenance: VH, H, M, L, N	notes: VH = very high H = high M = moderate L = low N = none or very low, not included in comparison of routes
Wetland soils - actual length crossed	H	no ex. TL no ex. trail	M	H	L	L	Co-incide with riparian vegetation and irrigated agriculture.
		no ex. TL ex. road/trail	L	M	L	L	
		ex. TL ex. road/trail	L	M	L	L	
High constraint value soils (PSH) - actual length crossed	H	no ex. TL no ex. trail	M	H	L	L	Below 15% slope only, all soil characteristics contribute to res/const. values
		no ex. TL ex. road/trail	L	M	L	L	
		ex. TL ex. road/trail	L	M	L	L	
Moderate constraint value soils - actual length crossed	M	no ex. TL no ex. trail	M	M	L	L	Below 15% slope only, all soil characteristics contribute to res./const. values.
		no ex. TL ex. road/trail	L	L	L	L	
		ex. TL ex. road/trail	L	L	L	L	
Active or stabilized dune soil areas (PD) - actual length crossed	H	no ex. TL no ex. trail	M	H	L	L	Below 15% slope only, all soil characteristics contribute to res./const. values.
		no ex. TL ex. road/trail	L	M	L	L	
		ex. TL ex. road/trail	L	M	L	L	
30% + slope (all soil types) - actual length crossed	VH	no. ex. TL no ex. trail	H	VH	L	M	Above 30% slope all soils have VH res./const. value (high "k" value/ water erosion hazard)
		no ex. TL ex. road/trail	M	VH	L	L	
		ex. TL ex. road/trail	M	VH	L	L	
High "k" value soils (high water erosion hazard) on 15-30% slopes - actual length crossed	VH	no ex. TL no ex. trail	H	VH	L	M	15-30% slopes, various "k" values are applied, "k" always outweighs other soil characteristics.
		no ex. TL ex. road/trail	L	H	L	L	
		ex. TL ex. road/trail	L	H	L	L	

Impact Levels: **Physical Resources**

Revised Table F-2b

environmental condition & impact zone	resource/constraint value: VH, H, M, L	existing transmission lines & access trails (it is assumed an access trail, or better, exists wherever a TL exists)	degree of change caused by construction: H, M, L, N	level of impact from consrtuction: VH, H, M, L, N	degree of change caused by operation/maintenance: H, M, L, N	level of impact from operation/maintenance: VH, H, M, L, N	notes: VH = very high H = high M = moderate L = low N = none or very low, not included in comparison of routes
Moderate "k" value soils (moderate water erosion hazard) on 15-30% slopes. - actual length crossed	H	no ex. TL no ex. trail	H	VH	L	L	15-30% slopes various "k" values are applied, "k" always outweighs other soil characteristics.
		no ex. TL ex. road/trail	L	M	L	L	
		ex. TL ex. road/trail	L	M	L	L	
Low "k" value soils (low water erosion hazard) on 15-30% slopes. - actual length crossed	M	no ex. TL no ex. trail	H	H	L	L	"
		no ex. TL ex. road/trail	L	L	L	L	
		ex. TL ex. road/trail	L	L	L	L	
Loess; wind-blown deposits (PL) - actual length crossed	M	no ex. TL no ex. trail	M	M	L	L	
		no ex. TL ex. road/trail	L	L	L	L	
		ex. TL ex. road/trail	L	L	L	L	
Other wind-blown deposits (PW) - actual length crossed	H	no ex. TL no ex. trail	M	H	L	L	
		no ex. TL ex. road/trail	L	M	L	L	
		ex. TL ex. road/trail	L	M	L	L	
Coal (PC), Bentonite (PB), Uranium (PU) - significant deposits that may be surface mined. - actual length crossed	H	no. ex. TL no ex. trail	N	N	M	H	If no road/trail but other ROW's within 1/4 mi. of action, treat as if road present.
		no ex. TL ex. road/trail	N	N	L	M	
		ex. TL ex. road/trail	N	N	L	M	
Lake, reservoir, river or stream - 500' min. or actual length crossed	H	no ex. TL no ex. trail	L	M	L	L	If no crossing of stream bed possible (N. Platte, Wind River) then no impacts (adjacent bridges used)
		no ex. TL ex. road/trail	L	L	N	N	
		ex. TL ex. road/trail	L	L	N	N	

Impact Levels: **Biological Resources**

Revised Table F-2d

environmental condition & impact zone	resource/constraint value: VH, H, M, L	existing transmission lines & access trails (it is assumed an access trail, or better, exists wherever a TL exists)	degree of change caused by construction: H, M, L, N	level of impact from consrtuction: VH, H, M, L, N	degree of change caused by operation/maintenance: H, M, L, N	level of impact from operation/maintenance: VH, H, M, L, N	notes: VH = very high H = high M = moderate L = low N = none or very low, not included in comparison of routes
Riparian vegetation with trees. -500' min. or actual length crossed	VH	no ex. TL no ex. trail	M	VH	M	VH	All wildlife impacts may be modified on the basis of site specific characteristics such as topography and proximity to present disturbance. Assumed that the ROW is always widened whatever the action & that trees may be lost. A few cases with high adjacent topo assumed to be spannable - no impact
		no ex. TL ex. road/trail	M	VH	M	VH	
		ex. TL ex. road/trail	M	VH	M	VH	
Riparian vegetation without trees. -500' min. or actual length crossed	H	no ex. TL no ex. trail	M	H	M	H	
		no ex. TL ex. road/trail	L	M	L	L	
		ex. TL ex. road/trail	L	M	L	L	
Juniper/mixed conifer -actual length crossed	M	no ex. TL no ex. trail	M	M	M	M	Assumed that the ROW is always widened, whatever the action & that trees may be lost.
		no ex. TL ex. road/trail	M	M	M	M	
		ex. TL ex. road/trail	M	M	M	M	
Bald Eagle winter Concentration area (BE) -actual length crossed	VH	no ex. TL no ex. trail	L	H	L	M	
		no ex. TL ex. road/trail	L	H	L	M	
		ex. TL ex. road/trail	L	H	N	N	
Sage grouse leks and nesting areas. -length across a 2mi. radius zone centered on the lek.	H	no. ex. TL no ex. trail	L	M	L	M	
		no ex. TL ex. road/trail	L	M	L	M	
		ex. TL ex. road/trail	L	M	N	N	
Prairie dog town; Potential Black Footed Ferret Habitat (BF) -length across town plus a 330' buffer zone	H	no ex. TL no ex. trail	M	H	N	N	Must be surveyed prior to construction. NO impact if no ferrets found. Very high impacts if ferrets found.
		no ex. TL ex. road/trail	M	H	N	N	
		ex. TL ex. road/trail	M	H	N	N	

TABLE F-5 (Revised)

IMPACT COMPARISON BY LINK AND ROUTE: THERMOPOLIS-ALCOVA ROUTES
(units are total miles equivalent of impact)

																Total Impact Score	Impact Points Per Mile
PHYSICAL																	
Preferred Route (69)	Link	1	2a	2b	2c	2d	2e	7	9	10a	10b	12	14	16-18	5		
	Score	17.28	65.70	76.70	50.98	31.48	32.39	7.39	81.10	42.26	28.96	22.06	26.21	5.57	3.90	491.98	4.04
Primary Alt. Route (115)	Link	1	3a	3b	3c	3d	3e	3f	10a	10b	12	14	16-18	6	—		
	Score	17.28	83.22	78.15	42.13	28.72	25.50	64.96	42.26	28.96	22.06	26.21	5.57	41.73	—	506.75	3.93
BIOLOGICAL																	
Preferred Route (69)	Link	1	2a	2b	2c	2d	2e	7	9	10a	10b	12	14	16-18	5		
	Score	5.40	49.07	36.73	36.76	22.66	12.60	2.11	27.79	38.53	11.84	14.33	17.74	4.81	4.98	285.15	2.34
Primary Alt. Route (115)	Link	1	3a	3b	3c	3d	3e	3f	10a	10b	12	14	16-18	6	—		
	Score	5.40	23.32	39.20	44.62	12.62	9.28	34.55	38.53	11.84	14.33	17.74	4.81	27.68	—	274.08	2.13
LAND USE																	
Preferred Route (69)	Link	1	2a	2b	2c	2d	2e	7	9	10a	10b	12	14	16-18	5		
	Score	5.53	15.72	0	1.04	0.28	1.85	0.21	32.28	1.36	0	0.09	0	8.00	4.55	70.91	0.58
Primary Alt. Route (115)	Link	1	3a	3b	3c	3d	3e	3f	10a	10b	12	14	16-18	6	—		
	Score	5.53	8.73	2.55	0.52	0.74	0.30	2.65	1.36	0	0.09	0	8.00	29.74	—	60.21	0.47
CULTURAL																	
Preferred Route (69)	Link	1	2a	2b	2c	2d	2e	7	9	10a	10b	12	14	16-18	5		
	Score	0	0	0	20.15	1.14	4.23	0	0	1.47	0	0.24	1.28	0	0	28.51	0.23
Primary Alt. Route (115)	Link	1	3a	3b	3c	3d	3e	3f	10a	10b	12	14	16-18	6	—		
	Score	0	0.28	0.09	0	0.24	0	0.81	1.47	0	0.24	1.28	0	0	—	4.41	0.03
VISUAL																	
Preferred Route (69)	Link	1	2a	2b	2c	2d	2e	7	9	10a	10b	12	14	16-18	5		
	Score	23.41	104.53	5.00	50.97	33.50	22.83	4.22	82.07	11.04	2.01	20.12	26.92	20.04	4.70	411.36	3.38
Primary Alt. Route (115)	Link	1	3a	3b	3c	3d	3e	3f	10a	10b	12	14	16-18	6	—		
	Score	23.41	46.14	65.97	24.75	16.25	3.37	12.95	11.04	2.01	20.12	26.92	20.04	49.38	—	322.35	2.50

LENGTH IN MILES																230 kv	69/115 kV	Total
Preferred Route (69)	Link	1	2a	2b	2c	2d	2e	7	9	10a	10b	12	14	16-18	5*			
	Length	2.77	13.68	15.00	13.00	13.00	11.42	2.10	16.00	13.00	6.57	6.30	6.38	1.64	0.87*	121.23	0.87	121.73
Primary Alt. Route (115)	Link	1	3a	3b	3c	3d	3e	3f	10a	10b	12	14	16-18	6*	—			
	Length	2.77	15.00	16.00	15.00	10.00	9.00	16.28	13.00	6.57	6.30	6.38	1.64	10.97*	—	117.94	10.97	128.91

TABLE F-6a (Revised)

IMPACT COMPARISON BY LINK AND ROUTE:
ALCOVA-CASPER PREFERRED AND PRIMARY ALTERNATIVES
(units are total miles equivalent of impact)

PHYSICAL IMPACTS											Total Impact Score
Route 1B	Link	19/21	23	24	27	--	29	31	35/37	39	
(Prim. Alt.)	Score	9.74	38.16	11.89	24.55	--	2.92	0.74	3.81	5.09	96.90
Route 2B	Link	19/21	22	24	27	--	29	31	35/37	39	
(Prim. Alt.)	Score	9.74	54.04	11.89	24.55	--	2.92	0.74	3.81	5.09	112.78
Route 4C	Link	19/21	22	24	26	28	34/41	35/37	39	--	
(Prim. Alt.)	Score	9.74	54.04	11.89	56.17	4.48	0.95	3.81	5.09	--	146.17
Route 7C	Link	13	20	25	28	--	34/41	35/37	39	--	
(Prim. Alt.)	Score	49.54	30.37	42.07	4.48	--	0.95	3.81	5.09	--	136.31
Route 8C	Link	11a	11b	25	28	--	34/41	35/37	39	--	
(Preferred)	Score	50.86	43.70	42.07	4.48	--	0.95	3.81	5.09	--	150.96

TABLE F-6b (Revised)

IMPACT COMPARISON BY LINK AND ROUTE: ALCOVA-CASPER PREFERRED AND PRIMARY ALTERNATIVES

(units are total miles equivalent of impact)

BIOLOGICAL IMPACTS											Total Impact Score
Route 1B	Link	19/21	23	24	27	--	29	31	35/37	39	
(Prim. Alt.)	Score	10.69	50.68	4.38	54.24	--	1.40	0.37	1.36	3.06	126.18
Route 2B	Link	19/21	22	24	27	--	29	31	35/37	39	
(Prim. Alt.)	Score	10.69	20.88	4.38	54.24	--	1.40	0.37	1.36	3.06	96.38
Route 4C	Link	19/21	22	24	26	28	34/41	35/37	39	--	
(Prim. Alt.)	Score	10.69	20.88	4.38	29.34	2.47	0.47	1.36	3.06	--	72.65
Route 7C	Link	13	20	25	28	--	34/41	35/37	39	--	
(Prim. Alt.)	Score	64.05	18.02	26.29	2.47	--	0.47	1.36	3.06	--	115.72
Route 8C	Link	11a	11b	25	28	--	34/41	35/37	39	--	
(Preferred)	Score	43.23	25.71	26.29	2.47	--	0.47	1.36	3.06	--	102.59

TABLE F-6c (Revised)

IMPACT COMPARISON BY LINK AND ROUTE:
ALCOVA-CASPER PREFERRED AND PRIMARY ALTERNATIVES
(units are total miles equivalent of impact)

LAND USE IMPACTS											Total Impact Score
Route 1B	Link	19/21	23	24	27	--	29	31	35/37	39	
(Prim. Alt.)	Score	10.46	36.17	6.00	39.77	--	4.19	0.74	11.53	5.92	114.78
Route 2B	Link	19/21	22	24	27	--	29	31	35/37	39	
(Prim. Alt.)	Score	10.46	24.51	6.00	39.77	--	4.19	0.74	11.53	5.92	103.12
Route 4C	Link	19/21	22	24	26	28	34/41	35/37	39	--	
(Prim. Alt.)	Score	10.46	24.51	6.00	25.66	11.42	1.80	11.53	5.92	--	97.30
Route 7C	Link	13	20	25	28	--	34/41	35/37	39	--	
(Prim. Alt.)	Score	27.50	19.99	31.04	11.42	--	1.80	11.53	5.92	--	109.20
Route 8C	Link	11a	11b	25	28	--	34/41	35/37	39	--	
(Preferred)	Score	20.09	21.31	31.04	11.42	--	1.80	11.53	5.92	--	103.11

TABLE F-6e (Revised)

IMPACT COMPARISON BY LINK AND ROUTE: ALCOVA-CASPER PREFERRED AND PRIMARY ALTERNATIVES

(units are total miles equivalent of impact)

VISUAL IMPACTS											Total Impact Score
Route 1B (Prim. Alt.)	Link	19/21	23	24	27	--	29	31	35/37	39	
	Score	26.09	104.90	14.64	85.00	--	7.01	1.85	3.81	10.80	254.10
Route 2B (Prim. Alt.)	Link	19/21	22	24	27	--	29	31	35/37	39	
	Score	26.09	35.08	14.64	85.00	--	7.01	1.85	3.81	10.80	184.28
Route 4C (Prim. Alt.)	Link	19/21	22	24	26	28	34/41	35/37	39	--	
	Score	26.09	35.08	14.64	105.30	20.00	2.37	3.81	10.80	--	218.09
Route 7C (Prim. Alt.)	Link	13	20	25	28	--	34/41	35/37	39	--	
	Score	104.20	39.64	108.71	20.00	--	2.37	3.81	10.80	--	289.53
Route 8C (Preferred)	Link	11a	11b	25	28	--	34/41	35/37	39	--	
	Score	25.76	43.92	108.71	20.00	--	2.37	3.81	10.80	--	215.37

Page F-14

Replace Section G, Conclusions, with the following:

G. CONCLUSIONS

1. Thermopolis-Alcova

Figure F.6 (Revised) in this FEIS summarizes the five resource group scores for each of the two alternative routes between Thermopolis and Alcova and shows the lower in each case. It can be concluded that both routes have low impact scores. The preferred route does show higher impact levels in three out of the five resource groups. It remains the preferred alternative, however, because it is predicted to be considerably less expensive to construct. Comparative costs are discussed in Chapter 3.

Figure F.7 (Revised) in this FEIS summarizes the five resource group scores for each of the five preferred and primary alternative routes between Alcova and Casper.

Routes 2B and 4C have four and three, respectively, of five possible occurrences of first or second lowest impact of the five routes. Routes 1B and 8C (the preferred alternative) each have two out of five possible occurrences of first or second lowest impact. Route 7C has no such occurrences. Since Route 8C occupies a designated utility corridor, has clear impact advantages over 7C, is generally comparable in impacts to 1B, 2B, and 4C, and has a generally low overall impact level, it is the preferred route.

As is explained in the Introduction to Chapter 5 in this FEIS, the impact scores shown in the revised versions of Figures F.6 and F.7 are based on the assumption that the existing transmission lines in the North Platte River corridor will be removed when their useful lives expire, and no other new lines will be built there.

FIGURE F.6 (Revised)
IMPACT COMPARISON SUMMARY BY ROUTES
THERMOPOLIS–ALCOVA ROUTES

(units are total miles equivalent of impact)

	Physical	Biological	Land Use	Cultural	Visual
Preferred Route (69 kV)	491.98	285.15	70.91	28.51	411.36
Primary Alt. Route (115 kV)	506.75	274.08	60.21	4.41	322.35

 - Lower impact within each resource group (considered the same if within 10% of the lower figure).

FIGURE F.7 (Revised)
IMPACT COMPARISON SUMMARY OF PREFERRED AND PRIMARY ALTERNATIVES
ALCOVA–CASPER ROUTES

(units are total miles equivalent of impact)

	Physical	Biological	Land Use	Cultural	Visual
Route 1B (Prim. Alt.)	96.90	126.18	114.78	4.45	254.10
Route 2B (Prim. Alt.)	112.78	96.38	103.12	8.90	184.28
Route 4C (Prim. Alt.)	146.17	72.65	97.30	7.86	218.09
Route 7C (Prim. Alt.)	136.31	115.72	109.20	20.46	289.53
Route 8C (Preferred Alt.)	150.96	102.59	103.11	33.55	215.37

 - Least and next to least impact within each resource group.

Results of Impact Analysis

Appendix G

CHANGES AND ADDITIONS TO THE DEIS
APPENDIX G - RESULTS OF IMPACT ANALYSIS

In order to arrive at the revised impact scores shown in Table F-5 and Tables F-6a, F-6b, F-6c, and F-6e in this FEIS, the impact tally sheets that were shown in Appendix G of the DEIS were recalculated from annotated versions of the link map impact charts reflecting the new impact values discussed in Chapter 5 and illustrated in the revised Appendix F tables.

The revised link maps and the revised tally sheets are available for reference at Western's Loveland-Fort Collins office if needed.

CHANGES AND ADDITIONS TO THE DEIS

MAPS AND TABLES

The study area-wide data constraint maps presented in the Maps and Tables Volume of the DEIS are not presented again in this DEIS. The following changes and additions apply:

Figure F.10 - Wildlife

The black-footed ferret sighting location shown on Pine Mountain, about 27 miles west of Casper, is in error and should be removed.

Figure 4.15 - Miscellaneous Land Uses

The landing strip shown south of the Boysen-Alcova transmission line about 37 miles west of Alcova is wrongly located. It should be about 15 miles farther west, west of the Natrona/Fremont County line. It is correctly located on Link Map 3e in the DEIS.

Link Maps

The link maps remain basically unchanged from the DEIS and are therefore not presented in the FEIS. Two exceptions are Link 2a and Link Subroute C where relatively minor routing adjustments have been made and are illustrated below.

Recent wildlife data supplied by the BLM are described verbally in Chapter 4.

As a result of the reconsideration of a number of impact values, measuring the effect of the proposed Alcova-Casper line occurring alone in the North Platte River corridor, and reflecting new concerns relative to raptor collision hazard, new wildlife data provided by the BLM and additional committed mitigation measures, particularly reseeding; the link map impact charts have been extensively annotated. The new impact values are discussed in Chapter 5 and illustrated in the revised tables in Appendix F in this FEIS. The link maps with their revised impact charts are available for reference at Western's Fort Collins office if needed.

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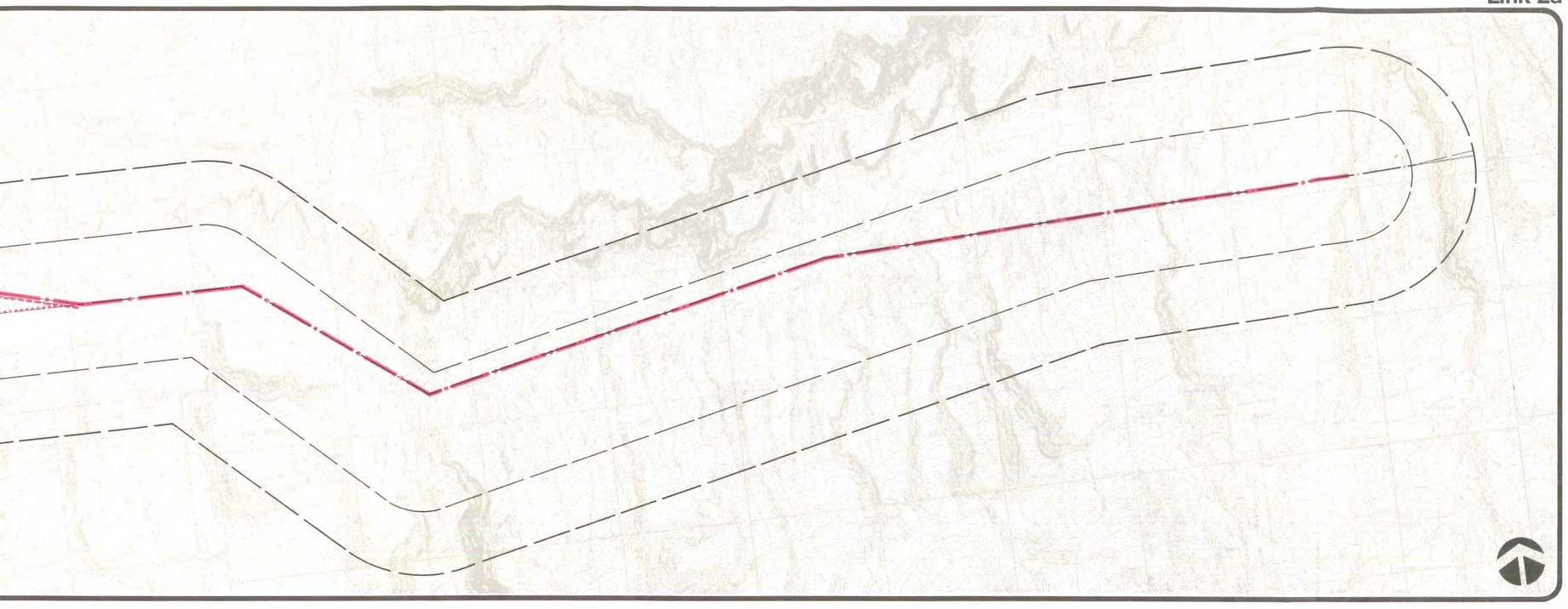
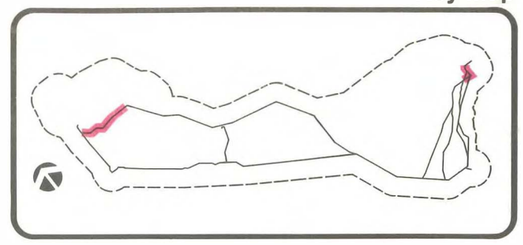
Maps and Tables

Link 2a



Key Map



Legend

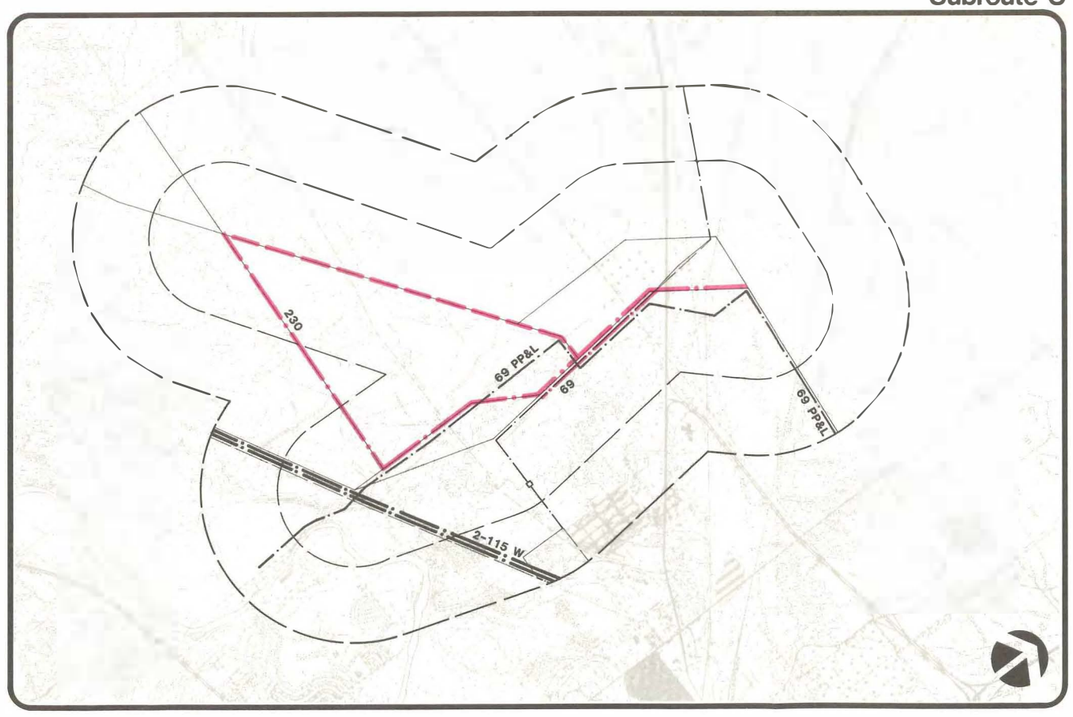
Potential Action

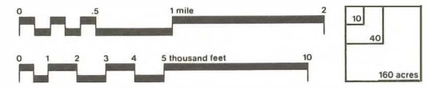
- Remove existing 69kv Western TL, reclaim ROW
- Remove existing 69kv Western TL, rebuild 230kv
- Build 230kv TL
- Construct improved access
- Route of proposed 230kv TL as shown in DEIS, now superseded

Existing System

- Existing TL, 69kv
- Existing TL, 115 or 230kv

Subroute C





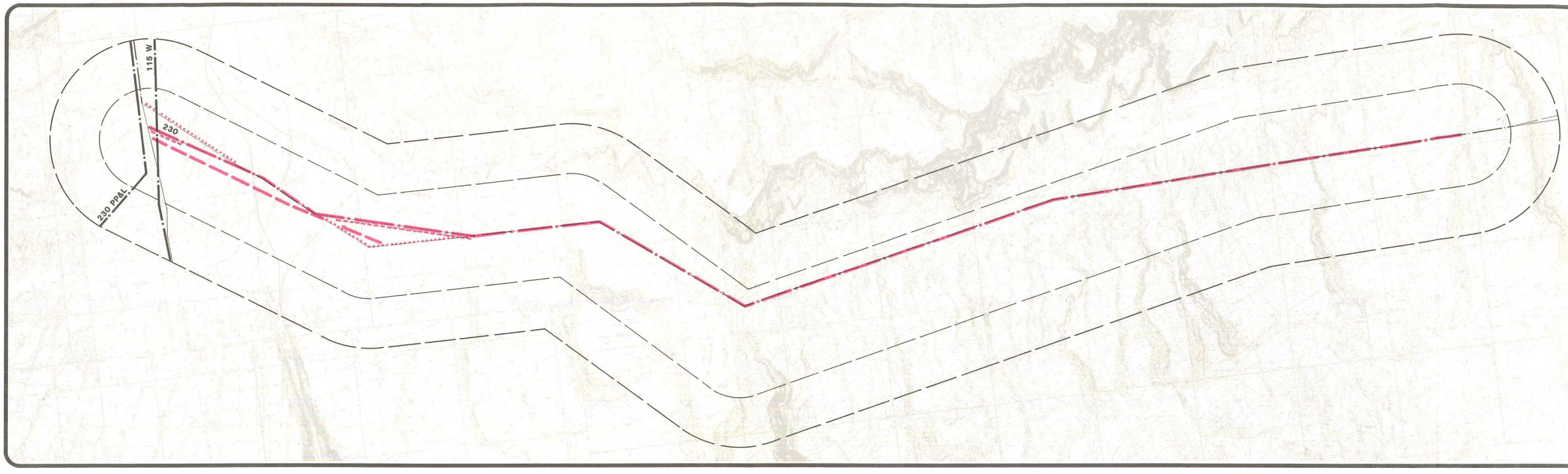
US Department of Energy

Thermopolis-Alcova-Casper Area
Electrical Transmission System

Impact Assessment

Candidate Routes

Lin



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