DOE/EIS-0090-F

Fort Peck-Havre Transmission Line Project Montana

Final Environmental Impact Statement

U.S. Department of Energy

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Responsible Official:

WILLIAM A. VAUGHAN

Assistant Secretary
Environmental Protection, Safety,
and Emergency Preparedness

FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS)

FORT PECK-HAVRE TRANSMISSION PROJECT
HILL, BLAINE, PHILLIPS, VALLEY AND McCONE COUNTIES, MONTANA

Prepared by

Western Area Power Administration

U.S. Department of Energy

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ABSTRACT

The Western Area Power Administration (Western) proposes to construct and operate a 230kV transmission line from Fort Peck to Havre, Montana, with three intermediate interconnecting substations. The 230kV transmission line, which would be initially operated at 161kV, would replace an existing 161kV transmission line, which is inadequate by current design standards and in an advanced state of deterioration, but which presently provides the only high-voltage transmission capability between Fort Peck and Havre. The proposed action, which includes plans for the abandonment of the existing transmission line, would provide electric service to current users of the existing transmission line; function as an outlet for transferring hydropower from the Fort Peck Power Plant of the Pick-Sloan Missouri Basin Program; and provide transmission capability for supplying Western's loads, as well as a vital link in the state's interconnected transmission network. Alternatives considered include no action, energy conservation, alternative transmission systems and technologies, and the proposed action with routing and design alternatives. The major impacts from the proposed action would be the potential impacts of construction-related siting activities on cultural resources, and the impacts from the transmission line itself on visual resources, other land uses, and agricultural resources and practices.

PREFACE

The Environmental Impact Statement (EIS) prepared for the Fort Peck-Havre Transmission Line Project comprises the Draft Environmental Impact Statement (DEIS) (DOE 1982) and this document, Final Environmental Impact Statement (FEIS). The two volumes are intended to be reviewed together. The DEIS includes a separate map volume and a four-volume supporting environmental report (Fort Peck-Havre Transmission Line Project Environmental Report, Wirth Associates 1982).

The DEIS, issued in July 1982, contains a statement of purpose and need, a discussion of the scoping process and project-related studies, a discussion of alternative actions, and an environmental analysis of the affected environment and environmental consequences of the proposed action for routing alternatives studied prior to July 1982. The DEIS underwent extensive public review by governmental agencies, organizations and individuals during an official comment period that included public hearings.

Subsequent to the publication of the DEIS, the 45-day comment period was extended 60 days to October 1982, in response to requests from the Hill County Board of County Commissioners and Honorable Ron Marlenee, member, United States House of Representatives. In response to public comments, additional alternative routes were studied in proximity to the Havre Substation as potential modifications to the environmentally preferred route proposed in the DEIS. This document, the FEIS, contains:

1. A comprehensive summary of the DEIS and FEIS.

2. Results of the environmental analyses of alternative routes studied in the Fort Assinniboine-Havre Substation area, which can be found in Chapter 1.

3. A description of the public review process, comments from letters and hearings on the DEIS and Western Area Power Administration's responses to comments, which can be found in Chapter 2.

4. Corrections and revisions of data in the DEIS, and new information, which can be found in Chapter 3.

Copies of the 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

INTRODUCTION

The Western Area Power Administration (Western) is proposing to construct, operate and maintain a 230kV transmission line to replace an existing 161kV transmission line between Fort Peck and Havre, Montana. This environmental impact statement (EIS) was prepared in compliance with the National Environmental Policy Act (NEPA) and the regulations of the Council on Environmental Quality, the Department of Energy, the Federal review agency responsible for approval of the proposed action, and the Bureau of Land Management (BLM), the Federal review agency responsible for granting rights-of-way across public land.

PURPOSE AND NEED

Although originally constructed in 1935, the existing Fort Peck to Havre 161kV transmission line remains an essential element in Western's electric-power system and Montana's interconnected transmission network. However, deterioration of the H-frame wood structures, grounding system, crossarms and hardware has made the operation of the line unreliable and maintenance costs excessive.

The proposed action would (1) provide continued electric service to the area; (2) improve system and service reliability; (3) improve safety conditions for Western's maintenance personnel, and reduce the frequency and costs of maintenance; (4) provide additional transmission capacity to accommodate future load-growth, thereby precluding the potential need for multiple transmission lines; and (5) contribute to energy conservation by reducing line losses (see DEIS Chapter 1).

SCOPING AND PROJECT RELATED STUDIES

DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)

Environmental studies, including regional-scale and corridor-scale studies, were conducted for more than 600 miles of alternative transmission line routes between Fort Peck and Havre. The principle studies, through which the environmental baseline for impact assessment and mitigation planning was developed, inventoried existing conditions for climate and air quality, earth resources, paleontology and ecological resources in the natural environment; visual resources, existing and planned land use, recreation and preservation land use, and socioeconomic construction- and fiscal-analysis in the human environment; and archaeological, historic, historical architecture and Native American cultural resources in the cultural environment. In addition, studies were also conducted to analyze potential electrical, biological, health and safety effects from the proposed Project (see DEIS Chapter 2).

In compliance with NEPA, appropriate Federal, state and local agencies, and interested persons participated in the identification of significant issues relevant to the proposed Project and in the development of the work plan for environmental studies. The comprehensive scoping and public involvement process included the following sequential steps:

- Scoping meetings to determine significant environmental issues to be emphasized in the environmental studies.
- Review of published and unpublished pertinent data, including a number of previous environmental studies and environmental statements germane to the study area.
- Identification and development of additional data where it was deemed necessary.
- Selection of a preliminary network of alternative transmission corridors for the 230kV transmission line between Fort Peck and Havre.
- Planning meetings to review the preliminary corridors under consideration and identify specific environmental concerns.
- Selection of the final network of alternative transmission corridors and identification by Western of a proposed centerline within each corridor.

An extensive program to contact and inform the public was conducted early in the planning process to provide information on the proposed Project to agencies, groups and individuals; to solicit input and obtain data for the environmental studies; and to identify issues and concerns about the proposed Project.

FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS)

Subsequent to the publication of the DEIS in July 1982, residents of the Herron Park subdivision approximately six miles southwest of Havre, Montana requested that Western consider alternatives to the proposed route to avoid the privately owned land north of Herron Park. Additional environmental studies, including land use, visual resources and cultural resources were conducted. New alternatives to Link 54b (portion of preferred corridor in the DEIS) within Set IV (Harlem Substation to Havre Substation) were selected and an assessment of the alternatives was conducted. The results of this addendum study are presented in Chapter I of this document.

PUBLIC REVIEW PROCESS

The public review process for the DEIS consisted of soliciting comments from government agencies, institutions, organizations and individuals to whom

approximately 300 copies of the document were sent, either in the form of letters, or remarks during public hearings conducted by Western in Glasgow, Malta, Harlem and Havre, Montana.

In response, 19 letters were received commenting on the DEIS and 19 people spoke at the public hearings. Responses to specific comments received in letters and hearings are included in this FEIS (Chapter 2).

ALTERNATIVES INCLUDING THE PROPOSED ACTION

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

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 between Fort Peck and Havre. Western would, however, attempt to meet the stated need with mitigating measures, such as treating existing woodpole structures with wood preservative, replacing structures as they give indication of structural failures and replacing hardware as it deteriorates.

While such mitigating measures might prolong the life of the existing line, they would constitute virtually rebuilding the line in a piecemeal fashion without improving reliability of Western's system. Outages from lightning strikes would continue at the high rate of 30-to-90 per year. 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 and has the advantage of reducing energy consumption with no documented adverse environmental impacts. However, Western's need, as defined in Chapter I of the DEIS, is not to reduce energy consumption but to replace an existing but deteriorating transmission line that provides the only means of transferring hydroelectric power out of Fort Peck Power Plant to the west, and bulk power to substations between Fort Peck and Havre for distribution to ultimate consumers. Since energy conservation can only affect energy demand but not provide the means of transferring electric power, it can not be considered as an alternative action for meeting the stated need.

Another alternative for meeting the stated need would be for Western to transfer energy from Fort Peck to Havre using other existing or planned transmission systems or new technologies. However, the only existing high-voltage transmission line in the proposed Project area (Fort Peck to Havre) is Western's 161kV transmission line, and there are no existing or planned transmission facilities owned by other utilities that Western could use for meeting the stated need. 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 230kV ac line would cost approximately two-to-three times as much as a 230kV ac line with, on balance, no apparent 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 to improved design standards. Accordingly, design alternatives for voltage, structures and conductor were considered along with the possibility of rehabilitating the existing line and eliminating one or more intermediate substation terminations (see DEIS Chapter 3). Results of evaluating design alternatives were incorporated in the Project description for the proposed action, the fourth alternative, which is described below and includes routing alternatives.

DESCRIPTION OF THE PROPOSED ACTION

Western proposes to construct, operate and maintain a single-circuit overhead 230kV ac transmission line between Fort Peck Power Plant, 18 miles southeast of Glasgow, Montana, and Havre Substation, approximately seven miles southwest of Havre, Montana, with intermediate interconnections at the new Richardson Coulee Substation, and Malta and Harlem substations. The existing 161kV transmission line would be removed, and the Richardson Coulee Substation relocated.

The proposed transmission line would be initially operated at 161kV. Subsequent operation at 230kV is anticipated to occur between 1990 and 1995, when upgrading of the terminal and intermediate substation facilities would be required.

Western would construct and operate the transmission line. When the line is operated at 230kV, Richardson Coulee, Malta and Harlem substations would be upgraded by Montana Power Company; Fort Peck Switchyard would be upgraded by the Corps of Engineers; and Havre Substation would be upgraded by Western.

Construction of the proposed Project is scheduled to begin in August 1983 and operation in January 1986. The expected life of the proposed Project is 100 years, assuming one replacement of the woodpole structures (see DEIS Chapter 3).

AFFECTED ENVIRONMENT

The environment potentially affected by the proposed action in north-central Montana, with the exception of communities along the Milk River valley, is sparsely populated. The study area is largely prairie and shows a general trend towards Great Plains climatology from west to east. Winters are characterized by cold waves interspersed with periods of warm winds. Summers are warm with average July temperatures in the high 60s and low 70s. Mean annual precipitation is 14-to-19 inches, nearly one-half of which occurs between May and July.

The study area falls within the glaciated section of the Missouri Plateau in the Great Plains physiographic province and is characterized by low, gently rolling grasslands and elevations from 2,000-to-3,000 feet above sea level.

There are four distinct landforms within the study area. The Milk River valley runs east-west through the study area from Glasgow to Havre. The upland plains are nearly level to sloping and are dissected by major coulees north and south of the Milk River valley. The northern slopes of the Bearpaw Mountains are located in the southwestern portion of the study area between Havre and Chinook. The Larb Hills are deeply dissected rolling uplands south of the Milk River between Malta and Glasgow.

Surface water in the study area is moderately abundant in the form of rivers, streams, lakes, reservoirs, stockponds and irrigation canals. The Milk River is the major water feature in the area. Many oxbow lakes, canals and associated wetlands lie adjacent to the river on a broad, flat floodplain from one-to-six miles wide. Minor flooding occurs each year, and the surface water in the Milk River is used for irrigated crop and livestock watering. Upland areas are dissected by narrow steep drainages, and streams occurring in coulees are seasonal or ephemeral due to low precipitation. Other water bodies in the study area include Hewitt Lake, Nelson Reservoir and Lake Bowdoin, toward the center of the study area, and Fort Peck Lake, located in the southeastern corner of the study area. Primary uses for these lakes are recreation and waterfowl habitat.

The area is vegetated primarily by mixed prairie, a community type characteristic of the semiarid climate and gently rolling topography of the Northern Great Plains. Within the study area, the five major vegetative communities are prairie, shrublands, rough breaks, wetlands and agriculture. No Federal- or state-protected plant species were identified within the study area.

The highest variety and numbers of wildlife species occur along the Milk River where riparian habitat supports a rich diversity of landbirds and mammals. The wetlands on the floodplain support large numbers of migrant and breeding waterfowl. Coulees provide narrow pockets of habitat containing deciduous browse for species such as white-tailed and mule deer. Uplands, where vegetation is somewhat sparser, serve as important breeding areas for both sage and sharp-tailed grouse, and pronghorn antelope. The most important

region for wildlife in the study area is the Bowdoin National Wildlife Refuge, approximately seven miles east of Malta.

No Federally listed endangered species were identified as breeding in the study area, although the American peregrine falcon, northern bald eagle, and black-footed ferret have ranges that overlap the study area. The gray wolf and whooping crane, although not listed for the study area, could occur as transient species at any time. State-listed species of "special interest or concern" include 32 birds, 5 mammals, 4 reptiles and 1 amphibian in the study area.

The majority of the study area is privately or county administered though large areas of public land are administered by the BLM, U.S. Fish and Wildlife Service, the Montana State Lands Department and the Fort Belknap Indian Reservation. Agriculture is the predominant land-use in the study area. Irrigated cropland is prevalent in the lowlands along the Milk River valley, while nonirrigated croplands and rangeland characterize the adjacent uplands. The major communities in the area are concentrated along U.S. Highway 2 in the Milk River valley. Havre, with an estimated 1980 population of 11,000, is the largest of these relatively small communities. Isolated farmsteads and dispersed residential areas occur throughout the study area. Commercial and industrial establishments tend to correspond to urbanized areas in the valley.

Three National Wildife Refuges lie within the study area: the Bowdoin and Hewitt Lake refuges northeast of Malta and the Charles M. Russell National Wildlife Refuge south of Fort Peck. Other important recreational areas include the Fort Peck Federal Recreation Area southeast of Glasgow, the Nelson Reservoir State Recreation Area east of Malta, the Sleeping Buffalo resort northeast of Malta, the Rookery Recreation Area northwest of Havre and the Beaver Creek County Park in Hill County south of Havre.

Class A (scenic quality) land in the study area is limited to the Bowdoin National Wildlife Refuge, where an abundance of water and variety of vegetative species creates a distinctive landscape. The Milk River valley and major ridges and bluffs of the Larb Hills are identified as Class B lands. Class C lands, which account for 50 percent of the study area, are characterized by homogeneous grasslands. High visual sensitivity occurs primarily within the Milk River valley and constitutes approximately one-third of the study area.

Of the 170 previously recorded archaeological sites in the study area, the majority (115) are habitation sites. Bison kills, bison jumps, cairns, tipi rings, petroglyphs and a possible intaglio are also recorded in the area. The Whakpa Chu'gn buffalo jump and archaeological site is the only site included on the National Register while the Beaucoup site complex, a habitation and bison procurement complex, is currently eligible for listing on the National Register.

Three historic sites including the Young-Almas House, Lohman Block and Phillips County Carnegie Library have been placed on the National Register

of Historic Places (46 FR 10645, 2/3/81), and two sites are in the process of being nominated: Fort Assinniboine and Fort Peck. Other sites of high historical significance are located in the downtown areas of Malta, Chinook and Havre as well as Fort Belknap and Fort Belknap Cemetery, located on the Fort Belknap Indian Reservation. Numerous other historical sites occur throughout the study area and are associated with periods from the 1730s to the present.

The Milk River valley has been an important area for Native Americans for centuries. Shoshoni bands resided in the valley but were later pushed out of the area by the Blackfeet tribes and Gros Ventre. The Assiniboine hunted and camped to the east of the valley, the Crow to the south and the Piegan to the west. Native American sites occurring in the study area include campsites, trading posts, burial grounds and the "Sleeping Buffalo" petroglyph. The historical sites of Fort Browning and Fort Assinniboine are in the study area as well as the site of the old Fort Belknap Agency located on the Fort Belknap Indian Reservation (see DEIS Chapter 4).

All of the prehistoric and historic resources located during the intensive survey of the Project area will be evaluated in terms of their significance. They will be assessed as part of a Multiple Resource Area or, in the case of Fort Assinniboine, as a site. Project-specific impacts will be identified when the designs of the transmission line have been determined. Western is conducting all cultural resource compliance studies in consultation with the Montana State Historic Preservation Officer and the Advisory Council on Historic Preservation.

ENVIRONMENTAL CONSEQUENCES

IMPACT ASSESSMENT/MITIGATION PLANNING PROCESS (IA/MPP)

Environmental consequences from the proposed action and alternatives are the residual impacts derived through a process that first identified, and subsequently evaluated and integrated, initial impacts and appropriate mitigation measures. The process involved assessing impacts, by comparing the proposed Project with the pre-Project environment; determining mitigation that would avoid, effectively reduce or eliminate impacts; and identifying "residual" impacts, or impacts remaining after the application of mitigation.

The principle types of environmental impacts associated with earth resources are those that would increase or accelerate the natural rate of soil erosion and those that would affect water quality.

Typical impacts to biological resources include any impact that affects any officially classified threatened or endangered species or critical habitat; affects any relatively undisturbed, rare or unique vegetative types, species or communities; creates a barrier to the migration or movement of any wildlife species; alters the diversity of biotic communities or populations of plants or animal species; affects important habitat; affects areas of low revegetation potential, or increases potential for wildlife.

Potentially significant impacts would occur to biological resources between Nelson Reservoir, Hewitt National Wildlife Refuge and associated wetlands, creating a hazard to low-flying migratory waterfowl moving between the two water bodies and feeding areas.

Characteristic direct and long-term impact types for land uses include any impact that displaces, alters or otherwise physically affects any existing, developing or planned residential, commercial or industrial use or activity, existing or planned agricultural operation, existing or planned air-facility, or affects general or regional planned and/or approved, adopted or officially stated policies, goals or operations of communities or governmental agencies.

The most significant potential land-use impacts occurring within the alternative corridors are physical conflicts with present and future agricultural activities and removal of cropland from production. Long-term impacts to agricultural resources would be annual costs of additional farm equipment, irrigation and weed-control operations, within and around transmission towers; interference with sprinkler irrigation equipment and potential conflicts with additional aerial applications.

Potential significant residual land-use impacts were also identified for individual and clusters of residences scattered throughout the study corridors and a few private airstrips.

The socioeconomic impact analysis addressed potential and negative construction worker, expenditure and fiscal effects that would result from the construction of the proposed facility. The maximum demand by construction workers for temporary accommodations could be met with existing facilities in each community, where community services would be adequate. Personal income in the region would rise as a result of Project expenditures, which would be a small beneficial impact for the region.

Visual impacts were considered to be adverse, direct and long-term. Typical impacts included impacts affecting the quality of any scenic resource; the view from or modifying the visual setting of any residential, commercial, institutional or other visually sensitive land use; the view from or altering the visual setting of any established or planned park, recreation or preservation areas; visual contrast resulting from conflicting tower types and/or materials.

Visual intrusion of the transmission line, principally because of structures contrast (no similar existing structure), would continue throughout the life of the proposed Project. The greatest residual impacts would occur in areas of natural scenic quality (Bowdoin National Wildlife Refuge) or where the transmission line would be in close proximity to residences, travel routes (e.g., U.S. Highway 2), use areas (Fort Peck Lake) or other sensitive viewing-locations.

Impacts to archaeological resources, which are nonrenewable, would be adverse and permanent. Construction and operation activities could result in

impact types affecting: archaeological resources physically and/or visually; sites or districts included in or eligible for inclusion on the National Register of Historic Places; or sites or areas identified as having special archaeological value. Impact levels were based on the probability of encountering sites and the amount of access road construction that is anticipated.

Types of impacts to historical resources were identified as direct physical impacts resulting from construction-related activities; indirect physical impacts resulting from increased access; and visual impacts created by the presence of towers and lines during the life of the Project.

Significant potential impacts would be visual impacts to Fort Belknap Church and Cemetery and visual disturbance anticipated for Fort Assinniboine.

Three types of impacts to Native American cultural resources were assessed: physical, visual and aural. The location of sacred sites will not be disclosed in this document because of concerns expressed by Native Americans for the protection of such sites.

Significant potential impacts to sacred sites would result from crossing the Fort Belknap Indian Reservation. Additionally, other Native American cultural resources may be significantly impacted in other parts of the study area (see DEIS Chapter 5).

ELECTRICAL EFFECTS

The electrical effects considered were those resulting from corona and electric fields. Corona is the electrical breakdown of the air into charged particles. Effects of corona, which are greatest during wet weather, include audible noise, visible light, photochemical oxidants, and radio and television interference. No significant adverse effects from audible noise, visible light or photochemical oxidants are anticipated. Impacts from radio and television interference, if they occur, are expected to be minimal and would be mitigated by Western to the satisfaction of the complainants.

Field effects from electric and magnetic fields created by the proposed transmission line include induced currents and voltages. Although there are no national standards for electric fields from transmission lines, the edge-of-right-of-way field for the proposed Fort Peck to Havre transmission line is calculated to be 0.65kV/M, which is well within established standards and at levels where no adverse effects have been observed. Also, the induced short-circuit current to the largest anticipated vehicle under the proposed line would be less than the National Electric Safety Code criterion of 5 mA.

Primary shocks from steady-state current would not be possible from the induced currents because of the relatively low field strengths and grounding practices of Western. Secondary shocks are not likely to occur very often, and, when they do, would represent a nuisance rather than a hazard. Spark

discharges from induced voltages could occur on objects inadequately grounded under the proposed line; however, shocks of this type would be rare.

Whether long-term direct exposure to electric fields from transmission lines causes biological or health effects in humans is controversial. Research results are often contradictory and inconclusive. The electric-field levels of the proposed Fort Peck to Havre line would be less than levels at which effects have been reported and below the perception levels for humans, and no adverse health or biological effects are anticipated.

Adverse electrical effects on agriculture are not anticipated because the electrical fields from the proposed transmission line would be below levels where effects have been observed on honeybees or crops.

Magnetically induced currents and voltages from the proposed Fort Peck to Havre transmission line would be minimized because of grounding practices of Western and available mitigating techniques that would be applied. It is highly unlikely that exposures to the magnetic fields from the proposed line would have adverse biological or health effects because of the low levels of magnetic fields generated by the line, which are equal to or less than those of appliances in the home. Reversion of pacemakers is the most substantial effect noted to wearers of pacemakers and is not considered a serious problem. To date, no evidence that a transmission line has caused a serious problem to the wearer of a pacemaker has been found (see DEIS Appendix D).

ENVIRONMENTALLY PREFERRED ROUTE

Based upon review of impact characterizations, significant unavoidable adverse impacts, individual resource routing preferences and agency/public comments, the cumulative environmental consequences of each route were summarized. Least potential impact or "environmentally preferred" routes were identified based upon a review of these data in relation to priorities of values.

The environmentally preferred route identified in the DEIS remains the same with the exception of local revisions of the routing within Set IV into Havre Substation. Following the detailed study of alternatives, the portion of the preferred corridor that was located to the north of the Herron Park subdivision was superseded by a route that avoids the Herron Park subdivision by crossing state land associated with the Northern Agricultural Research Center and Fort Assinniboine (see FEIS Chapter 1).

The preferred route (178.1 miles), originating at the Fort Peck Power Generating Plant, would proceed west to Highway 24 north of the Charles M. Russell National Wildlife Refuge, traverse parcels of agricultural land and proceed into the prairie west of the Milk River valley. The route would then turn northwest through the dissected uplands and cross the Burlington Northern Railroad before connecting with the site of the Richardson Coulee

Substation Alternate #2. From this point the route would proceed west through the upland rolling hills grasslands, through the southern portion of the Larb Hills, cross Beaver Creek and turn northwest into the Malta Substation. From Malta the route would proceed west through the hills north of the Milk River valley, turn northwest at Dodson and run north of the railroad into Harlem. Finally, the route would proceed west and south across the Milk River, run northwest across the northern portion of the Fort Belknap Indian Reservation, continue west through the upland rolling grasslands south of the valley to just west of Staten Coulee where the route would be south of Saddle Butte, continue west through the northern foothills of the Bearpaw Mountains, turn northwest across U.S. Highway 87 and then west into the Havre Substation.

The location of the existing and preferred corridors is shown in Figure 3-10(R)F.

CUMULATIVE IMPACTS OF THE PROPOSED ACTION

The cumulative environmental impact of removing the existing Fort Peck to Havre 161kV transmission line and introducing the proposed 230kV transmission line within the preferred corridor is generally considered to be beneficial. Cumulative impacts will be beneficial to land use, visual, vegetation, wildlife, wetland and Native American cultural resources. There would be no significant change to historic, paleontological or earth resources, while cumulative impacts to archaeological resources will be adverse. Beneficial cumulative land use and visual impacts include: (1) reduced agricultural impacts, (2) reduced visual impacts to residents, highway travelers and recreation sites and use areas, (3) reduced noise and radio interference, (4) improved electrical service to area residents, and (5) remove conflicts to the City of Havre's future growth area. Elimination of existing long-term impacts to the Bowdoin National Wildlife Refuge, riparian vegetation and marsh areas will reduce potential transmission collision hazards for waterfowl, resulting in beneficial cumulative impacts to biological resources. Native American cultural resources will be beneficial as a result of the removal of the existing line from the Fort Belknap Indian Reservation.

Adverse cumulative impacts to archaeological resources will result from the construction of the proposed line in areas of predominantly high site probability.

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CHAPTER I - FORT ASSINNIBOINE ADDENDUM STUDY

INTRODUCTION

Subsequent to the publication of the DEIS July 1982, residents of the Herron Park subdivision approximately six miles southwest of Havre, Montana requested that Western consider alternatives to the proposed route to avoid the privately owned land north of Herron Park. Additional environmental studies were undertaken in the area and 11 new links identified: Links 56, 57, 58, 59, 60, 61, 62, 63, 64, 65 and 66, as shown on Figure 3-9(R)F*. (Please note that the terms route, path and corridor are used synonymously.)

Local revisions of the routing of Set IV into Havre Substation to accommodate the new links required subdivision of a portion of existing Link 54a into 54b and 54c. The links were then organized into alternative paths as follows:

Path	A1	Links (54b, 54c, 66)	3.60 miles
Path	A2	Links (54b, 56, 57, 58)	2.20 miles
Path	A3**	Links (54b, 56, 59, 66)	2.10 miles
Path	A4	Links (60, 61, 62, 63, 58)	3.65 miles
Path	A5	Links (60, 61, 64, 58)	3.77 miles
Path	A6	Links (60, 65, 63, 58)	4.59 miles

The resources considered in the addendum study include wetland, land use, visual, archaeological, historical and Native American cultural resources. The other resources previously studied and addressed in the DEIS were reviewed and determined to be inconsequential for the purposes of the addendum study, and therefore, are not included in this document.

The results of environmental studies for each link and comparisons of the alternative paths are reported in this document. Since the study methodologies for the addendum wetland, land use, archaeological and Native American cultural resources studies were the same as those employed during the previous Fort Peck-Havre Transmission Line Project environmental studies, they will not be described here, but can be found in the DEIS.

For the purposes of the Fort Assinniboine Addendum Study, the visual assessment includes the visual concerns of special relevance to the historic values of Fort Assinniboine. A refined methodology, coordinating the efforts of the visual with historical resources studies, is included in this document.

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*Table and figure numbers with (R) appear in FEIS as revised DEIS tables and figures, and table and figure numbers with an "A" appear in the FEIS as supplementary (or addendum) information to the DEIS. Also, table and figure numbers with an "F" indicate that they appear only in the FEIS.
**Environmentally preferred route.

ADDENDUM STUDY DESCRIPTION

Background

To the south of Herron Park subdivision, on state land, is Fort Assinniboine, a historic site that is currently being considered for inclusion on the National Register of Historic Places. Because of the legal restrictions imposed by such a designation, Fort Assinniboine was considered as an exclusion area during the selection of alternative corridors from Fort Peck to Havre substations during the original environmental studies for this project.

Furthermore the Fort Assinniboine area is currently used as an agricultural experiment station, the Northern Agricultural Research Center, operated by Montana State University. In response to queries, it was determined that the construction and mere presence of a transmission line across the experimental plots would have a deleterious effect on research activities. Therefore, the agricultural research plots south and west of Fort Assinniboine were also considered an exclusion area during the initial corridor selection.

By considering Fort Assinniboine and the Northern Agricultural Research Center as exclusion areas, direct access for transmission corridors to the Havre Substation from the south was eliminated as an alternative. Replacing the existing 161kV transmission line using the existing right-of-way (ROW) would require construction within as close as 100 feet of numerous residences along Highway 87. The proposed route connection with the Havre Substation as presented in the DEIS avoided Fort Assinniboine, the Northern Agricultural Research Center and the existing ROW along Highway 87, and placed the line beyond 500 feet of residences in the Herron Park area.

Study Approach

As a result of the issues raised during the public comment period concerning visual resources, land use and related impacts to Herron Park, the Fort Assinniboine Addendum Study was initiated.

The general approach to the Fort Assinniboine Addendum Study is consistent with the corridor selections and impact assessment process described in Chapter 2 of the DEIS. The following sections provide a brief overview of the addendum-study approach. All figures are presented at the conclusion of this document.

Study Area Determination and Inventory

The initial task was to determine a study area within which alternative corridors would be selected. This first required establishing a boundary for the area associated with the historic Fort Assinniboine/Agricultural Experiment Station site being considered for inclusion on the National Register of Historic Places. The historic-site boundary, as shown on Figure 1-1AF, establishes the

portion of the study area where there would be concerns for adverse effects to cultural resources. The types of effects in consideration for Fort Assinniboine include: (1) potential destruction or alteration of a historic feature, or (2) the introduction of a visual element that is out of character with the Fort Assinniboine setting, as noted in the Federal Register (36 CFR Part 800).

Second, land use patterns, particularly agricultural, adjacent to the historic-site boundary (shown in Figure 1-1AF) were also an important consideration in establishing the study area. The study area established allowed for adequate alternative routing with these two constraints fully considered. Land use, visual, archaeological, historical and Native American resource studies were conducted within the study area, including the historic-site area, in order to refine the data gathered during the DEIS preparation.

Corridor Selection and Impact Assessment

A system of alternative corridors was selected within Set IV that allowed for a comparison of those alternatives to the comparable portion of the proposed route in the DEIS (see Figure 1-1AF). The location of each new alternative link was based upon consideration for agriculture, residences, highways and visual characteristics associated with Fort Assinniboine.

The assessment of and mitigation planning for alternative links was conducted in a format consistent with the DEIS. Field studies of alternative links were conducted for each resource investigation. This assessment resulted in a detailed comparison of alternative corridors, and a selection of a preferred route.

Data Presentation

Discussions of the affected environment and environmental consequences identified for each of the resources studied are included in the following sections. Also included are a summary comparison of routes and a discussion of the environmentally preferred route. Tables summarizing the resource inventories (Tables B-1 to B-5) and environmental consequences (Table B-6) by path are presented in Appendix B of this document.

THE AFFECTED ENVIRONMENT

Natural Environment

Floodplain/Wetland

Links 56, 61 and 65 would cross the Beaver Creek floodplain.

Link 56 - Link 56 would cross .37 mile.

Link 61 - Link 61 would cross .30 mile.

Link 65 - Link 65 would cross .20 mile.

Human Environment

Land Use

Land uses along Links 54b, 54c and 56 through 66 were inventoried in October and November 1982.

Results

Land uses along each link are summarized below. Reference should be made to Figure 1-2AF when reviewing this section.

Link 54b - Link 54b crosses 0.57 mile of private rangeland and 0.02 mile of rangeland within the Northern Agricultural Research Center. That portion of Link 54b within the Northern Agricultural Research Center crosses land designated as a future range research site.

Link 54c - Land uses crossed by Link 54c include two future range research sites, cropland, rangeland and Highway 87. Cropland crossed includes irrigated alfalfa as well as wheat and hay fields. Link 54c crosses 1.61 miles of private land and 1.37 miles in the Northern Agricultural Research Center.

Link 56 - Link 56 crosses a future range research site, irrigated alfalfa fields, a hay field and a multiple-use agricultural area. This multiple-use area is mainly used for grazing and calving. Link 56 is entirely within the boundary of the Northern Agricultural Research Center.

Link 57 - Link 57 crosses the multiple-use agricultural area, a county road and rangeland. Link 57 is entirely within the Northern Agricultural Research Center.

Link 58 - Link 58 crosses Highway 87 and a small portion of rangeland within the Northern Agricultural Research Center.

Link 59 - Link 59 crosses the multiple-use agricultural area, Highway 87 and rangeland all within the Northern Agricultural Research Center.

Link 60 - Land uses crossed by Link 60 include rangeland and a winter grazing area. Link 60 crosses 1.05 miles of private land and 0.08 mile of the Northern Agricultural Research Center.

Link 61 - Land uses crossed by Link 61 include a winter grazing area, rangeland and wheat and alfalfa fields. Link 61 also crosses a county road at two locations. A portion of the rangeland crossed by Link 61 (0.37 mile) is

designated as a potential agronomy research site. The entire link is within the Northern Agricultural Research Center.

Link 62 - Link 62 crosses rangeland and is entirely within the Northern Agricultural Research Center.

Link 63 - Link 63 crosses an irrigated corn field and rangeland within the Northern Agricultural Research Center.

Link 64 - Land uses crossed by Link 64 include rangeland and irrigated alfalfa and corn fields. Link 64 is entirely within the Northern Agricultural Research Center.

Link 65 - Land uses crossed by Link 65 include a winter grazing area, wheat and alfalfa fields and three roads. Link 65 crosses 1.61 miles of private land, 1.09 miles of the Northern Agricultural Research Center, and 1.01 miles of other state land.

Link 66 - Link 66 crosses Highway 87 and rangeland within the Northern Agricultural Research Center.

Visual Resources

Methodology

Approach

Because of the site-specific concerns, the broad-scale Visual Resource Management methodology employed in the Fort Peck to Havre visual resources study (DOE 1982, Wirth Associates 1982) was modified so as to focus on the visual concerns unique to the study area.

The analysis of the existing and potential visual conditions in the Fort Assinniboine area consists of two major, overlapping components: (1) the general visual resources and impacts in the study area; and (2) those visual resources and impacts of special relevance to the historic values of the Fort Assinniboine area. The latter component provides the avenue for coordination of the visual analysis with the history assessment.

The following aspects of the visual resource in the study area were inventoried:

- key viewing areas
- visual influence zones
- visual features
- zone of historic visual integrity

Maps and aerial photography of the study area were obtained. During field trips (September-November 1982) to the site most of the area was walked or

driven. Numerous color photographs were taken in order to record and analyze the pertinent visual settings. Local concerns were identified in meetings with members of the community and through contacts with agencies. Reference should be made to Figure I-3AF when reviewing this section.

Key Viewing Areas - Those areas from which views are considered to be particularly sensitive, were divided into two types, each of which is represented by selected viewpoints, as follows:

1. History-related viewing areas - sites of historic importance, having visual and/or historical interpretation opportunities, represented by:

   Viewpoints

   I (Inner Fort area)
   II (Outer Fort area)
   III (Historical marker on Highway 87, and nearby views along entry road to the Northern Agricultural Research Center)

2. Residential/highway-related viewing areas - areas from which relatively large numbers of people obtain views or from which views of long duration are obtained, i.e.,

   - Herron Park residential area
   - Evergreen campground
   - Highway 87
   - Outlying farmsteads and residences

These viewing areas and specific viewpoints were documented on maps and photographs.

Visual Influence Zones - Visual influence zones consist of areas of landscape which are significant or distinctive in a particular view or view corridor. These zones lie beyond the immediate foreground of the viewing area.

The study area was divided into distinct landscape units having reasonable homogeneity in landform, vegetation, structures and distance from principal viewing areas. Several of these units were identified as important visual influence zones seen from key viewing areas as shown on Figure I-3AF. These zones were categorized - first, as history-related or residential/highway-related; and second, by distance from key viewing areas, as follows:

- foreground (within approximately ¼ mile)
- middleground (approximately ¼ - 3 miles)
- background (approximately 3 miles or more)

The visual influence zones were mapped, together with important viewing directions or lines-of-sight from history-related Viewpoints I-III, and each residential/highway-related viewpoint.

Visual Features - Visual features are individual points, objects or sites of visual interest or distinctiveness. Visual features may add to or detract from the scenic qualities of an area.

The following features were identified and mapped in the study area and surrounding region:

- Historic features, e.g., surviving Fort buildings, shelterbelts and bunkers;
- Topographic features, i.e., prominent knolls and buttes such as Squaw Butte, Bearpaw Mountains and various ridgeline summits; and
- Utility and communication facilities.

Important visual influence zones and features were also depicted in aerial views (sketches) of the study area, for presentation purpose in public meetings.

Zone of Historic Visual Integrity - In this study, the landscape setting for the historic sites is a major consideration. It is necessary to identify those features of the landscape which contribute to the setting for historic sites and which retain some integrity in natural or historical character. These areas are important to the quality of the historic setting and the opportunity to visualize the site in its historical context.

The setting of Fort Assinniboine is dominated by the higher country to the south and southeast, which coincides with areas of rangeland that have few apparent recent man-made modifications. The zone of historic visual integrity is therefore identified principally as those visual influence zones which are important seen areas from Fort Assinniboine, together with the viewing corridors leading to them. The boundaries (shown in Figure I-3AF) were determined by the sight-lines from history-related Viewpoints I-III and exclude areas in which major recent activities are evident.

Results

Link 54b - Link 54b is in the foreground of a local residence and in the middleground of Highway 87 and Fort Assinniboine. The visibility between mile 0.1 and 0.26 has been reduced by relocating the route to the east side of a prominent knoll. This link is within the zone of historic visual integrity from Fort Assinniboine and is associated with views toward Squaw Butte.

Link 54c - Link 54c is in the foreground of Highway 87 and local residences in Herron Park and is in the middleground of Fort Assinniboine. The initial 0.84 mile of this link is within the zone of historic integrity from Fort Assinniboine, where views are directed toward Squaw Butte. This link would be skylined from Highway 87 and open views from Herron Park between mile 1.04 and 2.71 (see Figure I-7AF).

Link 56 - Link 56 would be in the middleground of Fort Assinniboine between mile 0.00 and 0.53, and in the foreground for the remainder of this segment. The initial portion (0.00 to 0.60 mile) would be within the zone of historic integrity in association with views toward Squaw Butte to the east. The visibility of the section between mile 0.30 and 1.00 from Fort Assinniboine is variable, due to topographic screening where the link is within the Beaver Creek Valley. Views of this link become open and skylined from mile 1.00 to the intersection of Links 57 and 59 at the south side of Highway 87 (see Figure 1-4AF).

Link 57 - Link 57 directly parallels the south side of Highway 87 within foreground views both from the highway and a roadside historical marker associated with Fort Assinniboine.

Link 58 - Link 58 crosses Highway 87 where views to transmission towers would be open and skylined. Views in this area are modified by existing transmission lines and the Havre Substation.

Link 59 - This link would cross Highway 87 and generally parallel the north side of the road.

Link 60 - Link 60 is visible within the middleground from Fort Assinniboine within the zone of historic visual integrity. This link would be skylined along a ridge to the south of the Fort, as shown in Figure 1-5AF.

Link 61 - Link 61 would be skylined within middleground views south from Fort Assinniboine as seen in Figure 1-6AF. The initial 0.81 mile is within the zone of historic visual integrity. The remaining portion of this link would be in the middleground of Highway 87 and entrance road into Fort Assinniboine.

Link 62 - Link 62 is visible from Highway 87 within the foreground and middleground as well as the near middleground from the Fort Assinniboine entrance road.

Link 63 - Link 63 parallels existing transmission facilities within the foreground of Highway 87.

Link 64 - Link 64 parallels the entrance road into Fort Assinniboine and is also within the foreground of Highway 87. This link would also be visible over the top of the shelter belt to the outer Fort buildings to the east.

Link 65 - Link 65 is within the middleground views to the south of Fort Assinniboine and would be skylined within the zone of historic visual integrity in areas up to mile 1.08. The remainder of this link is partially in the middleground of Highway 87 up to mile 1.09 and in the foreground to the end of the link.

Link 66 - Link 66 is a short connection into the Havre Substation and is within the foreground of the north side of Highway 87.

Cultural Environment

Archaeological Resources

Field reconnaissance was conducted along uncultivated portions of the new links in November 1982. The methodology used was the same as that used during the Fort Peck-Havre Transmission Line Project environmental study (DOE 1982, Wirth Associates 1982). Refer to Figure 1-10AF when reviewing this section.

Results

Levels of the probability of encountering archaeological sites are summarized by link below.

Link 54b - The entire alignment (0.59 mile) would cross an area identified as having a moderate probability of encountering sites.

Link 54c - The entire alignment (2.98 miles) would cross an area identified as having a low probability of encountering sites.

Link 56 - The alignment would cross areas identified as having low (1.02 miles), moderate (0.05 mile) and high (0.14 mile) probability.

Link 57 - The alignment would cross areas identified as having low (0.19 mile) and moderate (0.17 mile) probability.

Link 58 - The entire alignment (0.04 mile) would cross an area identified as having a low probability of encountering sites.

Link 59 - The entire alignment (0.27 mile) would cross an area identified as having a low probability of encountering sites.

Link 60 - The entire alignment (1.13 miles) would cross an area identified as having a moderate probability of encountering sites.

Link 61 - The alignment would cross areas identified as having low (1.16 miles), moderate (0.43 mile) and high (0.11 mile) probability.

Link 62 - The entire alignment (0.35 mile) would cross an area identified as having a low probability of encountering sites.

Link 63 - The entire alignment (0.43 mile) would cross an area identified as having a low probability of encountering sites.

Link 64 - The entire alignment (0.90 mile) would cross an area identified as having a low probability of encountering sites.

Link 65 - The alignment would cross areas identified as having low (0.86 mile), moderate (2.04 miles), and high (0.09 mile) probability.

Link 66 - The entire alignment (0.04 mile) would cross an area identified as having a low probability of encountering sites.

Historical Resources

Results

Overview

Because of site-specific concerns, a general historical overview of the study area is provided.

The latter part of the 1870s in Montana was marked by friction between the Indians and whites. The battle of the Little Big Horn occurred in 1876, followed by the withdrawal of Sitting Bull and his band of Sioux to Canada. From there they made occasional forays across the border to hunt. In 1877 Chief Joseph and the Nez Perce led the U.S. Army in a chase all across the Territory of Montana before they were captured near the Canadian border. These incidents and others helped build sentiment for establishment of a military post north of the Missouri River.

Following the recommendation of Lieutenant General Phil H. Sheridan, commander of the military division assigned to the Missouri River area, Congress appropriated $100,000.00 to establish a fort in northern Montana. In 1878, Lieutenant Colonel John R. Brooke was detailed to select a site. After thorough inspection of the region, a site was selected on the left bank of Beaver Creek about four miles south of its junction with the Milk River, 71 miles northeast of Fort Benton and 28 miles west of the Indian Agency of Fort Belknap. The location was regarded for many years as one of the most important points in the northwest.

In the spring the 18th Infantry was ordered to the new post from Atlanta, Georgia. The post, named Fort Assinniboine, was laid out and formally established on May 9, 1879. The post was laid out in the form of a rectangle and by points of the compass lies nearly northeast and southwest. See Figure I-11AF.

Fort Assinniboine was the largest post ever constructed in Montana. The size of the entire installation, including hay and coal-field reservations, was a total of 220,000 acres. The fort, meant to be a permanent post, was carefully planned and well built to withstand the elements. Construction in 1879 and 1880 provided 74 buildings. Bricks manufactured on the post and locally quarried stone were used extensively as building materials. Other materials were shipped from the east. Subsequent construction eventually increased the number of buildings to 104. When complete, the fort could accommodate 10 companies; the completement of men was usually 500.

Fort Assinniboine had a tremendous military importance both for American foreign policy viz-a-viz Canada and for the effect it had on the outcome of the Northwest (Riel's) Rebellion in Canada in 1885. The fort is situated in the middle of the southern half of the area traditionally occupied by the Cree and their allies, the Assinniboine, the traditional and strongest native military power in the northwest and central area of Canada. One of the major Cree bands, called the Prairie People and later to settle at Rocky Boy, Montana, occupied the area just north of the Missouri River prior to the establishment of Fort Assinniboine. However, the Cree were traditional allies of the British and apparently the Americans felt as a matter of policy that the frontier would be more secure if they were pushed out of the area. They accomplished this through aiding the Cree's traditional enemies, the Blackfoot and Gros Ventres. By 1885 the Cree military force in northern Montana had been broken through the power of the U.S. military. This was crucial to the outcome of Riel's Rebellion. The Canadians were free to act with impunity in destroying the armed forces of Riel and the provisional government, and then the armies under Chief Poundmaker, and to attempt to destroy Big Bear's band. Big Bear's band, under the leadership of Little Bear, staged a retreat from northern Saskatchewan through land controlled by thousands of Canadian troops until December of 1885 when they received diplomatic asylum from the United States at Fort Assinniboine. Survivors of this epic march contend that it was more remarkable than Chief Joseph's retreat. Thus, the establishment of Fort Assinniboine destroyed not only the Cree military might south of the border, but by that destruction also doomed the provisional government in Saskatchewan and probably ended the dreams of the Metis people, and the Cree, to an independent native state in the area.

The presence again during the years of 1887-88-89 of an unusual number of Canadian Indians about Belknap and the Bearpaw Mountains caused some apprehension. As the Sioux in South Dakota became restless and defiant, the manner of the border Indians also changed. When the outbreak at Pine Ridge occurred, a large part of the garrison at Fort Assinniboine was hurried eastward and the military force at Fort Peck was greatly strengthened.

When the Spanish-American War broke out in 1898 the post was almost stripped of men. At that time it was garrisoned by the 10th Cavalry (Negro). One of the officers of the 10th was Lieutenant John J. Pershing and it was from his troops that he gained the nickname of "Black Jack."

In 1903, after the Spanish-American War, Fort Assinniboine was reopened by the 2nd Infantry. Routine was resumed with no events of any importance to interrupt it. The Indians were quiet. On May 31, 1911 Congress ordered Fort Assinniboine to close.

Eventually in 1916, Rocky Boy's band of Chippewas and other homeless Indians of Montana were given 56,035 acres of Fort land and the State of Montana purchased nearly 2,000 acres to use as an agricultural experiment station.

At the experiment station, or the Northern Agricultural Research Center as it is formally named, experiments in dryland farming, crop rotation, summer

fallow, shelter belt plantings, improved winter wheat varieties, reseeding rangeland, strip farming, use of stubble mulch, chemical weed control and livestock research have been carried out for more than 60 years. The applied results have consistently improved the productivity of the land in Montana and elsewhere.

The boundary of the historic-site area currently under consideration is defined not only by the extant buildings and remaining foundations which were central to the fort and within the 1908 fenced area, but, also by a number of other remaining historical features (shown on Figure I-11AF). The majority of these features were associated with the military activities at Fort Assinniboine, and they include other features within the area fenced in 1908 (e.g., parade ground, Indian scouts' quarters, cemetery area), the brick-source area, garden area, two trash-dump areas and a portion of the target area. In addition, a few of the historical features within the boundary are remnants dating from the establishment of the Agricultural Experiment Station and include the shelter belt (or windbreak), agronomy plots and native prairie plot.

Historic Sites/Features Affected

Outside of the Fort Assinniboine/Agricultural Experiment Station historic-site area, no historic sites were identified. Within the historic-site area, no historic features would be physically affected by any of the links traversing the area (i.e. Links 54c, 56, 57, 59, 60, 61, 63 and 64). The integrity of the visual settings associated with the historic-site area is, however, a major consideration and is further discussed in conjunction with visual resources in the "Visual Resources" section in this chapter.

Native American Cultural Resources

The study was designed to address Native American concerns and values for places of contemporary or heritage significance which might be located within the Fort Assinniboine Addendum Study area. It includes, but is not restricted to, identification of places of special social and religious significance, documentation of Native American concerns for these places and Native American recommendations for their treatment. These goals were accomplished through the application of three complementary study components--Native American contacts, archival research and ethnographic research. The methodology is described in the DEIS (DOE 1982) and the Cultural Resources Environmental Report (Wirth Associates 1982). The present study was conducted from October to December of 1982.

Results

A total of five Native American cultural resources were inventoried for the Fort Assinniboine study area. These include three burial grounds, the old Fort Assinniboine military site, and the multiple resource exploitation area

associated with Beaver Creek which passes through the study area. Each of these resources was assigned a level of sensitivity. The methodology employed to assign sensitivity is discussed in the DEIS (DOE 1982) and the Cultural Resources Environmental Report prepared for the Fort Peck-Havre Transmission Line Project (Wirth Associates 1982). A summary inventory by site showing levels of sensitivity is provided in Table 1-1AF. Sites were identified along Links 54c, 56, 60, 61 and 65. A summary inventory is provided below.

TABLE 1-1AF
NATIVE AMERICAN CULTURAL RESOURCES
SUMMARY INVENTORY BY SITE WITH SENSITIVITY

Site Number I	Site Type II	Sensitivity Level III	Source of Information IV
	RELIGION AND RITUAL (a)		
011a	Burial Ground	Maximum	Native Americans Other Consultants
035a	Burial Ground	Maximum	Native Americans Other Consultants
036a	Burial Ground	Maximum	Native Americans Other Consultants
	HABITATION (c)		
045c	Military Fort	Moderate	Native Americans Other Consultants Archival
	MULTIPLE RESOURCE AREA (h)		
113h	Multiple Resource Area	Maximum	Native Americans Other Consultants Archival

Link 54c - Two sites were identified: a burial ground and a multiple resource area, both of maximum sensitivity.

Link 56 - Three sites were identified: a burial ground of maximum sensitivity, multiple resource area of maximum sensitivity, and the military fort of moderate sensitivity.

Link 60 - A multiple resource area of maximum sensitivity was identified.

Link 61 - A multiple resource area of maximum sensitivity was identified.

Link 65 - Two sites were identified: a burial ground and multiple resource area, both of maximum sensitivity.

ENVIRONMENTAL CONSEQUENCES

Natural Environment

Floodplain/Wetland

Floodplain/wetland areas would be affected by project activities, but impacts would be insignificant as no riparian vegetation would be disturbed (refer to Table 3-1F, pages 2 and 3 of 11).

Human Environment

Land Use

Results

A summary of potential impacts to land use is provided below. Reference should be made to Figure 1-8AF while reviewing this section.

Link 54b - No potential impacts to land uses were identified along Link 54b (0.59 mile).

Link 54c - Potential high impacts were identified for 0.01 mile where a turning structure would be placed in a future range research site. Potential moderate impacts could occur for 2.00 miles due to the crossing of cropland and one farmstead. The remainder of Link 54c (0.97 mile) would have no identifiable impact.

Link 56 - Potential moderate impacts were identified for 0.59 mile where Link 56 crosses cropland. Potential low impacts could occur to 0.10 mile of a future range research site. The remainder of Link 56 (0.52 mile) has no identifiable impact.

Link 57 - No potential impacts to land uses were identified along Link 57 (0.36).

Link 58 - No potential impacts to land uses were identified along Link 58 (0.04 mile).

Link 59 - No potential impacts to land uses were identified along Link 59 (0.27 mile).

Link 60 - No potential impacts to land uses were identified along Link 60 (1.13 miles).

Link 61 - Potential moderate impacts to 0.76 mile of cropland were identified along Link 61. Potential moderate impacts were identified for 0.37 mile where Link 61 crosses a potential agronomy research site. The remainder of Link 61 (0.57 mile) has no identifiable impact.

Link 62 - No potential impacts to land uses were identified along Link 62 (0.35 mile).

Link 63 - Potential moderate impacts were identified for 0.21 mile where Link 63 crosses an irrigated corn field. The remainder of Link 63 (0.22 mile) has no identifiable impact.

Link 64 - Potential moderate impacts were identified for 0.19 mile of cropland along Link 64. The remainder of Link 64 (0.11 mile) has no identifiable impact.

Link 65 - Potential moderate impacts were identified for 0.31 mile of cropland along Link 65. The remainder of Link 65 (2.68 miles) has no identifiable impact.

Link 66 - No potential impacts to land uses were identified along Link 66 (0.03 mile).

Visual Resources

Methodology

The assessment of visual impact of the proposed transmission lines is based on three major components:

- visual simulation
- visual dominance evaluation
- evaluation of effects on historic visual integrity

Visual Simulation - Important views were selected to represent transmission line links for each of the key viewing areas (except Evergreen Campground, which was determined to have no significant outward views, and scattered outlying farmsteads). The alternative transmission line depicted in each view was selected on the basis of maximum visual intrusion from that viewpoint. The most sensitive views were simulated by color photo-retouching on print panoramas, while sketch simulations were prepared for several other views. Photo simulations, Figures I-4AF through I-7AF represent the following views:

Viewpoint	View Direction	Transmission Line Links
Fort Assinniboine		
I (Figure I-6AF)	South	61
II (Figure I-4AF)	East	56, 54b
II (Figure I-5AF)	Southeast	60
Herron Park (Figure I-7AF)	North	54c

Where the existing 161kV transmission line was visible, it was removed from the simulated views.

All simulations were drawn out by manual perspective construction, based on photography with scale markers, and the calculations documented. Photography for photo-simulations and recording of scale-markers was carried out in a separate field trip during November 1982. One person set up a camera on a tripod at a given viewpoint, and by means of 2-way portable radios, directed another person with a 25-foot surveyor's pole and flag to mark transmission-line tower locations. This ensured high accuracy in position and height calculations for towers.

A 70-foot average tower height, with 700-foot average span, was assumed for tower locations, though modified for topography where necessary. The H-frame wooden-pole tower (see Fort Peck-Havre DEIS) was assumed. It was also assumed that no access roads would be built.

Visual Dominance - Visual dominance is a measure of the overall magnitude or prominence of the facility in the landscape, relative to its setting. It incorporates:

- contrast in line, form, color and texture
- scale contrast and dominance
- spatial dominance

These factors vary for a transmission line according to the following recurring conditions in the study area:

- Viewing distance (see visual influence zones above);

- Landscape complexity - highly complex landscapes, e.g., with dissected topography, rich vegetation patterns, considerable screening, or diversity of existing structures, can absorb new structures with less visual disturbance than low complexity landscapes, e.g., uniform open plains or rangeland; and

- Relative observer position - dominance varies with the relative height of the observer to the facility and the extent to which it is skylined. With superior observer positions and/or views against a land backdrop, towers and lines would normally be less prominent than with inferior observer positions and/or views against the sky.

These conditions are recorded for each visual influence zone. Potential dominance levels were obtained for each segment of the alternative routes by means of a matrix (Table I-2AF). The results were checked and revised against the simulations of specific conditions, and final dominance levels mapped, both for the historic viewing areas only and for the overall study area.

Historic Visual Integrity - Impacts within the historic visual integrity zone are considered to be more severe because of the loss or degradation of remaining natural and scenic qualities. Elsewhere, agricultural and structural modifications are already commonplace. Retention of important scenic qualities benefits all those who live in, travel through, and view the area.

Initial Visual Impact Levels - Overall impact to visual resources was determined by combining visual dominance with intrusions on the zone of historic visual integrity, as shown in Table I-3AF.

TABLE I-3AF
DETERMINATION OF VISUAL IMPACT

		Inside HVI* Zone	Outside HVI* Zone
Visual Dominance	Dominant	High	High
	Co-Dominant	High	Mod
	Subordinate	Mod	Low
	Detectable	Low	Low
	Undectable	None	None

*HVI - Historic Visual Integrity

Results

Reference should be made to Figures I-4AF, I-5AF, I-6AF, I-7AF and I-11AF when reviewing this section.

Link 54b - The visibility of Link 54b would become detectable to views from Fort Assinniboine toward Squaw Butte where the line would be relocated to the east of a local knoll from mile 0.10 to 0.26 resulting in a low impact. The visual influence of the remainder of Link 54b would be co-dominant with the landscape as viewed from Fort Assinniboine, also resulting in high visual impacts. The initial 0.10 mile of this link would have a low impact on views from Highway 87, and would not be seen from Fort Assinniboine due to topographic screening.

Link 54c - The initial segment of Link 54c from mile 0.00 to 0.39 would have a high impact on Fort Assinniboine where the line would be co-dominant with the landscape views toward Squaw Butte. From mile 0.39 to 0.84, visual impacts on Fort Assinniboine would be moderate since the line would be subordinate to the general landscape views to the east. Link 54c would dominate views from Herron Park and Highway 87 from mile 1.04 to 2.71

resulting in high visual impacts to local residents and highway views (see Figure I-7AF).

Link 56 - Link 56 would result in a high visual impact on views from Fort Assinniboine toward Squaw Butte and other easterly views between miles 0.00 to 0.29, 0.46 to 0.60 and 1.00 to 1.21 where the line would be either a dominant or co-dominant feature in the landscape. Moderate visual impacts would occur between miles 0.29 to 0.46 and 0.60 to 1.00 as a result of landscape screening where the line would be generally subordinant to general views across Beaver Creek.

There is the potential to reduce high impacts to moderate between miles 0.46 and 0.60 by re-alignment of the line from a raised plateau to the Beaver Creek Valley. This re-alignment would result in greater impact to irrigated cropland, however, so the initial visual impact would remain in order to minimize impacts to agricultural lands (see Figure I-4AF).

Link 57 - Link 57 would dominate views from Highway 87 and from the roadside historic marker, resulting in high impacts on views toward Fort Assinniboine.

Link 58 - Link 58 would dominate views from Highway 87, resulting in a high impact.

Link 59 - Visual impacts on Highway 87 would be high at the road crossing and moderate where Link 59 generally parallels the road to the north.

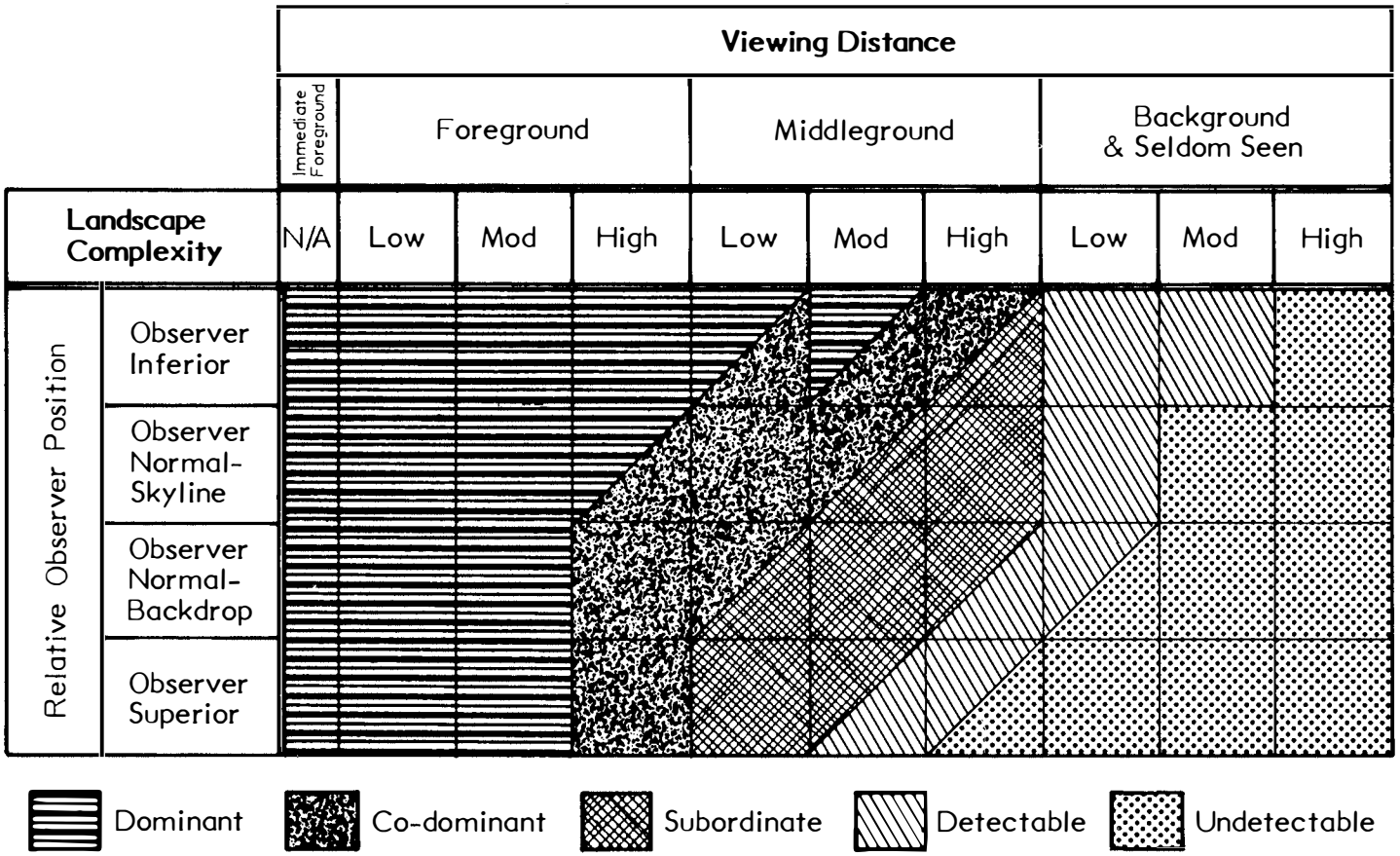
Link 60 - Link 60 would have a high visual impact on views to the south from Fort Assinniboine between miles 0.42 and 1.08 where the line would be either a dominant or a co-dominant feature in the landscape. Moderate impacts would occur between miles 0.00 to 0.42 and 1.08 to 1.13 where the line would either be a subordinant or detectable feature in the terrain (see Figure I-5AF).

Link 61 - Link 61 would have a high visual impact on Fort Assinniboine between miles 0.30 and 0.81, where the line would dominate views toward the Bearpaw Mountains to the south. The remainder of the link would result in moderate impacts to views from the Fort (see Figure I-6AF).

Link 62 - Link 62 would have a moderate visual impact on views from Highway 87 and the entrance road to Fort Assinniboine due to the influence of existing transmission lines.

Link 63 - Link 63 would result in a moderate visual impact to views from Highway 87 due to the influence of existing transmission lines.

Link 64 - Link 64 would dominate views from the entrance road into Fort Assinniboine as well as views from the Fort buildings, resulting in a high visual impact.



MODEL OF POTENTIAL VISUAL DOMINANCE FOR TRANSMISSION LINES

Table 1-2AF

Link 65 - Link 65 would have a high visual impact on views from Fort Assinniboine to the south toward the Bearpaw Mountains between miles 0.21 and 1.08, where the line would be a co-dominant feature in the landscape. Impacts from the initial portion of this link would be moderate to views from Fort Assinniboine due to screening in the Beaver Creek Valley.

Link 66 - Link 66 would have a moderate visual impact to views from Highway 87, where views are modified by the Havre Substation.

Cultural Environment

Archaeological Resources

Results

Low potential impacts to cultural resources were identified along all links with the exception of Links 56, 61 and 65 which are summarized below. Refer to Figure 1-10AF when reviewing this section.

Link 56 - Moderate impacts for 0.14 mile and low impacts for 1.07 miles would be expected to occur.

Link 61 - Moderate impacts for 0.11 mile and low impacts for 1.59 miles would be expected to occur.

Link 65 - Moderate impacts for 0.09 mile and low impacts for 2.90 miles would be expected to occur.

Historical Resources

Analysis of Impacts to Historical Resources

Because no historic sites were found outside of the Fort Assinniboine/Agricultural Experiment Station historic-site boundary, the assessment of impacts on historical resources focuses on the historic-site area where the key central and peripheral historic features are located. The types of effects in consideration for Fort Assinniboine include:

- Potential destruction or alteration of historic features; and
- The introduction of a visual element that is out of character with the Fort Assinniboine setting.

The historic-site area is shown on Figure 1-11AF. The assessment of potential direct physical impacts to historic features within the historic-site boundary utilized the following types of data:

- Original pattern of the Fort property and features, as indicated on Figure I-11AF, based on record searches and agency contacts; and

- Current pattern of remaining historic features, as indicated on Figure I-11AF, based on aerial photography and field reconnaissance.

The assessment of visual impacts was integrated with the visual resource assessment, and includes the major components:

- visual simulation
- visual dominance evaluation
- evaluation of effects on historic visual integrity

An explanation of the visual resource methodology is provided in the visual resource section of environmental consequences. The visual resource assessment incorporates historical-, residential- and highway-related visual concerns. The history-related visual concerns are presented separately as follows:

- Figure I-11AF - This figure indicates the levels of visual dominance associated with alternative links, and the zone of historic visual integrity.

- Figure I-12AF - This figure indicates levels of impact to historical resources associated with alternative corridors

- Figures I-4AF, I-5AF and I-6AF - (See Visual Resources)
  These photo-simulations illustrate the appearance of alternative links as seen from Fort Assinniboine.

Results

Potential destruction or alteration of historic features within the site boundary would be avoided by alternative links (54c, 56, 57, 59, 63, and 64) that cross this area.

Visual impacts associated with the setting of Fort Assinniboine are described in the visual resources results section. Visual impacts specific to history-related concerns are shown on Figure I-12AF.

Native American Cultural Resources

The model developed to assign impact levels to Native American cultural resources is described in the DEIS (DOE 1982) and the Cultural Resources Environmental Report prepared for the Fort Peck-Havre Transmission Line Project (Wirth Associates 1982).

For purposes of the Fort Assinniboine Addendum Study, impacts were assigned only to those Native American cultural resources located on or immediately adjacent to alternative transmission corridors (links). Additionally, only physical impacts were considered since those interviewed did not express concerns for visual impacts to Native American cultural resources.

Results

High impacts to cultural resources identified by the Native Americans interviewed occur along Links 56 and 65. No other identifiable impacts were reported.

Link 56 - The alignment would cross the northern edge (approximately 0.35 mile) of a burial ground area.

Link 65 - The alignment would cross (approximately 0.07 mile of) a burial ground where eight cairns were identified.

COMPARISON OF ROUTES

In order to select an environmentally preferred route, alternative paths in the Fort Assinniboine area of Set IV were compared in terms of potential environmental impacts, using the same criteria as the process described in Chapter 2 of the DEIS and Chapter I of the Environmental Report. A brief description of results of the routing comparison is presented below and summarized on Table 3-7(R)F. Tables summarizing the resource inventories and environmental consequences by path are contained in Appendix B of this document. The location of the preferred route is shown on Figure 3-10(R)F.

Environmentally Preferred Route

Path A3 - Links 54b, 56, 59, 66

The environmentally preferred route identified from the addendum study is Path A3. There would be fewer impacts to agricultural land use and fewer visual impacts to local residences than along Path A1 (the comparable portion of the DEIS preferred route within Set IV). Path A3 crosses a portion of the historic-site area being considered for the National Register of Historic Places; however, no historic features would be physically affected and the visual impacts associated with the historic setting of Fort Assinniboine are lessened due to topographic variation.

Skylining would be minimized in views toward Squaw Butte which is a portion of the setting that provides a sense of historic integrity to Fort Assinniboine (see Figures I-4AF and I-11AF). Acceptable mitigation for Native American cultural resources is attainable along Link 56.

Visual impacts along Highway 87 would be reduced by the relocation of the existing Fort Peck to Havre 161kV transmission line to the north side of the highway, away from the views of Fort Assinniboine from an adjacent roadside interpretive site. A complex of turning structures at the entrance to the Northern Agricultural Research Center is also simplified by relocation of the 161kV line, further reducing visual impacts from the highway and to Fort Assinniboine. Modifications to the Havre Substation will be necessary to accommodate Path A3.

CHAPTER 2 - PUBLIC COMMENTS AND AGENCY RESPONSES

INTRODUCTION

This chapter describes the public review process for the DEIS. Public comments on the documents were solicited from agencies, organizations and individuals and were received in the form of letters and remarks at public hearings. The comments in response to the DEIS were numerous. Therefore, every effort has been made to organize the material in such a way that reviewers can quickly identify the principal issues of public concern.

The issues raised by the public were identified by the preparers of the environmental documents and are responded to in Tables 2-1F, 2-2F and 2-3F following a description of the review process and procedures. Where possible, issues from letters and hearings have been summarized individually and are presented in tabular form (Tables 2-1F and 2-3F). Letters that could not be easily summarized are reproduced in full in Table 2-2F. An index listing all agencies, organizations and individuals whose comments on the DEIS appear in this document can be found at the end of the chapter.

PUBLIC REVIEW PROCESS AND PROCEDURES

The DEIS was filed with the Environmental Protection Agency and released to the public on 9 July 1982. Notice of filing and dates and locations of public hearings were published in the Federal Register on 14 July 1982 and in local newspapers in the project area 8 July 1982. The public comment period ended 23 August 1982 but because of numerous requests, it was extended to 22 October 1982. Public comments on the DEIS, from letters and hearings, formed the basis for additional environmental studies from which new alternatives were identified and subsequently compared in an addendum to the draft document.

Approximately 300 copies of the DEIS were sent to Federal, state and local government agencies, institutions, organizations and individuals for review and comment. In response, a total of 22 letters commenting on the DEIS were received by Western. All written comments and transcripts of hearings may be inspected at the following location:

Western Area Power Administration
Billings Area Office
2525 4th Avenue North
Billings, Montana 59101

It is requested that prior arrangements be made to review documents.

Western reviewed and carefully considered all comments and responded to those substantive comments that presented new data, questioned findings of analyses or raised questions or issues relevant to the potential environmental

impacts of the proposed project and alternatives, as required by the National Environmental Policy Act and related regulations.

Formal public hearings on the DEIS, at which a total of 19 people spoke, were conducted by Western in Glasgow, Montana on 26 July 1982; Malta, Montana on 27 July 1982; Harlem, Montana on 28 July 1982 and in Havre, Montana on 29 July 1982. Approximately nine people attended and two people spoke at the hearing in Glasgow; approximately 17 people attended and five people spoke at the hearing in Malta; approximately nine people attended and four people spoke at the hearing in Harlem; and approximately 16 people attended and eight people spoke at the hearing in Havre.

Tables 2-1F, 2-2F and 2-3F, which follow, contain the comments on the DEIS and agency responses provided by Western.

TABLE 2-1F
DRAFT ENVIRONMENTAL IMPACT STATEMENT
Written Comments

The following table lists letters in the order received. A total of 17 letters were received in response to the DEIS. Letters requiring specific responses or references to responses are reproduced and responded to in the subsequent section.

Summaries of Letters and Responses

Letter No.	From	Issue/Concern	Response
1	USDI, Bureau of Mines Western Field Center	No comments.	None
2	State Department of Health and Environmental Sciences Solid Waste Management Bureau	Specific comments.	Reproduced and responded to in Table 2-2F.
3	U.S. Department of Commerce National Oceanic and Atmospheric Administration National Ocean Survey (NOS)	NOS requires not less than 90 days notification in advance if planned activity will disturb geodetic control survey monuments.	No survey monuments have, as yet, been found along the proposed route. If any monuments are found, Western will endeavor not to disturb them and will notify NOS as required.

Table 2-1F (continued)
Summaries of Letters and Responses

Letter No.	From	Issue/Concern	Response
4	U.S. Department of Commerce National Oceanic and Atmospheric Administration Environmental Data and Information Service Solid Earth Geophysics Division	Specific comments.	Reproduced and responded to in Table 2-2F.
5	U.S. Department of Housing and Urban Development Office of Regional Community Planning and Development	Document adequate considering the proposal's compatibility with local and regional comprehensive planning and impacts on urbanized areas.	None
6	USDI, Bureau of Land Management Lewistown District Office	Specific comments.	Reproduced and responded to in Table 2-2F.
7	Board of Commissioners Hill County	Specific comments.	Reproduced and responded to in Table 2-2F.
8	M.S. Marra	Opposes proposed transmission line crossing Marra property, residential area and major highway. Creates high visual pollution and hazard to future development of Havre Airport. Suggests a more direct route south through Fort Assinniboine.	Refer to FEIS Chapter 1.
9	Montana Historical Society Historic Preservation Office	DEIS does not include descriptions of all properties on or eligible to the National Register of Historic Places.	The Historic Preservation Office was supplied with a copy of the Fort Peck-

Table 2-1F (continued)
Summaries of Letters and Responses

Letter No.	From	Issue/Concern	Response
9 (con't)			Havre Transmission Line Project Environmental Report (31 August 1982) which provided additional information. When the letter from the SHPO (Letter No. 9) was sent, they did not have this information.
		The "themes" need to be usefully related to the cultural resources, their relative value, and the degree to which their significant qualities might be impacted.	
		The text and bibliography should indicate the primary sources used in determining sites and site locations.	
		The sections on architecture and Native American cultural resources (at least those pertaining to ethnohistory) should be related more directly to the section on the area's history.	
		The discussion on impacts should include vandalism, a discussion of avoidance and a ranking of those things most likely to affect historic sites.	

Table 2-1F (continued)
Summaries of Letters and Responses

Letter No.	From	Issue/Concern	Response
9 (con't)		Also, the discussion of when visual impacts would be a factor is faulty. The need to consider visual impacts is related to whether the setting contributes to the significance of the property.	
10	U.S. Department of Transportation Federal Highway Administration Region Eight, Montana Division	"The Montana Department of Highways should be contacted before working near highways so proper steps to protect the travelling public can be taken."	Your comment has been noted and will be complied with.
11	Hill County Commissioner	Error in Environmental Report, Volume 3, page 24: Beaver Creek Park is managed by Hill County Park Board, not by the Kiwanis Club.	Your comment has been noted. See FEIS Chapter 4.
12	Federal Energy Regulatory Commission Office of Electric Power Regulation	The "proposed project would not affect matters concerning the Commission's responsibilities under the Federal Power Act, Natural Gas Act, and other legislation."	None
13	Department of the Army Missouri River Division Corps of Engineers	"We support your proposed action and believe that the (DEIS) adequately covers the activities relating to the Corps of Engineers."	None
14	Montana Department of Fish, Wildlife and Parks Ecological Services Division	Suggests that all marsh areas be avoided by overhead powerlines to eliminate waterfowl mortalities. Recommends route south of Bowdoin Refuge. States that the environmentally preferred route shown in the DEIS would alleviate these concerns.	No marsh areas are crossed by the project.

Table 2-1F (continued)
Summaries of Letters and Responses

Letter No.	From	Issue/Concern	Response
15	U.S. Environmental Protection Agency Region VIII	Specific comments.	Reproduced and responded to in Table 2-2F.
16	Ron Marlenee Congress of the United States House of Representatives	Specific comments.	Reproduced and responded to in Table 2-2F.
16a	Ron Marlenee Congress of the United States House of Representatives	Specific comments.	Reproduced and responded to in Table 2-2F.
16b	Ron Marlenee Congress of the United States House of Representatives	Specific comments.	Reproduced and responded to in Table 2-2F.
17	USDI, Office of the Secretary Office of Environmental Project Review	Specific comments.	Reproduced and responded to in Table 2-2F.
18	Montana Historical Society Historic Preservation Office	Specific comments.	Reproduced and responded to in Table 2-2F.
19	Montana State University College of Agriculture Northern Agricultural Research Center	Specific comments.	Reproduced and responded to in Table 2-2F.
20	Montana Department of Natural Resources and Conservation	Specific comments.	Reproduced and responded to in Table 2-2F.

2

Written Comments

Complete Letters and Responses

Office Memorandum •

STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

TO : James D. Davies, Dept. of Energy **DATE:** July 28, 1982

FROM : Vic Andersen, Solid Waste Mgmt. Bureau

SUBJECT : Comments of Fort Peck to Havre DEIS

A The DEIS has only one sentence (pg. 3-13) dealing specifically with solid waste disposal. We will need additional information as to what specific types and quantities of waste are to be disposed of and where. Also we are concerned that wastes are allowed to be disposed of only at state licensed and approved landfills and that it be spelled out very clearly to potential contractors.

Thank you for providing us an opportunity to comment on this DEIS. Hopefully through this process we'll be able to avoid future problems.

A The construction contractor will be required to conform to state and local law and to use approved sites for solid waste disposal. During construction of the new line, there will be a minor amount of waste including clipped ends of cables, broken insulators and packaging materials. During removal of the existing line, all of the materials will become the property of the contractor who will salvage the insulators and cables. The poles and cross arms will be sold for firewood and other uses.

4

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
ENVIRONMENTAL DATA AND INFORMATION SERVICE
National Geophysical and Solar-Terrestrial Data Center
325 Broadway
Boulder, Colorado 80303

July 28, 1982

James D. Davies
Dept. of Energy
Western Area Power Adm.
P.O. Box EGY
Billings, Montana 59101

Dear Mr. Davies:

This is in response to your letter of June 30, 1982 (32000) requesting comment on the draft environmental impact statement for the proposed Fort Peck to Harve transmission line project.

A Our review has been restricted to the portion of the DEIS relating to seismicity. The map of epicenter locations appearing in the DEIS shows an event in 1968 of magnitue 5.0, which is noticeably above the maximum nearby magnitude of 4.3 quoted in the text. However, the 1968 event is identified in references as an explosion detonated by the Corps of Engineers. It would be helpful if this fact is added to the notation on the map, otherwise the reader would think that it is an earthquake. The plot of the earthquakes in the DEIS conforms with the data in our data base.

B The validity of the statement, "there are no active faults in all of Montana east of the Rocky Mountains", cannot be confirmed by this office, since that kind of information is not contained in our data base. We suggest that the U.S. Geological Survey comment on that point.

Sincerely yours,

Herbert Meyers, Chief
Solid Earth Geophysics Division

A Your comment has been noted. See FEIS Chapter 4.

B Your comment has been noted. See FEIS Chapter 4.

6

IN REPLY REFER TO
2800
Your B2204

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Lewistown District Office
Airport Road
Lewistown, Montana 59457

AUG 06 1982

Department of Energy
Western Area Power Administration
Billings Area Office
P.O. Box EGY B
Billings, MT 59101

Dear Mr. Davies:

Enclosed are my comments on your Draft Environmental Impact Statement for Western Area Power Administration proposed Fort Peck to Havre, Montana, Transmission Line Project.

A 1. I feel that there should be some mention of the fact that this power line is raptor safe. I know that it is raptor safe, but the publics which are not familiar with powerlines may question the fact.

B 2. The statement on page 4-5 of no active faults in eastern Montana is suspect. Figure 4-2 shows several epicenters in eastern Montana, one very near Hinsdale in the study area. Further the EIS prepared by USDI for the Northern Border Pipeline lists the Hinsdale Fault which is 25 miles long and has had four seismic events. One of these was clearly an earthquake and the other three are believed to have been earthquakes. The Northern Border EIS also lists a series of active faults at Tiger Butte, about 6½ miles SE of Glasgow or about 9 miles NNW of Fort Peck.

C 3. The Section of Roads and Highways on page 4-19 suggests Highway 24 ends at Glasgow. This is in error as the highway extends to the Canadian border.

D 4. Throughout the document you have referred to the Charles M. Russell Wildlife Range and the Charles M. Russell Wildlife Refuge which are one in the same. I feel you should be consistent throughout the document and use their official title of Charles M. Russell National Wildlife Refuge.

A As stated on page 14 of Overhead Transmission Lines: Impact on Wildlife prepared by the Montana Department of Natural Resources and Conservation in 1977, "Electrocution of birds perching on power lines, including raptors, herons, crows, ravens, and wild turkeys, has been well documented (6, 49, 50, 142, 257, 296, 303). The electrocutions result from simultaneous contact of two wires. However, nearly all such electrocutions are associated with power distribution lines; the distances between wires of high-voltage transmission lines are greater than the wing spans of most birds, making electrocutions by such lines unlikely (85, 142)." The average distance between the conductors of the proposed 230kV transmission line is 22 feet (Fort Peck-Havre DEIS, Figure 3-2).

B Your comment has been noted. See FEIS Chapter 4.

C The portion of Highway 24 from southeast of Glasgow heading north is delineated on the screened base map but is not acccentuated.

D Your comment has been noted. See FEIS Chapter 4.

6 (continued)

E 5. A sage grouse lek unmentioned in the EIS straddles the preferred route centerline. The location is T. 28 N., R. 38 E., Sec. 34 NW¼NW¼NE¼.

Sincerely yours,

Glenn W. Freeman
District Manager

E Your comment has been noted. See FEIS Chapter 4.

Table 2-2F (continued)
Complete Letters and Responses

7

MONTANA
BIG SKY

BOARD OF COUNTY COMMISSIONERS
HILL COUNTY
HAVRE, MONTANA

CHAIRMAN	COMMISSIONER	COMMISSIONER
Dan Morse	Art Rambo	A.R. Hagener

August 4, 1982

James D. Davies
Area Manager
Billings Area Office
P.O. Box EGY
Billings, MT 59101

Dear Mr. Davies:

Following your July 29th meeting in Havre we have had several requests from local and affected landowners concerning the proposed power-line route.

A One of the concerns of the persons contacting us was the lack of opportunity to ask and get responses to questions concerning the route.

B In the light of the questions and concerns that have been raised we would request a postponement of the August 23rd deadline for response until after a meeting with concerned local landowners has been arranged and held.

C We feel the affected landowners have a right to ask and receive answers to their questions before any hearing period is closed or any action finalized.

Please notify us of possible meeting dates.

Sincerely yours,

Chairman

Commissioner

Commissioner

BOARD OF HILL COUNTY COMMISSIONERS
HILL COUNTY, MONTANA

BCC,CK

A See response to Comment A of Letter No. 16.

B The deadline for public comments was extended to October 22, 1982.

C We agree. See response to comments A and L of Letter No. 16. Also, see following letter sent by Mr. Stephen Fausett, Western Area Power Administration.

7 Response

Department of Energy
Western Area Power Administration
Billings Area Office
P.O. Box EGY
Billings, Montana 59101

In reply refer to: B2204

SEP 17 1982

Mr. Dan Morse, Chairman
Board of Hill County Commissioners
Hill County Court House
Havre, Montana 59501

Dear Mr. Morse:

This letter is to advise you and the Board of Hill County Commissioners as to Western Area Power Administration's (Western) current status and plans regarding the Havre end of our proposed Fort Peck to Havre transmission line project.

On August 12, 1982, we conducted a special public meeting in Havre, at your request, to discuss the proposed project with affected landowners. During that meeting a number of individuals asked questions regarding our selection of an environmentally preferred transmission line corridor. Most of the concern expressed was for an area southwest of Havre which includes Herron Park Subdivision, Fort Assiniboine, and Montana State University's Agricultural Experiment Station. Members of my staff in attendance at that meeting (Stephen Fausett, Jim Cloud, and Mike Skougard) answered as many questions as possible, recorded the questions and concerns raised by the landowners and other interested individuals for discussion in the Final Environmental Impact Statement, and described Western's preliminary plans to determine feasible alternatives to our preferred corridor in the area in question.

Since that meeting, we have extended the draft environmental impact statement comment period to October 22, 1983, in response to the requests of yourself and others. We have also assigned our environmental consultants, Wirth Associates, to the task of conducting a multidisciplinary local corridor siting study. The purpose of that study is to identify local environmentally sensitive areas with a high degree of resolution, more clearly ascertain the sensitivity of landowners and residents in the area to a transmission line, find transmission line routing corridors that avoid sensitive areas, ascertain the relative impacts of the alternatives developed, and select a final environmentally preferred corridor. Perhaps the most critical element in identifying environmentally sensitive areas is to determine the boundaries of a Fort Assiniboine historical district. Our representatives met with the Montana State Historic Preservation Office in Helena on August 31, 1982, to ascertain what work had been done on this to date by agencies of the State. At this point, it appears that Western will have a Fort Assiniboine boundary identified by the end of this month.

7 Response (continued)

Once we have arrived at an acceptable boundary for Fort Assiniboine, we will begin to locate alternative corridors and assess their impacts. After we have assessed the impacts of the various alternatives sufficiently to allow for the selection of a preliminary preferred corridor, we will conduct a public planning workshop in Havre. At that workshop the alternative corridors and the rationale used in their selection will be presented and we will request input from the public. We anticipate that this workshop will be held during the week of November 15, 1982. Using the public input, we will refine our alternatives and make a final corridor selection.

In order to assure adequate public notice of the study, we will issue periodic press releases and will advertise our public workshop(s) in the local newspapers, as well as the "Great Falls Tribune" and the "Billings Gazette." These notices and advertisements will include detailed maps of the study area, indicating sensitive areas, alternative corridors, etc., as appropriate.

We appreciate your help in arranging the meeting on August 12, 1982, and your interest in the Fort Peck to Havre transmission line project. We would also appreciate it if you would make the contents of this letter public, as you deem appropriate.

If you have any questions regarding the Fort Peck to Havre study in general, or the specific status of the Fort Assiniboine area study, please contact me or members of my staff at (406) 657-6042.

Sincerely yours,

Stephen A. Fausett

Stephen A. Fausett
Assistant Area Manager
for Engineering

15

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

AUG 13 1982

Ref: 8MO

Mr. James D. Davies, Area Manager
Western Area Power Administration
P.O. Box EGY
Billings, Montana 59101

Dear Mr. Davies:

Thank you for the opportunity to review your agency's draft environmental impact statement on the Fort Peck - Havre Transmission Line Project. The draft EIS is informative and well written.

According to the information supplied in the DEIS the prooosed transmission line would have less environmental impacts than the line it is to replace. However, we would recommend the following:

A (1) The final EIS should discuss the methods of handling and disposing of transformers from the old line. As you know, some of these may contain PCB's and will require special care.

B (2) Mitigation measures, as described in Table 5-1, should be agreed to before construction starts. We especially are interested in implementation of No. 11 under "Selectively Recommended Mitigation" because of our involvement in water quality protection.

C (3) We believe that minimizing topsoil disturbance and monitoring reclamation success on soils with reclamation constraints (ref. "Results" on p. 5-6) should be implemented and made part of any construction contracts and follow-up maintenance devised for this project.

According to EPA's rating system for draft impact statements this EIS is rated LO-1 (lack of objections - sufficient information).

If you have any questions, please call Mr. Gene Taylor of our Helena, Montana Office at (406) 449-5486.

Sincerely yours,

/s/ Steven J. Durham

Steven J. Durham
Regional Administrator

A Any disposal of the transformers will be carefully monitored in compliance with state and Federal laws. No disposal will be required until the voltage is increased to 230kV.

B Western will comply with Mitigation Measure No. 11.

C Monitoring reclamation success will be done in coordination with local landowners.

16

RON MARLENEE
MONTANA

WASHINGTON OFFICE:
408 CANNON HOUSE OFFICE BUILDING
WASHINGTON, D.C. 20515
(202) 225-1555

FORT PECK

MONTANA OFFICES:
312 9TH STREET, SOUTH
GREAT FALLS, MONTANA 59405
(406) 453-3284

2717 FIRST AVENUE, NORTH
BILLINGS, MONTANA 59101
(406) 657-6753

TOLL FREE
800-332-5965

Congress of the United States
House of Representatives
Washington, D.C. 20515

August 9, 1982

James D. Davies
Area Manager
Billings Area Office
Western Power Administration
P.O. Box EGY
Billings, MT. 59101

Dear Mr. Davies:

I am writing to you in regards to the proposed location of the Fort Peck - Havre Transmission Project.

Several of my constituents have brought to my attention matter of great concern to them with regard to the actual location of the line and/or the activities of those surveying the area.

A One group in particular is extremely concerned with the location of the powerline in relation to the Herron Park residential addition in Havre, Mt. I have been informed that as of to date about 30 residents have signed a petition requesting an extension of the comment period in order that they might voice their concerns.

Apparently those individuals located in the Herron Park subdivision have not been previously notified or queried as to the potential location of the powerline in this area. It is my understanding that the powerline will be directly adjacent to their property fence lines, and in some case as close as 100'. Trespassing by engineers gathering data has been reported and according to one landowner, tags were placed on his fence eventhough he did not give permission for access to his property. Several of the residents claim they were never contacted by WAPA regarding their intentions to place a line this close to their homes.

Specifically the following concerns have been brought to my attention:

B *(The location of the powerline in relation to the city airport and the effect upon new expansion in the future, as well as the landing of larger planes.

C *(Possible interference of TV transmissions for those not on cable.

D *(The effect on two-way radio operation.

E *(What possible effect the electric field may have on cardiac patients with pacemakers.

F *(Health hazards or potential problems because of the high-water table in the area of the proposed transmission line at Herron Park.

COUNTIES
BIG HORN BLAINE CARBON CARTER CASCADE CHOUTEAU CUSTER DANIELS DAWSON FALLON FERGUS GARFIELD GOLDEN VALLEY HILL JUDITH BASIN
MCCONE MUSSELSHELL PETROLEUM PHILLIPS POWDER RIVER PRAIRIE RICHLAND ROOSEVELT ROSEBUD SHERIDAN STILLWATER SWEET GRASS TETON
TREASURE VALLEY WHEATLAND WIBAUX YELLOWSTONE

NOTE:

Responses to Representative Marlenee's comments are provided in the letter (16 Response) dated August 9, 1982 from Mr. James Davies, Western Area Power Administration.

See FEIS Chapter 1, Fort Assinniboine Addendum Study, conducted in response to comments received from the residents of Herron Park subdivision.

Also refer to the letter (16b) dated November 19, 1982 from Representative Marlenee regarding the results of the Fort Assinniboine Addendum Study.

16 (continued)

G Other individuals have contacted me regarding their displeasure with the proposed route. Mr. Dion indicated that he did not beleive that WAPA officials had ever looked at the proposed site that would run through his cropland. He has stated that if the line were moved just one-half mile it would be on state land that is not under production and would make spraying of his crops much easier. Mr. Dion was successful in having Mr. Jim Cloud visit his site after the Havre meeting.

H Another rancher in the Havre area reported damages to his crop when the survey crews drove through his fields. Although promised that a claim agent from the Billings office would arrive in a couple of days to check the damages, no one showed up. Several others indicate they were not contacted by survey crews for permission to enter their land, and those who were, did not give permission to drill test holes, yet drilling was done. This is a common complaint throughout the Havre and Malta area.

I Mr. Marra of Shelby does not know what effect a 150' right-of-way through the middle of his 160 acres of development land will have on potential developers, but is also interested in some answers.

J Mrs. Nellie Spencer of Malta is worred about having a substation located within 100' of her back door. She feels this will be a hazard to her safety and health and is upset that she was not queried as to her feelings on the location of the line.

K According to the information I have been provided, Herron Park was chosen as the site of the "hook" because of potential problems in crossing the Indian Burial Grounds and the site of the historic fort. Where other alternatives considered other than the Herron Park route such as skirting the burial grounds further south or followng the existing power line route?

L It appears that a number of questions remain and inasmuch as the residents of the Herron Park area have only recently become aware of the proposals by WAPA, I am respectfully requesting a 60 day extension of the deadline for receiving comments. I believe that this would be in the best interest of the residents and landowners. I would further request that your agency meet with these various individuals and make an on-site tour of the area in question to determine what alternatives are available at this time.

Although I will be unable to attend the scheduled meeting of the Havre residents and your agency on August 12, I will have a member of my staff in attendance. I look forward to hearing what plans your agency has with regard to this matter.

Please direct any correspondence concerning this inquiry to my district office, located at:

312 9th Street South
Great Falls, MT. 59405

Sincerely,

Tom Marlenee

Tom Marlenee

cc/ Michael Penfold, State Director
Bureau of Land Management

16 Response

Department of Energy
Western Area Power Administration
Billings Area Office
P.O. Box EGY
Billings, Montana 59101

AUG 19 1982

In reply refer to: B2204

Honorable Ron Marlenee
Member, United States House
of Reprsentatives
312 9th Street South
Great Falls, Montana 59405

Dear Representative Marlenee:

Thank you for your letter of August 9, 1982, expressing your concerns and those of your constituents regarding Western Area Power Administration's (Western's) proposed Fort Peck to Havre Transmission Line project. Western has been working toward resolution of most of the problems you mentioned in your letter.

By way of introduction, it may be beneficial to reacquaint you with the purpose and need of the project. Western proposes to replace the existing Fort Peck-Havre 161-kV transmission line with a new transmission line that will be constructed to 230-kV standards but will be initially operated at 161-kV. Although originally constructed in 1935, the existing Fort Peck to Havre 161-kV transmission line remains an essential element in Western's electric-power system and Montana's interconnected transmission network. However, deterioration of the H-frame wood structures, grounding system, crossarms and hardware has made the operation and maintenance of the line costly and unreliable. Also, the absence of aerial ground wires on the existing line makes the line extremely vulnerable to lightning strikes with resultant outages to area electrical loads.

Our proposed replacement of the old line with a new line of modern design will dramatically improve the quality and reliability of electrical service to the Fort Peck/Havre area by reducing the frequency and severity of power system outages caused by lightning and structural failures. The new line will provide valuable additional transmission capacity to serve future electrical requirements in the area. It will also improve the safety and efficiency of our maintenance and operation activities associated with the transmission line. The project is discussed in greater detail in the project Draft Environmental Impact Statement (DEIS), a copy of which was mailed to your Billings Office on June 30, 1982.

16 Response (continued)

A Your letter questioned our efforts in notifying affected individuals of the proposed project. Western has made a good-faith effort to obtain input from affected landowners, interested individuals and groups, and local, State, and Federal governmental bodies and agencies through public involvement activities for this project which began in November 1979. Environmental impact statement (EIS) scoping meetings were conducted with the public, and county commissions and planning boards in Glasgow, Malta, Chinook, and Havre, Montana. These scoping meetings were announced in press releases to all news media within our marketing area in Montana, and a "notice of intent" was published in the Federal Register. In December 1980, following the evaluation of alternative corridors and the initial selection of a preferred corridor, we conducted a series of planning meetings in the before mentioned cities, again meeting with the public, and county commissions and planning boards. Prior to conducting these planning meetings we contacted, by letter, all known landowners along the existing line route, and within the alternate and preferred corridors. A press release was distributed several days prior to the meetings. A news story resulting from the Havre meeting appeared in the Havre Daily News on December 19, 1980, and refered to a possibility of routing the proposed line on the north side of Highway 2 in the vicinity of Fort Assiniboine. A second round of planning meetings was conducted in March 1981 in Glasgow, Malta, Harlem, and Havre. This round of planning meetings was to inform the public of changes made in the earlier preferred alternative, which were made in response to comments and suggestions made at the first planning meetings. Press releases were distributed well in advance of those meetings. Affected landowners, the Mayor of Havre, the Valley County Planning Board, and others were notified by letter. Western also sponsored a series of high voltage transmission line electrical effects demonstrations near Glasgow, Malta, Harlem, and Havre, during August 1981, which were announced via press releases. On July 8, 1982, a press release was issued to all known local news media by Western, and on July 14, 1982, a notice appeared in the Federal Register, both announcing the availability of the draft EIS (DEIS) and the schedule for public hearings on the DEIS. All known landowners within the proposed preferred corridor were informed by letter. Western paid to have public notices announcing the hearings printed in local newspapers during the week preceeding the hearings. The county commissions in each of the four affected counties were contacted. We offered to meet with them to discuss the DEIS and gather their comments. Each county commission declined our offer. Throughout the Fort Peck to Havre Transmission Line Project we have endeavored to be very thorough in informing the public and have been receptive and responsive to their comments and concerns. If our notification process is lacking, we may consider the use of paid display-type newspaper advertising, radio and television spots, and other means with which to reach the public in the future.

I believe, too, that since this situation has been brought to our attention, we have been very responsive to the concerns of the residents of Herron Park. On August 12, 1982, members of my staff met with residents of Herron Park and other interested individuals, in Havre, in order to explain the need for the project, answer questions, and listen to the concerns and suggestions of those in attendance. The concerns and questions expressed at that meeting will receive careful attention in the final EIS. We will also coordinate the alternative route study with the State of Montana and will study in more detail the area in and around Herron Park, Fort Assiniboine and the agricultural experiment farm.

16 Response (continued)

H (See also H below)

A portion of the currently preferred corridor containing the centerline of the proposed transmission line passes over property owned by a homeowneer in Herron Park, Mr. Donald Petersen. This particular tract of land is not part of Herron Park Subdivision, but is located adjacent to it. On February 24, 1981, a realty specialist from the Billings Area Office obtained a Right of Entry Permit from Mr. Ed Solomon, who was at that time a tenant on the land. On February 19, 1981, a contract for deed for this tract of land was signed by the current landowner, but was not recorded at the time we obtained the right of entry. We were not aware of the situation and Mr. Solomon did not so inform our realty specialist. We did not learn of this situation until the public hearing on July 29, 1982, in Havre. We regret that Mr. Peterson discovered his involvement with a tranmission line construction project in this manner.

B

The proposed location of the transmission line is approximately 1-1/2 miles from the closest end of the airport runway in Havre. The Federal Aviation Administration requires a "clear zone" at the end of runways. In this "clear zone" the ratio of the distance from the end of the runway to the height of an object relative to the elevation of the end of the runway is 50:1. This is the ratio for all aircraft, regardless of size, at non-military airports. Based upon that distance to height ratio, and assuming an average structure height along the proposed transmission line of 70 feet, the Havre Airport would be able to extend their runway about 1,780 feet toward the proposed line. However, when data was gathered for the DEIS, neither the city or county planning boards inidicated any plans to expand the Havre Airport, and no mention of any such plans has been made by any responsible official to date, despite numerous opportunities to do so.

C D E

The electrical characteristics of the proposed line and anticipated effects on AM radio reception, FM radio and television reception, citizen's band radio reception, cardiac pacemakers, and other areas of concern were discussed in the DEIS at pages 5-24 through 5-32 and in Appendix D. Generally, the effects of the electrical fields generated by a 230-kV transmission line on AM radio, FM radio, television, and citizen's band radio are expected to be slight. However, if isolated problems arise, there are mitigation methods which can be used to correct such problems. Scientific literature indicates that virtually no serious, irriversible adverse impacts to cardiac patients with pacemakers would be expected from electrical, or magnetic field effects of a 230-kV electrical transmission line.

F

The relationship of the proposed transmission line and the high water table in and around the Herron Park Subdivision area would not pose any unusual hazard or problem. Western uses construction methods which reduce the chance of a structure tipping or falling to practically zero. Pages D-8 through D-10 of the DEIS discuss the hazards of shocks due to induced currents, steady-state current shocks, and spark discharge shocks. While these could cause nuisance shocks, there is very little potential for shocks which could be characterized as a hazard with a line constructed to standards such as the proposed line.

G

Three members of my staff met with Mr. Dion on July 30, 1982, and made an onsite inspection of his property. It was their recommendation that the feasibility of moving the proposed line to the south some distance be investigated. Our engineers have now concluded that it would be possible.

16 Response (continued)

Mr. Jim Cloud, Director of Lands in the Billings Area Office discussed the engineer's conclusion and new routing proposal with Mr. Dion on August 12, 1982, in Havre, Montana. At that time, Mr. Dion indicated he was satisfied with the change. It should be pointed out that there were a few other similar situations which came to light during the public hearings on the DEIS. In each case, members of my staff made onsite inspections, and, where it was determined to be feasible, made recommendations for rerouting the line.

H During the public hearings a number of landowners and operators voiced complaints about the actions of our survey crews, and damages sustained to their crops by those crews. We make every effort to satisfy those who sustain losses or other damages resulting from the actions of our agency personnel or our contracted representatives. Upon further investigation of a number of the aforementioned complaints, the landowner/operator stated there was no real monetary loss. Those complaints that did in fact involve some monetary loss have been dealt with by this office. Complaints of such things as rudeness and inconsideration, on the part of surveyors are more difficult to manage. Because of personnel ceilings, we contract for surveyor services and cannot exercise direct supervisory control over their actions. We have, however, notified our surveying contractor to notify landowners who have so requested before going onto their land, to close gates, treat landowners/operators with due respect, and generally conduct themselves in an appropppriate manner.

I If the proposed line were to traverse Mr. Marra's property, as the currently preferred alternative does, our appraisers would assess the economic impact and the effect on future land uses, including possible development. This appraisal process would consider the impact to the entire tract of land, not just the easement. A fair market value for the easement would be established including impact to the rest of the property. We would then negotiate with Mr. Marra and if a settlemenmt satisfactory to both parties could not be reached in negotiations, we would have to initiate condemnation proceedings and the court would establish just compensation for the easement, which would include any loss in value accruing to the entire tract of land.

J The land upon which Montana Power Company (MPC) is presently constructing their Malta Substation has been owned by them since 1960. In 1960, MPC also began construction of the substation with the pouring of concrete footings and pads for some substation components. In 1964, MPC constructed their Richardson-Coulee Substation and suspended work on the Malta Substation. In February 1978, Nellie Spencer and her daughter Janet Kindle purchased about 39 acres of land next to the MPC substation site. At the same time R&R Spencer Land and Livestock purchased about five acres of land adjacent to the 39 acres and the MPC site. Roy and Richard Spencer, owners of R&R Land and Livestock are the husband and son respectively of Nellie Spencer. Since February 1978 Ms. Nellie Spencer's residence has been constructed on the five acre tract of land. Our records indicate that R&R Land and Livestock were invited to all of the planning meetings and the public hearings, and that respresentatives of that company were in attendance at the first planning meeting. The problem of the proximity of the substation to Ms. Spencer's home was discussed at that meeting. In summary,

NOTE: The Spencers attended a planning meeting in Malta in December 1980. At that time MPC had begun construction of the Malta Substation.

16 Response (continued)

Ms. Spencer built her home on land adjacent to the MPC site, which MPC had planned to use for a substation since 1960, and which is directly beneath our existing Fort Peck to Havre 161-kV transmission line and she has had ample opportunity to comment on the proposed transmission line.

K

Also, see FEIS, Chapter 1.

In selecting alternative routing corridors we are directed by many Federal statutes, executive orders, and regulations. Among those factors we must consider are historical, historical architectural, sites or objects with religious significance to Native Americans, and archaeological remains. If a particular site is considered to be significant and on, or eligible for inclusion on, the National Register of Historic Places it must be accorded serious consideration. Fort Assiniboine is clearly a National Register eligible site. We understand the State of Montana is studying its possible nomination. Because of this fact, and correspondence we received from several sources, we determined that it would be best to consider Fort Assiniboine as an avoidance area for the proposed transmission line.

To the south and west of the Fort is located an agricultural experimental farm operated by Montana State University. In response to our queries, the manager of the farm indicated that the consturction and mere presence of a transmission line across their experimental plots could have a deleterious effect on their mission. Therefore, we concluded that the agricultural experiment station should be considered as an avoidance area as well.

By considering the Fort and experimental farm as avoidance areas, direct access to our Havre Substation from the south was eliminated as an alternative. In addition, using the existing right-of-way through this area would have caused us to construct the new line within as close as 100 feet of a number of residences in the area. The "hook" avoided the Fort and experimental farm and would place the line within 400 feet of only one residence, and 450 feet of a second, all others being over 500 feet from the proposed line in this area.

As was mentioned earlier we will study alternative routes through and/or around the Fort Assiniboine area and the state agricultural experiment farm in more detail. The task of finding a route around the Fort Assiniboine historical district is complicated by the fact that the committee which is studying the problem for the State of Montana, has apparently not determined the boundaries of such a historical district. After identifying potential alternative corridors, we anticipate meeting with concerned agencies of the State, as well as individuals concerned with Fort Assiniboine, and if deemed appropriate, representatives of Herron Park residents. We will then publish the alternatives and our preferred corridor, allow an appropriate length of time for study by concerned individuals (i.e., Herron Park residents, etc.), groups, and agencies. We will then conduct a public hearing to gather additional data, and then use this information in compiling our final EIS and arriving at a decision as to the corridor to be selected. We anticipate that this process will take at least 60 days, so there will be no problem with granting the time extension you requested.

L

16 Response (continued)

We will keep you informed of our actions on this project including notification of any meetings which you or members of your staff may wish to attend. We trust that this letter sufficiently responds to you inquiry; however, should you need additional information concerning this project or any other aspect of Western's program, please let us know.

Sincerely yours,

James D. Davies
Area Manager

16a

RON MARLENEE
MONTANA

WASHINGTON OFFICE:
409 CANNON HOUSE OFFICE BUILDING
WASHINGTON, D.C. 20515
(202) 225-1555

MONTANA OFFICES:
312 9TH STREET, SOUTH
GREAT FALLS, MONTANA 59405
(406)453-3264

2717 FIRST AVENUE, NORTH
BILLINGS, MONTANA 59101
(406) 657-5753
TOLL FREE
800-332-5965

Congress of the United States
House of Representatives
Washington, D.C. 20515

September 24, 1982

James D. Davies, Area Manager
Department of Energy
Western Area Power Administration
Billings Area Office
P.O. Box EGY
Billings, MT. 59101

Dear Mr. Davies:

I want to thank you and your staff for keeping me informed on the Fort Peck to Havre Transmission Line Project as it relates to the concerns of my constituents residing in the Herron Park area and throughout portions of the proposed route in Havre.

I have had an opportunity to personally travel the proposed route through the Havre area, and agree wholeheatedly with those who oppose the Herron Park route. I feel that your further efforts to study alternatives to this route will bring forth an alternate route that can be accepted by all the groups involved.

Is the information that you received with regard to the opposition of the State Agricultural Experiment Station or the Fort Assiniboine historical interests a matter of public record, and if so how soon will it be available for review? I would like to acquaint myself with their concerns as well as those of the opposite viewpoint.

I understand that your staff recently met with the Montana Historical Society in regard to the placement of the Fort on the National Historical Register. Can you provide me with any input on the status of that particular project?

I would appreciate it if you would advise me at the earliest possible date of the date the hearings will be set in Havre on this project. I want to be sure that either myself or a member of my staff is present for those hearings and would certainly appreciate any information you have.

Again, thank you for your assistance and cooperation.

With kindest regards, I am

Sincerely,

Ron Marlenee

COUNTIES

BIGHORN BLAINE CARBON CARTER CASCADE CHOUTEAU CUSTER DANIELS DAWSON FALLON FERGUS GARFIELD GOLDEN VALLEY HILL JUDITH BASIN
MEAGHER MUSSELSHELL PARK PETROLEUM PHILLIPS POWDER RIVER PRAIRIE RICHLAND ROOSEVELT ROSEBUD SHERIDAN STILLWATER SWEET GRASS TREASURE WHEATLAND WIBAUX YELLOWSTONE

16a Response

3230/4 OCT [illegible]

Honorable Ron Marlenee
Member, United States House
of Representatives
312 9th Street South
Great Falls, MT 59405

Dear Congressman Marlenee:

This is in response to your letter of September 24, 1982, regarding the status of the Western Area Power Administration's (Western) local siting study in the Fort Assiniboine/Herron Park Subdivision area of the Fort Peck to Havre, Montana, Transmission Line Project.

During the planning process for the Fort Peck to Havre line, Western or its contracted representatives have contacted or been contacted by a number of individuals and agencies with regard to the Fort Assiniboine/State Agricultural Experiment Station. The correspondence referring to the Fort was primarily concerned with insuring that the proposed line avoided the area. These comments were directed toward the preservation of the Fort as a historical site and values attributed to the area by Native Americans. I am enclosing copies of those letters for your information. Because of the apparent historical significance of Fort Assiniboine and the value placed on the area by Native Americans, it was determined that the Fort should be treated as an avoidance area fairly early in our planning.

In a public planning workshop conducted in Havre in March 1981, Mr. Don Anderson, Manager of the Experiment Station, indicated that because of the nature of their experiments, it would be preferable to route the transmission line through areas not utilized for experimental agronomy plots. We determined that the Experiment Station should also be considered as an avoidance area.

We have been coordinating our Fort Assiniboine study with the Montana State Historic Preservation Office (SHPO) and have met with them on August 31, and September 29, 1982. These meetings were to ascertain the State's progress in studying and nominating Fort Assiniboine to the National Register of Historic Places, and to report the findings of our own study of the Fort and determination of boundaries for a historical site. We have contacted Montana State University and will meet with them and SHPO to discuss the Fort Assiniboine area, the Experiment Station, and the impacts of alternative transmission line corridors through and around the area.

16a Response (continued)

during the week of November 15-19, 1982, Western will conduct a public meeting in Havre to present the results of our Fort Assiniboine Area Siting Study and the alternative corridors we identify. We will use input from that meeting to arrive at our selection of a preferred corridor. While we are studying alternatives to the Herron Park "hook" route, that route must still be included as one of the alternatives under consideration. I will advise you of the specific date, time, and location for the public meeting as soon as our arrangements are finalized.

If you have further questions regarding the Fort Peck to Havre Transmission Line Project, I will be happy to answer them.

Sincerely,

James D. Davies
Area Manager

16b

RON MARLENEE
MONTANA

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409 CANNON HOUSE OFFICE BUILDING
WASHINGTON, D.C. 20515
(202) 225-1555

Congress of the United States
House of Representatives
Washington, D.C. 20515

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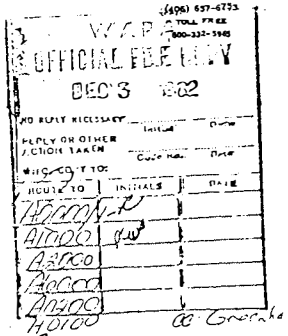

November 19, 1982

James D. Davies, Area Manager
Department of Energy
Western Area Power Administration
Billings Area Office
P.O. Box EGY
Billings, MT. 59101

Dear Mrs. Davies:

I am most pleased to learn of your preferred route for the Fort Peck to Havre Transmission Line, as I am sure the residents of Herron Park will be.

My staff assistant, Kathy Meadors, has informed me of your excellent public meeting held in Havre on the 16th of November. I have been advised of the many simulated drawings and the photographs that your staff presented to the public. I am certain this extra effort made it much more informative and realistic to those who were concerned about the final placement of the poles and the impact to the environment.

I would like to take this opportunity to thank you and your staff for the excellent cooperation provided me and my staff during the past several months. With your assistance I was able to keep my constituents informed, which has in effect helped eliminate many misunderstandings and fears.

I would appreciate it if you would continue to keep me informed as to any developments which may occur with regard to possible opposition from MSU or the State Historical Society to the suggested route.

Again, I appreciate your assistance in this matter.

Sincerely,

Ron Marlenee

No response is necessary.

COUNTIES

BIG HORN BLAINE CARBON CARTER CASCADE CHOUTEAU CUSTER DANIELS DAWSON FALLON FERGUS GARFIELD GOLDEN VALLEY HILL JUDITH BASIN
MCCONE MUSSELSHELL PETROLEUM PHILLIPS POWDER RIVER PRAIRIE RICHLAND ROOSEVELT ROSEBUD SHERIDAN STILLWATER SWEET GRASS TETON
TREASURE VALLEY WHEATLAND WIBAUX YELLOWSTONE

5.2-

17

United States Department of the Interior

OFFICE OF THE SECRETARY
OFFICE OF ENVIRONMENTAL PROJECT REVIEW
Room 688, Building 67
Denver Federal Center
Denver, Colorado 80225

IN REPLY REFER TO:

AUG 27 1982

82/1186

Mr. James D. Davies
Area Manager
Western Area Power Administration
P.O. Box EGY
Billings, MT 59101

Dear Mr. Davies:

We have reviewed the Draft Environmental Impact Statement for the Fort Peck-Havre Transmission Line Project, Montana. Comments are as follows:

Geologic Resources

A The statement on page 4-5 of no active faults in eastern Montana is suspect. Figure 4-2 shows several epicenters in eastern Montana, one very near Hinsdale in the study area. Further, the EIS prepared by the United States Department of the Interior (USDI) for the Northern Border Pipeline lists the Hinsdale Fault which is 25 miles long and has had 4 seismic events. One of these was clearly an earthquake and the other three are believed to have been earthquakes. The Northern Border EIS also lists a series of active faults at Tiber Butte, about 6 1/2 miles southeast of Glasgow or about 9 miles north-northwest of Fort Peck.

Fish and Wildlife Resources

B The Fish and Wildlife Service (FWS) responded to your letter on February 27, 1981, with a list of species and an outline of the endangered species consultation process. So far, the FWS has no record of having received Western Area Power Administration's Biological Assessment, nor was mention of the assessment process made in the draft EIS. Generally, it is advisable for the process to be completed and documented in the final EIS. It is recommended that Western contact the Endangered Species Team Leader in the FWS Billings office (Mr. Wayne Brewster, FTS 585-6059/COMM (406) 657-6059), so that this issue can be cleared up prior to completion of the final EIS.

C Another issue which needs to be clarified in the final EIS is the seeming confusion surrounding crossing of the Charles M. Russell National Wildlife Refuge (CMR NWR) by part of the transmission line (Set 1, Path 10, Links 1 and 1b). On page 1-4 of the draft is is noted that CMR NWR will have to issue

A Your comment has been noted. See FEIS Chapter 4.

B Refer to letter (17 Response a) dated February 16, 1983 from Mr. Wayne Brewster, USDI, Fish and Wildlife Service, and letter (17 Response b) dated March 1, 1983 from Mr. James Davies, Western Area Power Administration.

C The proposed route crossed only private lands that are within the administrative boundary of the Charles M. Russell National Wildlife Refuge.

17 (continued)

a permit to cross the refuge. Table 4-5 apparently shows that the line crosses only Army Corps of Engineers' (COE) managed lands. Such is not the case. About 10 miles of the line is within the boundary of CMR, 8 miles of which is either managed by COE or private interests, while the remaining 2 miles are managed by the FWS.

Western should be aware that special permits will have to be obtained from FWS to cross CMR NWR lands. The FWS is also concerned that none of the earlier coordination with Western or its representatives indicated that the transmission line would cross CMR lands. The latest map presented to FWS was at a meeting on December 3, 1980. At that time, and on all previously received maps, the line was located just north of the refuge boundary. We recommend that Western contact the CMR NWR manager (Mr. Ralph Fires, COMM (406) 638-8706) as soon as possible regarding special use permits and any constraints on these that will be involved.

D For wildlife purposes, the FWS suggests that native species, not crested wheatgrass, be used for revegetation.

D Your comment has been noted and will be considered in the final decision.

E A sage grouse lek should be mentioned in the EIS. It straddles the preferred route centerline, and is located at T. 28 N., R. 38 E., sec. 34, NW1/4NW1/4NE1/4.

E Your comment has been noted. See FEIS, Chapter 4.

Park and Recreation Resources

F The proposed route of the transmission line crosses a portion of Beaver Creek Park.

Beaver Creek Park, southwest of Havre, has received matching assistance from the Land and Water Conservation Fund (L&WCF). It is subject (in its entirety) to the provisions of section 6 (f) of the L&WCF Act, as amended. This section of the act requires that changes from outdoor recreation use be approved by the Secretary of the Interior, and requires the substitution of other properties of at least equal fair market value and reasonably equivalent usefulness and location for the recreation lands to be taken. A request for a change in land use at Beaver Creek Park must be made through the Montana State Liaison Officer (SLO), who is responsible for administering the L&WCF in Montana. He is Mr. Ron C. Holiday, Administrator, Parks Division, Montana Department of Fish, Wildlife, and Parks, 1420 East 6th Avenue, Helena, Montana 59601.

F The proposed route of the transmission line does not cross any portion of Beaver Creek Park. See DEIS, Maps, Diagrams and Tables volume, Figure 4-9.

G There are several other sites within the study area which have received matching assistance from the L&WCF. It is not clear whether they will be impacted by the transmission line. The SLO should be consulted prior to final route selection on whether the proposed route will involve further taking of recreation lands, and the proper procedures for compliance with section 6 (f) of the L&WCF Act.

G The proposed route of the Fort Peck-Havre transmission line will not cross or have an impact on any lands that have received matching assistance from the Land and Water Conservation Fund, based on a review by the Parks Division of Montana Department of Fish, Wildlife and Parks.

17 (continued)

Fort Belknap Indian Reservation

H The EIS notes in several places that, in crossing the Fort Belknap Indian Reservation, historical and/or cultural properties may be affected. We urge that Western work closely with the Fort Belknap Community Council in obtaining permits to examine cultural properties and seek their input and guidance in the nomination of the properties to the National Register.

I We are aware that Western has had contacts with the Fort Belknap Community Council in order to solicit their input into this proposal. In this regard, it is our understanding that the tribes agree with the environmentally approved corridor, which for the most part lies north of the Milk River and off the Fort Belknap Indian Reservation. We would, however, like further consideration to be given to moving that portion of the environmentally approved corridor west of Harlem, and which lies on the reservation, to the north and off the reservation. This move would mean that corridor segments 42b as identified in figure 3-10 be utilized rather than segment 42a. Further discussions must be held with the Fort Belknap Community Council regarding this matter.

J It is suggested that maps, diagrams and tables, as given in Volume II of the document, be expanded to depict land ownership.

Sincerely yours,

Robert F. Stewart

Robert F. Stewart
Regional Environmental Officer

H Western has worked closely with the Fort Belknap Community Council and is involving them in the nomination of historic properties.

Western received permission to survey from the Community Council, BIA and private landowners.

I Based on the land-use studies, extensive public involvement and detailed routing studies, it was determined that Link 42a was the only environmentally acceptable alternative west of Harlem.

J Land jurisdictions are depicted on Figure 4-7 in the Maps, Diagrams and Tables volume of the DEIS. In addition, private land ownership maps are on file at Western Area Power Administration.

17 Response a

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Billings Office
316 North 26th Street
Billings, Montana 59101-1396

B2204

February 16, 1983

Mr. James D. Davies, Area Manager
Department of Energy
Western Area Power Administration
Billings Area Office
P.O. Box EGY
Billings, Montana 59101

Attention: Steve Fausett

Dear Mr. Davies:

We received your letter of January 26, 1983 (B2204), and have reviewed the biological assessment contained in the Environmental Report for the Fort Peck-Havre Transmission Line Project. We concur that the project is not likely to adversely effect the endangered bald eagle and peregrine falcon.

Contingent upon the transmission line corridor not passing through any prairie dog towns, we also concur that the project is not likely to adversely effect the black-footed ferret. However, if the transmission line corridor is routed through any prairie dog towns (as shown in Figure 4-4), we require that informal consultations be reinitiated with us, and that prairie dog towns be surveyed for black-footed ferrets, within one year prior to construction activities. Surveys need to be coordinated with personnel from this office. We are enclosing a copy of our draft guidelines for conducting ferret surveys. Final guidelines should be available for distribution later this spring.

Apparently the Section 7 consultation process is not entirely clear to you. Section 7(c) of the Endangered Species Act outlines the procedures to be followed and we summarize them here for your use in future consultations. For major federal action that significantly affect the quality of the human environment (i.e. an EIS is generally prepared), Section 7 consultation is initiated by a Federal action agency when they inform the Fish and Wildlife Service of the proposed project action and request a list of threatened and/or endangered (T/E) species that may occur in the project area. At that time, we supply a list of T/E species which need to be

17 Response a (continued)

addressed in the biological assessment. Section 7(c) requires that the action agency prepare a biological assessment to determine if the proposed project will affect T/E species identified in our species list. If preparation of the biological assessment is not initiated within 90 days, the species list should be verified with us prior to preparation of the assessment. The reason for this is to incorporate any changes in listed species which may have occurred between the initial request for a species list and the time when preparation of the biological assessment begins. The biological assessment shall be completed within 180 days of initiation, but can be extended by mutual written agreement between the action agency and FWS.

Upon completion of the biological assessment, it is up to the action agency to determine if the proposed project will affect any or all of the T/E species identified in our species list. After receiving the biological assessment and the action agency's may affect/no affect determination, we will either concur or disagree with the may affect/no affect determination. If the action agency makes a no affect determination and we concur, no further consultation is necessary. However, if the action agency makes a may affect determination and we concur, or the action agency makes a no affect determination and we disagree, formal consultation will be necessary.

We supplied a species list to WAPA for this project on February 27, 1981, and did not receive the biological assessment until the draft environmental impact statement was distributed late in 1982. We do not have any problems with biological assessments being incorporated into draft EIS's for projects; in fact, Section 7 regulations have been designed to integrate Section 7 consultation with NEPA. However, in the future, we recommend that you follow the procedures and time frames set forth in Section 7 of the Endangered Species Act, so that our agencies may work cooperatively in carrying out our joint consultation requirements.

Please contact us if we can be of further assistance.

Sincerely,

Wayne G. Brewster
Field Supervisor
Endangered Species

cc: Ecological Services, Billings

17 Response b

Department of Energy
Western Area Power Administration
Billings Area Office
P.O. Box EGY
Billings, Montana 59101

MAR 1 1983

B2204

Mr. Wayne G. Brewster
Field Supervisor, Endangered Species
Federal Building, Room 3035
316 North 26th Street
Billings, MT 59101-1396

Dear Mr. Brewster:

This is in response to your letter of February 16, 1983, regarding endangered species consultation for the Western Area Power Administration (Western) proposed Fort Peck to Havre Transmission Line Project.

We were pleased to receive your concurrence that the project would not have an adverse effect on the endangered bald eagle and peregrine falcon. Please be assured that Western is concerned with the well being of endangered species and will inform your office if any prairie dog towns are encountered along the transmission line route. Our intent is to construct the transmission line in the environmentally preferred corridor. Based upon the data gathered for the draft environmental impact statement for the proposed project, no prairie dog towns are known to exist within the preferred corridor.

We would also like to thank you for summarizing the procedures to be followed under the provisions of Section 7(c) of the Endangered Species Act. As you are well aware, transmission line construction projects are normally long term. The EIS process itself requires approximately two years to complete. Construction may not begin until a year later and continue for 1 to 3 additional years. We apparently were remiss in providing Fish and Wildlife Service a completed Biological Assessment within 180 days of initiating the consultation process or requesting an extension. We appreciate your cooperation in this matter and will try to do better in the future.

Sincerely,

James D. Davies
Area Manager

FORT PECK

MONTANA HISTORICAL SOCIETY

HISTORIC PRESERVATION OFFICE

225 NORTH ROBERTS STREET • (406) 449-4584 • HELENA, MONTANA 59601

October 13, 1982

Stephen A. Fausett
Assistant Area Manager for Engineering
Department of Energy
Western Area Power Administration
Billings Area Office
P.O. Box EGY
Billings, MT 59101

Dear Mr. Fausett:

Re: Fort Peck to Havre Transmission Line

Thank you for the opportunity to review the other volumes for the above-named environmental report. I respect the general intentions that went into planning this project and especially like the format that has been developed by Wirth Associates to address visual impacts. That is, in my judgment, the predominate cultural resource question raised by new power line construction. However, I find that most of the work done is not of much use in providing WAPA with information on how or whether historic resources should influence corridor selection or line location. Concentrating effort on "known" resources contributes significantly to the document's lack of utility. "Known", in the context of this study, translates into resources that are mentioned in county histories or area texts. Some field checking occurs, but not in any systematic sense. Hence, the expenditure of effort on assigning value to sites and line impact to sites is being executed on resources that may, in many instances, no longer exist and is not being applied to a range of resources that likely do stand along the line.

I believe that the purpose of the environmental study and assessment would have been far better served had research first concentrated on using primary source materials that directly address both what historical resources once existed and which are likely to exist now (sources such as GLO maps, early USGS maps, BLM land records, census information, school and tax information, etc). Second, predictions should have been attempted from the information gathered. These predictions would have included what kinds of historic sites would

Ms. Sherfy was contacted after receipt of her October 13, 1982 letter. In several phone conversations, she elaborated on and clarified her concerns regarding the Fort Peck to Havre history study. According to Ms. Sherfy, these concerns are:

(1) emphasis on identifying only "known" resources in the study area rather thon addressing both "known" as well as expected types of historic resources;

(2) the lack of use of primary data sources (specifically the GLO maps) at the alternative corridor phase to identify expected (i.e., homesteads) historic resources;

(3) clarification of methods related to site visitation and collection of data regarding the integrity of or extant remains at sites;

(4) submittal of the architectural history ond history reports as two instead of one report;

(5) the exclusion of modern towns from the impact assessment (individual known historic properties within the towns were included); ond

(6) the ossumption that sites which only illustrate local historic patterns are less important than those sites that illustrate regional or national historic potterns.

The following comments address each of the above concerns.

Reply of Concern # 1:

It should be noted that the original workscope for the history study which was submitted to the State Historic Preservation Office for review in May 1980, stated that "known" historic resources would be identified (along with relevant historic themes and events) through a review of the literature, agency contacts and an archaeological sample survey. No comments were received regarding the history study methods or goals.

Ms. Sherfy pointed out that as a result of concentrating on known sites the most common historic site to be found outside of the urbon areas (i.e., homesteads) would not be well represented in the inventory or accurately reflect what types of historic sites would be encountered along a right-of-woy. This is a valid concern. However, although homestead sites were perhaps under emphasized in the history report, they were not excluded from the inventory. When the record searches were conducted, all previously recorded homesteads were included in the inventory. In addition, any historic property found during the 10 percent sample survey of the alternative corridors was added to the inventory. The sample survey showed that homesteads (consisting primarily of old foundations and debris) could be expected along rights-of-way located outside of urbon areas.

18 (continued)

Stephen A. Fausett
October 13, 1982
Page 2

possess sufficient integrity to be treated as such and what kinds of buildings would exist along the proposed corridors. Finally, attempts could have been made to assess whether the qualities that make most of the likely existing sites significant would be impacted by the presence of a power line. The major problem of the study is best illustrated by referring to pages 33, 34, and 35 of the history section. None of the resources included in that "Inventory" are discussed on the basis of what resources survive there now. So, while the research team devoted great effort in assigning those sites places in impact and sensitivity charts, they may all have largely wasted time and effort in doing so.

The history and architecture sections should not have been studied and described separately. The material is, in part, duplicated as were efforts. More important, historical and architectural significance can almost never be sorted out as distinct entities.

Towns (on page 32) should not be excluded from weighting or review in the inventory when individual buildings, already listed in the National Register, can be found in those towns and are included in the analysis. The only reason for exclusion would be a certainty that the line would not be visible to any resources in those communities. That, then, warrants removal of properties like the Lohman Block from the list.

In any sort of ranking scheme, the fact of designation cannot be used in any way as a measure of relative property value. The section on architecture recognized that fact far more than the history section. Designation here reflects very little about intrinsic value and more about the quirks of local sponsorship. Also, sites of importance to communities cannot be given less value than sites important to the state or a region. Landmark (national significance) designation does impose a somewhat greater, stringent 106 review requirement. But otherwise, the whole Register program is geared to granting value and encouragement to the perception of locally significant sites. In short, a single property important to a given community may be as important to that community's perception of itself and hence worthy of strong protection measures as a site important to a state is.

In summary, too much effort went into assessing value and impact of or on resources that the researchers knew only by names in books. If more field checking was done than is reported here--that too is important and should be noted. The information on site integrity has to be keyed to knowledge as opposed to guessing about the kinds of resources still present if this is to be subject to outside review.

Reply to Concern #2:

Ms. Sherfy has determined that homesteads could have been identified along the alternative corridors through a review of Government Land Office (GLO) maps dating to the homesteading era. We were unaware that GLO maps for that area showed actual structure locations. Review of the maps could have added more sites to the history study inventory.

It should be noted that a determination of eligibility document with additional information about eight of the homestead sites was submitted to the SHPO (February 1983) after the October 13th letter from the SHPO had been received (Determination of Eligibility Document, Fort Peck-Havre Multiple Resources Area, 1983).

Reply to Concern #3:

With the exception of the homestead sites, which were located through record searches, all of the history sites listed in the history inventory were visited by Dr. Dolman, the project consulting historian. The integrity of each site is provided on Table II Site Inventory: Sensitivity, located in the history report. In addition, the site descriptions provide information on extant remains. The integrity assigned to homestead sites was determined from the site forms.

Reply to Concern #4:

For reasons related to compilation of the reports and the fact that the studies were not conducted by the same person, the results of the architectural history and history studies were not compiled into one document. Considerable effort was made to ensure that work was not duplicated and it is our feeling that it was not.

Reply to Concern #5:

Ms. Sherfy suggested that the larger towns in the study area could have been evaluated in o more general sense rather than dealing with only individual properties. The following recommendation was made: areas within a town that are likely to have historicolly significant properties should have been identified and the expected impacts (particularly visual) to those areas assessed. Such an approach could have enhanced the history study. However, depending on the growth patterns of the towns, using the approach could have required considerably more historic research and certainly additional visual studies for each town. For the Fort Peck to Havre Project where the alternatives are not crossing through towns and generally are not visible (particularly from the downtown areas where one would expect the older historic buildings), identifying such areas and doing the necessary visual studies would have probably contributed little to the selection of a preferred corridor.

18 (continued)

Stephen A. Fausett
October 13, 1982
Page 3

Using a broader range of primary source materials such as maps, I would like to have seen more effort spent on assessing the likely presence or absence within the area of Register eligible resources, the characteristics that would make those resources significant, the ways the line would affect significant qualities, and how that information could be translated into corridor/line planning work.

Sincerely,

Marcella Sherfy
Deputy SHPO

TAF/det

Reply to Concern #6:

It was assumed that sites of local importance are significant. Nevertheless, sites that are important not only at a local level but also at a regional and/or national level were recognized as such and given a higher sensitivity level. This does not imply that the sites of only local importance are insignificant. It does recognize, however, the fact that a site which is also of regional and/or national importance is more likely to meet the National Register eligibility criteria, particularly criterion a) which deals "with events that have made a significant contribution to the broad patterns of our history."

18a

Advisory Council On Historic Preservation

1522 K Street, NW
Washington, DC 20005

Reply to:

730 Simms Street, Room 450
Golden, Colorado 80401

April 13, 1983

Mr. James D. Davies
Area Manager
Department of Energy
Western Area Power Administration
Billings Area Office
P.O. Box EGY
Billings, MT 59101

Dear Mr. Davies:

This is in further response to your letter of December 8, 1982, as supplemented by the documentation provided with your letter of March 2. In December you requested that we review three volumes of the draft environmental statement for the Fort Peck to Havre Transmission Line Project to determine whether sufficient information to fulfill the documentation requirements of a preliminary case report (36 CFR 800.13(b)) would be met by it so that the consultation process in accordance with the Council's regulations for compliance with Section 106 of the National Historic Preservation Act (16 U.S.C. 470f) could be initiated. On January 7, 1983, we itemized some additional documentation that was necessary. The additional documentation requested was substantially provided in your letter of March 2.

It appears that the Western Area Power Administration has a very sound basis for determining the effects of this project on historic properties. We note, however from the three-page "Consultation with Montana State Historic Preservation Officer" (SHPO) and conversations with Marcella Sherfy of the SHPO's staff that the evaluation of the National Register eligibility of affected properties has not been completed. In addition, detailed consultation with the Montana SHPO regarding the contents of the proposed Memorandum of Agreement (MOA) for this project apparently have not been initiated. In view of this, we suggest that you work with the Montana SHPO to complete the evaluation of affected historic properties (36 CFR 800.4(a)) and to develop a proposal for an MOA (36 CFR 800.6(c)). To assist you with this effort, enclosed is a copy of our "Section 106 Update" Numbers 1, 2 and 3, which explain how to develop an MOA in accordance with the Council's suspension of Section 800.6(c)(1) which sets out direction for the preparation of a Memorandum of Agreement.

As indicated in Table 3-1F, pages 7 and 8 of 11, Western is consulting with the Stat Historic Preservation Office and will complete the consultation process as presentl initiated and as required by 36 CFR Part 800.4.

18a (continued)

We look forward to hearing from you regarding this matter as soon as consultation with the Montana SHPO has proceeded to an appropriate stage of our regulations.

If we can be of assistance, please contact Brit Storey of my staff at (303) 234-4946, an FTS number.

Sincerely,

Louis C. Wall
Chief, Western Division
of Project Review

Enclosure

Montana State University
College of Agriculture

FORT PECK
Agricultural Experiment Station
Northern Agricultural Research Center
Star Route 36--Box 43
Havre, Montana 59501
Telephone 406-265-6115

October 19, 1982

TO: Department of Energy
Western Area Power Administration

FROM: Donald C. Anderson, Superintendent
Northern Agricultural Research Center

RE: Proposed Fort Peck to Havre Transmission Line.

A The proposed line route as listed in the Draft Environmental Impact statement, DOE/EIS-0090-D, crosses the eastern edge of the Northern Agricultural Research Center. The route is acceptable except for corner "PI 309." Corner "PI 309" of the transmission line is located in the center of an area reserved for future research plots. An acceptable route would be to move the corner into the adjacent property to the east of the research site.

Thank you for considering this request.

DCA/maf
cc: Dr. Jim Welsh
Dr. William Tietz

A The corner for "PI 309" has been relocated to avoid the future research plots.

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION
ENERGY DIVISION

TED SCHWINDEN, GOVERNOR

32 SOUTH EWING

STATE OF MONTANA

(406) 449-3780 ADMINISTRATOR & PLANNING AND ANALYSIS BUREAU
(406) 449-3940 CONSERVATION & RENEWABLE ENERGY BUREAU
(406) 449-4600 FACILITY SITING BUREAU

HELENA, MONTANA 59620

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2000
B2200
Ecol

February 4, 1983

Steve Fausett
Western Area Power Administration
Billings Area Office
P.O. Box EGY
Billings, Montana 59101

Dear Steve:

Attached is our report presenting DNRC's comments on Western's Havre-Ft. Peck transmission line Draft Environmental Impact Statement. We have attempted to indicate areas where we feel the information is adequate and complete and areas where clarification and/or additional documentation is desirable.

I have attached a draft copy of DNRC's construction guidelines for your review and consideration. These guidelines have been adopted in a slightly different form by the Board of Natural Resources as conditions for compliance with the Major Facility Siting Act on other transmission lines.

If the additional information and discussion requested by DNRC is contained within your FEIS, it is probable that DNRC could adopt your final EIS and submit it to our Board without any major modifications. I would like to suggest that we have a meeting after you have reviewed our comments to determine future actions by our respective agencies.

Sincerely,

Kathy Hadley

Kathy Hadley
Bureau Chief
Facility Siting Bureau

KH/jb
Attachment

AN EQUAL OPPORTUNITY EMPLOYER

Western met with the DNRC on March 22, 1983 to review initial responses that had been prepared to their comments on the DEIS. The following responses to DNRC comments reflect the results of the discussions with DNRC reviewers.

20 (continued)

REVIEW OF FORT PECK – HAVRE TRANSMISSION LINE:

NEED AND ALTERNATIVES SECTIONS

ADEQUACY OF DATA AND ANALYSIS

The economic comparison of alternatives is one of the clearer such presentations DNRC has seen in a transmission line EIS. However, several areas in the sections on need and alternatives would benefit from expansion.

A The first area that it would be helpful to expand is the discussion of the role of the existing 161 kV line, together with the MPC 69 kV line, in serving loads along
B the Highline. A discussion of power flows under normal and outage conditions, under winter and summer peaks and under peak line loading conditions, if different, would be helpful. Great emphasis is given to the unreliability of the existing line
C because of lightning and structure failure. Can the 69 kV line carry sufficient power to avoid dropping loads when the 161 kV line is out of service? Can it do so under peak conditions?

A B C The existing Fort Peck to Havre 161kV transmission line serves as the sole high-voltage transmission link between Fort Peck and Havre. It is normally operated closed all the way between Fort Peck and Havre to provide a continuous electrical path for the transfer of electrical power to area loads. It is only opened under emergency (i.e., system faults) or maintenance conditions. The Montana Power Company 69kV transmission line that geographically parallels the 161kV line serves another purpose. This 69kV line is operated normally open (sectionalized) between each of the 161/69kV substations at Havre, Harlem, Malta and Richardson Coulee to provide radial low-voltage transmission paths to local distribution substations. There is not sufficient capacity in the 69kV line to transmit power, even under relatively moderate load conditions, from Havre to Fort Peck or vice-versa if the 161kV line between those points were to be unavailable. However, the 69kV line section has some limited capability to transfer electrical load from one 161/69kV delivery point to another by resectionalizing the 69kV line sections.

D The major gap in the data and analysis is an evaluation of the maintenance and
E outage costs associated with the no action alternative. No data are presented on the distribution and duration of outages, the cause of the outages and the number of
F customers affected. Nor are any costs provided for maintenance and repair or replacement of existing structures before or after they fail. This information would permit a comparison of the costs and benefits of rebuilding. (Line loss figures for the existing line are provided.)

D E F The primary objective of the project, as outlined in Chapter I of the DEIS, is to insure continuity of electrical service to area residents and to improve the reliability and quality of their services. Adoption of the no-action alternative would satisfy neither of these objectives since the existing transmission line would still lack the overhead ground wires and structural soundness needed to avert outages caused by lightning and structural failure. The no-action alternative would require costly piecemeal reconstruction of the existing line by Western maintenance crews on a breakdown basis under adverse conditions of weather and power outages. Since Western maintenance crews are not staffed or equipped for large-scale construction activities and are subject to sudden interruptions of scheduled work for response to emergency situations, they are not cost-effective when employed in construction activities. Also, piecemeal construction would require that materials (poles, crossarms, conductors, etc.) be purchased in small quantities where price discounts would be less. The net result of these inefficiencies would be a substantial increase in the construction cost/mile for the reconstructed transmission line.

20 (continued)

G A third gap in the EIS data is the capacity of the existing line and sufficient information on projected loads to indicate when its capacity would be exceeded. Such information would permit an analysis of the relative merits of construction now versus postponement until the additional capacity becomes necessary.

G The additional capacity for future load growth or generation additions provided by 230kV construction is a peripheral benefit associated with the construction of a new line and is a prudent utility practice. Since the new line is primarily being constructed to replace a deteriorating, substandard transmission line with the objective of improving system reliability and quality of service, the proposal to defer this construction until the capacity of the old line was exceeded did not have any bearing on resolution of the reliability problems and was not a significant factor in selecting the preferred alternative.

H Finally, it would be helpful to have some discussion of the sensitivity of the results of the economic analysis to alternative assumptions. One example of this is the use of an 8% discount rate, which might be termed a mid range discount rate. BPA is currently using 3%; ONRC used 4.3% in its analysis of the proposed Kootenai Falls project; other analyses have used discount rates of 10% and 12%. The lower end of the range is usually thought of as depicting the social rate of time preference, and is preferred by recent writers on the subject.

H The project economic analysis, as shown in the final EIS, has been updated to use a 9.5 percent interest rate. This rate is established under current Federal regulation governing the ratemaking rules for new power projects and system transmission facilities. This interest rate is reviewed and updated annually and is used for ratemaking cost/benefit studies, and selection of project alternatives. Recent trends indicate that this rate may rise to even higher levels. If an interest rate higher than 9.5 percent was employed, it would further strengthen the economic arguments for selection of the preferred alternative.

I A sacond area where some furthar explanation and sensitivity analysis would be helpful is in the value of line loss savings. WAPA is using 12 mills per kWh for the value of reduced energy losses, and although the figure is not presented it appears they are estimating approximately $11.55 per kW for reduced peak losses. The comparison of alternatives may be sensitive to these values. If reduced losses defer the need for new baseload and peaking capacity in the region then the values should reflect the cost of power from new plants and should be upwerds of 40 mills. On the other hand recent forecasts in the northwest done by BPA and the Northwest Power Planning Council indicate surpluses into the mid 1990s and possibly later. If this turns out to be correct then there may be no value to the region from reduced losses during this period. The analysis should at least consider this possibility.

I The selection of 12 mills/kWh for the value of the energy associated with loss savings is based on Western's historicol average yield on surplus energy sales. No value was assigned to the capacity associated with loss savings since it is such a small amount and would not be marketed on a firm basis. This capacity would, however, be utilized on an almost daily basis to market on-peak surplus hydro energy to displace more expensive energy generated at fossil plants. It should be noted that the 12 mills/kWh value is well above the current required yield of 6.1 mills/kWh for Western's firm power sales under the Pick Sloan Program.

20 (continued)

REVIEW OF FORT PECK – HAVRE TRANSMISSION LINE:

ELECTRICAL EFFECTS SECTIONS (pp. 5-24 through 5-32 and Appendix D)

These sections are generally well done and complete. DNRC has three comments:

1) Electrical field strength at the edge of the right-of-way (EoROW)

A DNRC has just received a report recommending a EoROW limit of 1 kV/m (Sheppard 1983). According to p. 2-27, the Fort Peck/Havre line would have a 0.65 kV/m EoROW maximum, but according to Table 3-4, the maximum is 1.5 kV/m. If the former figure is correct, the ROW width is adequate, but if the latter is correct it may not be.

A The edge-of-right-of-way field for the proposed line is calculated to be 0.65kV/m. Toble 3-4 should be changed from 1.5kV/m to 0.65kV/m to reflect this value.

2) Potential impacts to honeybees (pp. 5-30 and D-13)

B Research of the type cited in this section has been continuing, and the most recently available report describes some effects on hives from electric fields as low as 2 kV/m rather than the 7 kV/m cited on p. 5-30 in the draft EIS (Rogers et al. 1982). Some adverse effects might occur to hives if they were located in the right-of-way, since the maximum field expected under the 230 kV line is 2.4 kV/m. DNRC recommends that Western advise all beekeepers along the proposed final route of the known effects of electrical fields on bees and of the uncertainties involved; Western should assist the beekeepers in relocating hives prior to energization of the line.

B It is acknowledged that effects on honeybees in hives have been observed down to 2kV/m. Since the effects appear to be in the hive and appear to be related ta induced hive current, the effects could be present at lower electric fields in taller hives than those used by Rogers et al (1982). Similarly, effects might be absent in shorter hives at higher fields. Therefore, there is uncertainty about the threshold electric field for effects on bees, and the possibility of such effects exists for the proposed line. Elimination of the possibility of effects on bees is most easily accomplished by not locating hives near the low point of the conductors.

Reference:

Rogers, L.E., J.L. Warren, N.R. Hinds, K.A. Gano, R.E. Fitzner and F.G. Piepel. 1982. "Environmental Studies of a 1100kV Prototype Transmission Line, an Annual Report for the 1981 Study Period." Proposed for the U.S. Department of Energy, Bonneville Power Administration, Portland, Oregon 97208. Document No. DOE/BP-142.

Beekeepers will be notified of this by Western and Western will offer to relocate.

20 (continued)

3) Radio and television interference (pp. 5-25 D-3,4)

C Appendix D contains a complete list of mitigation that could be applied to resolve complaints. There is a wide range of costs involved in this list. The mitigating measures in Table 5-1 concerning radio and television interference is not specific, leaving it unclear if Western is willing to use all the measures listed in Appendix D (see construction guideline # 16.8).

C Table 5-1, Mitigation Measure Nos. 10 and 12, indicates that Western will apply necessary mitigation to satisfy complaints of line-generated radio and television interference. Western will work with an affected landowner on a one-to-one basis to eliminate the interference. The particular mitigation measure selected will depend on the source and severity of the interference.

In DEIS Appendix D, page D-5, line 18, change "will be" to "could."

Cites

Rogers, L.E. 1982. "Environmental studies of a 1100 kV prototype transmission line, and annual report for the 1981 study period." Prepared for the Bonneville Power Administration by Battelle PNL, Richland, WA 99352.

Sheppard, A. "Biological effects of high voltage AC transmission lines." A report to the Montana Department of Natural Resources and Conservation. Submitted by A.R. Sheppard, 1003 W. Olive Avenue, Redlands, CA 92373.

20 (continued)

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

TED SCHWINDEN, GOVERNOR — COGSWELL BUILDING

STATE OF MONTANA

HELENA, MONTANA 59620

January 28, 1983

Pat Nichols
Facility Siting Bureau
Energy Division
Department of Natural Resources
and Conservation
Helena, MT 59601

Dear Pat:

The Air Quality, Water Quality and Solid Waste Management Bureaus reviewed the Western Area Power Administration's (WAPA) draft environmental impact statement on the Fort Peck to Havre Transmission Line Project.

Comments included:

Solid Waste Management Bureau

A The draft EIS states that "...all rubbish and waste material would be hauled away and disposed of at approved sites." Therefore WAPA will not have to apply for a solid waste disposal license.

Air Quality Bureau

B Gravel crushing permits will be required for any road improvements and tower construction. Open burning permits may not be required unless there is more than 100 acres of clearing. (applications enclosed)

We will need to have an estimate of the total tons or cubic yards or gravel needed for the project and an estimate of the amount of clearing that will be necessary.

Water Quality Bureau

C The proposed project will definitely require a Short-Term Exemption from Surface Water Quality Standards for Construction Activities (application enclosed) and although the impact statement did not indicate the need for a Montana Pollutant Discharge Elimination System Permit construction activities in high goundwater areas or water ways would require such a permit.

Sincerely,

Tom Elverhoff

A No response necessary.

B Western will provide data through licensing process.

C Western will provide data through licensing process.

20 (continued)

REVIEW OF FORT PECK - HAVRE TRANSMISSION LINE:

TERRESTRIAL & AQUATIC LIFE & HABITATS

I. INTRODUCTION

The Western Area Power Administration (WAPA) has proposed to construct and operate a 230-kV transmission line from Fort Peck to Havre, Montana. The transmission line is proposed to replace an existing 161-kV line which is inadequate by current design standards and in an advanced state of deterioration.

WAPA prepared a Draft Environmental Impact Statement (EIS) on the proposed project and subsequently provided funding to the State of Montana to determine whether the EIS meets the substantive requirements of the Montana Major Facility Siting Act (MFSA). This report critiques the methodology used in the EIS and addresses compliance with the MFSA in regard to aquatic and terrestrial ecosystems.

20 (continued)

II. ANALYSIS OF THE EIS

A. Methodology

A The methodology used to select a preferred corridor was discussed in Volume 2, Page 26 and Pages 35-45. From the discussion, it is apparent that an interdisciplinary team performed an analysis in which various resource concerns were weighted and evaluated in conjunction with public comment and engineering to arrive at a preferred corridor. Although an interdisciplinary analysis was performed, it is uncertain which resource concerns were considered to be the most important for corridor selection. A statement addressing which resource concerns were given preferential weighting in the interdisciplinary analysis would help explain the methods used.

A See FEIS Chapter 3.

B The discussion on the corridor selection process is difficult to understand, particularly in regard to "Thresholds" (Page 39, Volume 1). The complex nature of the selection process is conveyed to the reader, but the details of the process remain unclear. In addition, it appears that subjective judgment was often relied upon in the selection process. The means whereby subjective judgment and quantifiable resource data were integrated to arrive at the preferred corridor is not clear from the discussion in the EIS.

B See FEIS Chapter 3.

B. Impact Assessment

C The discussion in the EIS concerning impacts to terrestrial ecosystems should be expanded. On Pages 5-7, Chapter 5 ("Biological Resources"), for example, typical types of resources are discussed as "affecting" various [illegible]

C D Table II (FEIS, Chapter 4) provides an explanation of how the proposed action will affect wildlife and vegetation, whether the impacts will be adverse or beneficial, and the long-term versus short-term nature of the impact.

20 (continued)

will affect the resource nor whether the effects will be long-term, short-term, adverse, or beneficial.

D Table 1 of Chapter 7 ("Wildlife and Vegetation Impact Model"), does not state which impacts may occur as a result of the proposed action. The

E footnotes refer to incorrect tables and the numerical codes under the headings "Impact Types" and "Selected Mitigation" are not explained in the EIS.

F On Pages 18 and 19 of Chapter 7 ("Impact Assessment"), it should be expanded to discuss the potential impacts of transmission line and access roads on sharp-tailed and sage grouse. It seems appropriate, because of the large numbers of grouse leks within the preferred corridor, to address such possible residual impacts as noise from the transmission lines

G interfering with lek behavior. Also, the long-term potential impact of grouse striking wires as they move to and from leks should be discussed. Because large numbers of grouse move to leks in the spring and to a more limited extent in the fall, during twilight hours, when visibility is low, the probability of mortality from wire strikes is high if transmission lines are close to leks. Patterson, a noted grouse authority, wrote:

> Whenever transportation and agricultural systems have invaded grouse range, the species is forced to compete with man for space, while simultaneously sustaining mortality from accidents caused by man's structures and improvements. Birds are killed by cars on roadways and by flying into obstructions such as fences, telephone lines, and power installations.[1]

H Other potential impacts which were not addressed are those short-term effects related to construction activity on nesting raptors. During

[1] R. Patterson, 1952. The Sage Grouse in Wyoming. Denver: Sage Books, Inc.

E In the footnote, "Table I" should be changed to refer to Table II (FEIS, Chapter 4).

F On page 19 (ER, Volume 2, Chapter 7), first line of the page, "grouse breeding area" should be changed to read "grouse lek or breeding habitat." Following that sentence insert "As mapped in this study, the leks (Figure 4-4) include a buffer zone (1.5-2.0 miles) around them and is considered to be the area in which the majority of grouse using the lek breed. Thus, even though a lek is not surrounded by a mapped (patterned) breeding habitat, an inferred breeding area is included in the assessment. Breeding areas for grouse are only mapped where there is sage brush cover which is considered to be optimum grouse nesting habitat."

On page 19, third and fourth lines, after "by" insert "noise and removal of habitat resulting from."

G H On page 19, fourth line, after "powerline" insert "Long-term residual impact to the grouse would include bird mortality from collisions with the transmission lines particularly when the grouse move to and from leks; however, the potential for impact in this case will remain low if the corridor is sited more than 0.5 mile from a grouse lek. Another possible short-term impact is the disturbance to nesting raptors during the construction phase; however, the potential for this impact is considered to be low because of the avoidance by the corridors of prime raptor nesting habitat such as rough breaks and riparian habitats."

20 (continued)

the construction of the line, nesting raptors such as golden eagle, prairie falcon, and ferruginous hawk could be displaced from their nests if construction noise and disturbance exceeds tolerance levels. These species are particularly sensitive to disturbance in close proximity to their nests during some periods of nesting and brood rearing.

I The possibility that the proposed action will enhance the proliferation of noxious weeds is briefly alluded to in the EIS. Because leafy spurge is a problem in eastern Montana and has the potential of causing serious losses in range and cropland production, the impact of the proposed action on the spread and establishment of this species should be expanded. Wherever native vegetation is disturbed, particularly along a linear right-of-way, there is a good possibility that leafy spurge and other undesirable weeds will invade.

J The Montana Weed Law requires that landowners or counties control noxious weeds; therefore, it is a legal and financial burden to eradicate noxious weeds. Generally, weed control is conducted with chemical herbicides which can adversely affect both terrestrial and aquatic ecosystems.

C. Mitigation Measures

K The mitigation measures described in Table 3 (volume 1) will reduce impacts to sensitive species if employed at appropriate times and over sufficiently large areas. Measure #12[2] (Table 3, Page 6 of 51), for example,

[2]Mitigation measure #12 reads as follows: "Prior to construction, an ecological field review of tower and access-road design will be conducted by an appropriately qualified professional to identify site-specific impacts to threatened, endangered or otherwise sensitive vegetation and wildlife and to determine the most effective means to mitigate these impacts. Possible mitigation measures could include minor adjustments in tower and road [illegible]

I On page 19 (ER, Volume 2, Chapter 7) following line 13, add paragraph "A potential residual impact of construction-related activities would be the establishment and propagation of noxious weeds that would be detrimental to the adjacent cropland. The mognitude of this impact will be low if clearing of vegetation is kept to a minimum acreage and if weed proliferation is closely monitored during construction and post-construction (one to two years) phases."

J No response necessary.

K L M Western will make available to DNRC and MDFWP a plan and profile showing the proposed centerline location. Western will also conduct a survey of the centerline in the Larb Hills and Malta areas to determine the locations of any sharp-tailed grouse or sage grouse leks which might be affected by the project. Centerline adjustments or other mitigating measures will be taken where necessary to minimize impacts to wildlife. Site-specific mitigating measures will be monitored where necessary to ensure that the measures are successful. Where mitigation is not possible and significant unmitigated impacts would occur, Western will work with DNRC and MDFWP to identify other appropriate means of reducing impacts, including compensation if justified.

20 (continued)

would be very effective if employed over the entire corridor. Apparently, this measure will be employed primarily to reduce impacts near grouse leks. The "Impact Assessment/Mitigation Planning Chart for Wildlife and Vegetation" (Chapter 7, Volume 2) suggests mitigation measure #12 as being only for mitigating disturbance to grouse leks, with the exception of mile post 10.6-11.1. At mile post 10.6-11.1, this mitigation measure is suggested to avoid disturbance to a lake and to minimize removal of vegetation.

In view of the statement on Page 4-10 (Chapter 4) in reference to wildlife resource data ("The data presented are by no means complete, but rather represents what is known at the present time"), it seems appropriate to expand the application of mitigation measure #12 to include the entire corridor. Application of this mitigation measure over the entire corridor would constitute a centerline study and could identify site-specific sensitive areas not identified during the EIS process. Additional grouse leks and grouse breeding areas could be identified as well as raptor nests, additional prairie dog towns, and highly productive plant communities.

L In addition to the mitigation measures suggested, a monitoring program should also be implemented to ensure that the mitigation measures

M employed are successful. The possibility that compensation should be made for those impacts which are not mitigatable should also be addressed.

D. Editorial Comments

N In reference to Volume 2, Chapter 6, Page 2, Paragraph 1, the statement that sages, rabbitbrush, and other shrubs are "not important in most of the study area" is incorrect. Sages and other shrubs are extremely important in the study area as wildlife habitat. Sage grouse are especially restricted to big sagebrush for food, nesting habitat, and

N On page 2 (ER, Volume 2, Chapter 6), lines 2 and 3, change "...(Weaver and Albertson 1956); however, these plants are not important in most of the study area." to read "...(Weaver and Albertson 1956). Although these plants are not abundant in most of the study area, they contribute very important wildlife habitat where present, such as in the Larb Hills."

20 (continued)

cover. Antelope heavily rely on big sage as a primary winter food source, and deer browse extensively on rabbitbrush and other shrubs.

O In Chapter 6, Page 2, Paragraph 2, the following statement is inaccurate:

> The only other situation in northeastern Montana where trees are a dominant natural species is the few mountain ranges such as the Bearpaw Mountains . . .

Tree-dominated plant communities occur on the Charles M. Russell Game Range in relatively close proximity to the study area.

P In Chapter 6, Page 3, Paragraph 3, the discussion of flood hazard mapping does not explain how flood hazard maps were used to assess impacts to aquatic or terrestrial ecosystems as a result of the proposed action.

Q In Chapter 6, Page 9, Paragraph 4, the statement that "leafy spurge is a problem species associated with road graders" is ambiguous. Apparently, leafy spurge is either spread due to soil disturbance caused by road graders and/or by seeds carried by road graders. Because leafy spurge is associated with soil disturbance, there is a very good possibility that the proposed action could enhance the proliferation of this species, thereby causing serious adverse environmental impacts.

R On Page 19, Paragraph 2 of Chapter 6, a playa lake is discussed. It is stated that the "vegetation types are unavailable" but that the "grass-like vegetation is used for grazing and may be some of the best non-irrigated pasture in the study area." It is not discussed how it could be conjectured that the area could be some of the best non-irrigated pasture land if the vegetational composition is unknown. In view of the belief that it may be some of the best non-irrigated pasture land in the study area, more information should be gathered and presented in the EIS.

O On page 2 (ER, Volume 2, Chapter 6), the following should be changed:

line 10 - "situation" to "situations"
line 11 - "is" to "are"
line 12 - "...Boldt 1978)" to "...Boldt 1978) and in the Charles M. Russell National Wildlife Refuge."

P On page 3, after the last sentence of paragroph 3, the following sentence should be added:
"Because the entire Milk River valley is a floodplain, vegetation habitat types rather than flood hazard maps were used to assess impacts to biological resources."

Q On page 9, paragraph 4, change "...problem species that is associated with road graders." to read "...problem species that are probably introduced by and/or dispersed by road graders."

R The discussion of the playa lake on page 19 should be modified. According to BLM and SCS (Steve Shuck, BLM, and Roy Dunbar, SCS, personal communication), the lake is dry except in particularly wet years, when the center of the basin may be wet. The vegetation types occurring around the edge of the playa include western wheat grass, rushes, sedges and grass-like species. The last sentence of that paragraph ("The grass-like vegetation is used...in the study area.") should be deleted.

20 (continued)

7

S In Chapter 7, Page 19, Paragraph 1, reference is made to "grouse breeding areas." It is uncertain whether this statement refers to leks or nesting areas. Grouse breeding areas are also referred to on Pages 4-10 and 4-11 (Chapter 4), but there is no explanation of what constitutes a

T grouse breeding area. In addition, on Figure 4-4 of the Map Volume ("Alternative Corridors - Biological Resources"), both leks and grouse breeding areas are delineated. At some locations, grouse breeding areas are shown to be in close proximity to leks (e.g., southern Larb Hills). At other locations, leks are shown but breeding areas are not associated with them. It would be useful to know, when predicting impacts and designing mitigation measures, whether grouse breeding areas lie in close proximity to leks and whether they are associated with specific terrain or vegetation.

S See response to Comment F above.

T See response to Comment F above.

20 (continued)

8

III. COMPLIANCE WITH THE MFSA

A. Nature of Environmental Impact on Aquatic and Terrestrial Lifeforms (MFSA 75-20-301 (b))

U

Based on a review of the maps depicting biological resources (Figures 4-4 and 5-3), it appears that adequate data were collected and analyzed to determine whether the proposed facility represents the minimum adverse impact on natural resources. The maps show wildlife areas of special concern, major vegetation types, and predicted impact levels, both before and after applied mitigation. The narrative in the EIS does not, however, adequately explain the nature of some of the long- and short-term impacts of the proposed project (see Pages 2 and 3 of this report). In spite of the fact the impact discussion is not as complete as it could be, necessary data appear to have been collected and considered in adequate detail to satisfy the requirements of the MFSA.

B. Response to MFSA (75-20-503)

The research activities of WAPA on [illegible] environmental impacts has been adequate. In most cases, currently available technology has been suggested to minimize or mitigate environmental impacts.

Other requirements of MFSA (75-20-503) which must be addressed in the EIS include the following:

V

2 (a) area of land required and ultimate use;

(b) consistency with area, state and required land use plan;

(c) consistency with existing and projected nearby land use;

(d) alternative uses of the site (i.e., substation locations);

U

On DEIS, page 5-7, replace the entire paragraph under the heading "Biological Resources" with the following:

"Impact types were generally found to be adverse, direct and indirect, and long- and short-term with respect to biological resources (see Table 2, Chapter 7). Short-term impacts would result primarily from removal of vegetation along the centerline and disturbances (e.g., access roads, noise, etc.) during the construction phase. These impacts would include disruption of sensitive species such as the sage and sharp-tailed grouse and raptorial species if siting of the transmission line is too close to nesting areas and if construction activities during the breeding season exceed tolerance levels. Siting of the proposed corridors has taken into account these potential impacts; therefore, the resultant routing will minimize short-term impacts to wildlife and vegetation. Also for this reason, most long-term residual impacts will be low occurring where transmission lines are close to grouse leks, grouse breeding habitat, and waterfowl breeding habitat. In addition, unavoidable (low) residual impacts will result from clearing of vegetation along the right-of-way and potential introduction of noxious weeds."

On page 5-87 at end of poragraph 3 (line 16), change "...breeding habitat." to "...breeding habit and leks."

V

No response necessary.

20 (continued)

(j) extent of erosion, scouring, wasting of land (at substation site along route):

Comment: The five requirements have been addressed sufficiently to satisfy the MFSA.

W

(k) corridor design and construction precautions--(includes existing and alternative routes);

Comment: Corridor design and construction precautions have been addressed adequately in a generic sense; however, there may be areas not identified in the EIS where specific construction practices may be employed to reduce or mitigate potential impacts. A more detailed route analysis (i.e., a centerline study) would be necessary to locate such areas.

W See response to Comments K, L and M above.

X

(m) effects on natural systems, wildlife and plant life;

Comment: The effects of the proposed action on natural systems should be discussed in greater detail to satisfy the requirements of the MFSA.

X See response to comments above.

Y

(o) extent of recreation opportunities and related compatible uses;

(s) opportunities for using public lands for location of facilities whenever as economically practicable as the use of private lands and compatible with the requirements of this section;

3 (a) hydrologic studies of adequacy of water supply and impact of facility on streamflow, lakes and reservoirs;

Comment: These points have been adequately considered in the EIS.

Y No response necessary.

7 (a) Construction periods noise levels:

Comment: At certain sites during certain seasons, construction period noise

20 (continued)

Z levels may adversely impact wildlife. It may be feasible to schedule construction activities at times during the season when noise impact to wildlife will be minimal. Nesting raptors, breeding grouse, and wintering big game would likely be affected by construction noise.

Z See response to Comments F, G and H above. In addition, most construction will probably not occur at the height of the grouse breeding season, thus may not be a problem. Moreover, great care has been taken to avoid proximity of the centerline to known leks.

AA (b) Operational noise levels;

Comment: The effect of operational noise levels on grouse breeding behavior was not adequately addressed in the EIS.

AA This issue was discussed with BLM, Valley Resource Area, and specific data on transmission noise levels in grouse breeding behavior were unknown. BLM has been primarily concerned about construction-related disturbance during breeding, and not operational noise.

BB C. Response to Chapter 7, Sub Chapter 3, Rule 36.7.304

Sections (4), (5), (6)(c), (7)(a), (7)(b), and (10) have been addressed in adequate detail.

BB No response necessary.

20 (continued)

IV. SUMMARY

The EIS for the Fort Peck to Havre project will satisfy the substantive requirements of the MFSA if the discussion of impacts is expanded. The data base for terrestrial and aquatic ecosystems appears to be adequate to determine the least-impact route for these natural resources. Appropriate mitigation measures, if employed in a timely manner and at appropriate locations, could substantially reduce most adverse, long-term impacts of the project. The EIS does not, however, discuss compensation for unmitigatable, residual impacts to natural resources.

20 (continued)

REVIEW OF FORT PECK - HAVRE TRANSMISSION LINE:

AGRICULTURAL/LAND USE AND GEOLOGY/SOILS

INTRODUCTION

This report assesses the adequacy of the agricultural/land use and geology/soils portions of the Western Area Power Administration (Western) Fort Peck-Havre transmission line EIS and Environmental Report.

In general, the standards of the Major Facility Siting Act (MFSA) are adequately addressed in the EIS but some points have been left unclear or omitted. These points are discussed in the following sections. The first section critiques the general methods used, the second deals with the land use analysis for agriculture. Geology/soils concerns are dealt with in the third section, and the final portion contains conclusions, and suggested mitigating measures and construction guidelines.

DISCUSSION OF METHODS USED BY WESTERN

A The EIS and supporting documents discuss the method used to identify unmitigable impacts but it's unclear what trade-offs were made to select the study corridors and preferred route. The documents do not define the relative importance of impacts to one resource to those affecting another resource. For example, it is not clear whether avoiding an area of clayey soils is more important than avoiding an area with center pivot irrigation. Such evaluations are essential in understanding how routes and corridors were selected.

A This information was provided to the DNRC March 22, 1983 and is provided in the FEIS, Chapter 3.

20 (continued)

DNRC conferred with the consulting firm employed by BPA, (Tetherow 1983) and learned that impacts to various resources were evaluated and compared in selecting the corridor and route. However, DNRC cannot verify the validity of such comparison without specific documentation.

DISCUSSION OF AGRICULTURAL LAND USE METHODS AND FINDINGS

B The inventory and mapping of agricultural lands (i.e., prime and important farmland, potentially irrigable cropland, irrigated cropland, sprinkler irrigated cropland and nonirrigated cropland) (USDOE 1982b) is adequate to meet the requirements of the MFSA. However, there is no documentation of how initial impact levels were derived. This deficiency could easily be corrected by presenting the remainder of Table 11 found in the discussion of land use in Volume 3 (USDOE, 1982d). The necessary information is said to be on file with Wirth and Associates in Denver.

B This information has been provided to DNRC March 22, 1983.

C Further clarification is needed on weed control. Page 3-13 of the EIS (USDOE 1982a) says, "Rights-of-way would not be chemically treated unless necessary to comply with the permit requirements of public agencies." The EIS also says, "Herbicides may be used at structures on the transmission line right-of-way to prevent undesirable weed growth" (USDOE 1982a, p. 3-15). Will Western use herbicides to control weeds? If not, how will weeds be controlled? Will weed control be limited to structures or will weeds be controllad on all disturbed areas on the right-of-way such as temporary and permanent access roads?

C As stated in the ER, Volume 1, page 18, "Herbicides may be used at structures on the transmission line right-of-way 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 the Western power facilities in Montana. Application would be made at three-year intervals during the summer months. Vegetation may also be removed to minimize the fire hazard and to enhance the appearance of the areas around power installations."

The landowner will be responsible for weed control. The landowner is compensated when the easement is acquired. There will be no chemical treatment by Western other than the herbicides.

20 (continued)

Agricultural Land Use Concerns Relating to MFSA (by Section of MFSA and Rules)

D 75-20-301 2b - "The nature of the probable environmental impacts"

Although impacts resulting from crossing agricultural land are noted in both the EIS (USDOE, 1982a, p. 5-11) and in volume 3 (USDOE 1982d, p. 37), it is difficult to determine what the specific impacts will be and why they will occur. For example, the EIS says, "Long-term impacts to agricultural resources would be annual costs of additional farm equipment...." There is no explanation of what type farm equipment would be required or why.

DFG HIK Permanent easements would be acquired for transmission line and access roads rights-of-way. Landowners would be paid fair market value for rights acquired to their property. All easements acquired would provide for the payment of damages caused by the construction of the line (DEIS, page 3-11). The landowner will be responsible for weed control and will be compensated when the easement is acquired. An expanded discussion of Agricultural Issues is provided in the FEIS, Chapter 3.

Page 37 of volume 3 (USDOE 1982d) says, "The proposed project could lead to long-term disruption of farming practices, removal of land from production, creation of weed and pest problems and/or creation of a saftey hazard." This statement leaves many unanswered questions about the nature of impacts to farming, as follows.

E - Would there be impacts due to gates being left open during maintenance activities?

E The landowner's rights are not abrogated by Western's construction practices. Gates would be locked at landowner's request. See DEIS, page 3-12, paragraph 4.

F - What "pests" are expected?

G - Would farming be hindered by the need to cultivate around the towers? If so, would this be a serious problem?

H - Would areas near poles be double planted? Would this affect crop yields?

I - How do towers effect irrigation practices?

J - Would additional gates and access roads increase trespass problems?

J It should be noted that presence of an access trail is a potential avenue for increased trespassing. Western maintains any gates on right-of-way. Additional gates and access would "not be locked unless locks are requested by landowners. Gates will be installed whenever fences cross the right-of-way." DEIS, page 3-12.

20 (continued)

K Western's discussion of impacts to farming operations should be expanded to include a thorough description of expected impacts including the type of impact and how it would be created.

L The EIS does not provide sufficient information on soil compaction, which could be a major problem on cultivated land, especially when construction equipment is operated on moist soils. Without mitigating measures such as subsoiling, crop yields may decrease. Western has not proposed any measures to deal with soil compaction. If mitigation is left to the landowner how will he/she be compensated? Soil compaction and associated problems should be discussed.

L See response to Comment AA in the discussion of geology/soils in this section. Western will compensate for damage during construction.

M Since part of the proposel includes removal of the existing 161 kV line, additional discussion of the short-term impacts associated with removal of the line is needed. Such a discussion should include tha duration of activity, amount of land disturbance (cultivated and range), how the lendowner will be compensated for crop losses, the mathods used to remove the line, and reasons why poles would be pulled out in some places and cut off 18-24 inches below the ground surface in others. Except for these points the discussion is adequate.

75-20-301 2c - "That the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives"

M Poles will be pulled unless the landowner prefers them to be cut off. Western will compensate for damage during construction.

N Tha discussion of methods does not clearly state the weight given each resource concern in the selection of prefarred routes. However, conversations with Wirth and Associates revealed that avoiding cultivated and irrigated land was weighted more heavily than other resource concerns (Tetherow 1983). Documentation of the weighting scheme used in the analysis would maka the discussion adequate.

N See FEIS Chapter 3.

20 (continued)

O 75-20-301 2e - "What part, if any, of the line or aqueduct shall be located underground"

Undergrounding has been adequately discussed on pages 3-3 to 3-5 of the EIS. Undergrounding is not proposed for any portion of this project.

O No response necessary.

P 75-20-503 2a - "Area of land required"

The documents contain sufficient information on the long-term land requirements for each land use category. However, there is not enough discussion of short-term land requirements for stringing and tensioning, staging areas, and for removing the existing 161 kV line.

P

Typical 230kV Specifications	
Stringing and tensioning -	Wire splicing 20' x 50' 0.022 ac. Wire pulling 100' x 200' 0.459 ac.

Staging areas - 2-3 acres DEIS Table 3-4
Removing existing 161kV line - 60' x 100' per tower

These tasks will all take place within the right-of-way.

Q 75-20-503 2c - "Consistency with existing and projected nearby land use"

Agricultural land use has received adequate treatment in the analysis (Tethrow 1983). However, the EIS does not clearly discuss how the mapping of agricultural land was used to select the recommended corridors. For example, did areas with highly erodible soils take precedence over areas with sprinkler irrigation when selecting a study corridor? Further clarification is needed.

Q See FEIS Chapter 3.

R 75-20-503 2d - "Alternative uses of the site"

This has been adequately addressed.

75-20-503 2i - "Construction practices"

R No response necessary.

20 (continued)

S Discussion of activities and impacts associated with removal of the existing 161 kV line is needed (see Geology/Soils section for further discussion). The discussion of tha construction phase of the new line is sufficient.

S See FEIS Chapter 3.

T 36.7.304 7a - "Map and air photo requirements"

This rule has not yet been complied with. However, Wirth Associates is in the process of preparing the necessary topographic maps showing the routes and DNRC expects to receive these soon, which will constitute compliance.

T Western provided detailed mops of the preferred corridor to the DNRC.

U 36.7.304 7b - "Raquirement for map showing existing transmission lines"

This requirement has been met.

U No response necessary.

V 36.7.304 1D - "Reclamation method to be employed on resources disturbad during construction"

The discussion of reclamation methods is scattered throughout the report rather than gathered under a separate heading.

DNRC suggests additional mitigating measures and construction guidelines in the last section of this report. Adoption of these measures would adequately supplement Western's discussion.

V See response to Comment EE.

DISCUSSION OF GEOLOGY/SOILS ANALYSIS AND FINDINGS

The geological mapping is sufficient to meet the MFSA standards, but several points in the discussion need further clarification. First, the contents of two tables in the soils analysis differ somewhat in the discussion of earth resources.

20 (continued)

W In Volume 2 (USDOE, 1982c) Table III, Map Unit Characteristics, shows different revegetation constraints than does Table IV, Map Unit Sensitivities. The discrepancy can best be seen in map units 1, 6, and 13. The text also differs from Table IV in saying "Unit 6 has major (revegetation) sensitivity on the fine textured soils and minimal sensitivity on the other soils in the unit" (USDOE 1982c, Chapter 3 p. 17).

X The transition from major revegetation constraints to a moderate reclamation sensitivity turns out to be a significant problem when determining whether an impact is long-term or short-term. This is shown by the following quote: "The revegetation sensitivity determined the impact duration. Only map units with major reclamation sensitivities produced long-term impacts. All other inputs (sic) were short-term, according to the model" (USDOE 1982c, Chapter 3 p. 7). These apparent discrepancies need to be explained.

Y In the discussion of the soil map of the study area the text and tables mention eight map units but only seven are shown in the map key (USDOE 1982b). This discrepancy should be expleined.

Z Another item needing clarification is the projected life of the project. Table I, Impact Assessment Model (USDOE 1982c), indicates the life of the project is 50 years while other places in the EIS show the project life to be 100 years (USDOE 1982a, p. 5-33).

W Table III, Map Unit Characteristics, shows the characteristics of each soil series comprising the map units. There are typographical errors for map unit 5. It should be corrected as follows:

other sails for water erosion rated: variable
other soils for wind erodability rated: variable
other soils for compaction susceptibility rated: variable
rentsac for revegetation constraints change: from maximum to minor
rock outcrop for revegetation constraints change: from variable to maximum
other soils for revegetation constraints rated: variable

These changes are shown on attached sheet. Those changes will in no way affect the impact assessment because the impact assessment was based on Table IV, Map Unit Sensitivities.

Table IV, Map Unit Sensitivity, rates revegetation sensitivity for the map unit as a whole. It considers, in addition to the soil series characteristics, map unit characteristics such as terrain, vegetation type and difficult mechanical treatments. The rating is somewhat subjective and is based on canversations with Clair Clark (BLM, Lewistown District 1980). On Table IV, Map Unit 1 should remain as minimal even though some of the component soils are rated on Table III as moderate revegetation constraints. On Table IV, Map Unit B should, however, be rated major rather than moderate for vegetation. On Table IV, Map Unit B should be rated major in fine sails rather than moderate. The text (Volume 2, USDOE, 1982c, page 17, third paragraph, seventh sentence) should reod "units 3, 4 and 13 have major revegetation sensitivity."

X The revegetation sensitivity determined initial impact duration. Only map units with major reclamation sensitivities produced long-term initial impacts using the assumption of no mitigation. However, mitigation measures were recommended on soils with moderate to major revegetation sensitivity and the residual impacts are as a result expected to be low. In any case, the correction to major revegetation sensitivity from moderate sensitivity would not affect route selection, selected mitigation measures or residual impacts.

Y Map Unit 8 is not shown on the map key because it was not in the corridor. It is described in the text because it occurs within the study area north of Havre.

Z Life of the project: 100 years, assuming one replacement of the woodpole structures. DEIS, page 3-10.

20 (continued)

Adequacy of the Geology/Soils Analysis

AA 75-20-30 2b - "The nature of the probable environmental impact"

Although tables in volume 2 (USDOE 1982c) show soil compaction is expected, neither the EIS nor volume 2 adequately treats the problem. Soil compaction is expected to occur as a result of moving heavy equipment during construction (BPA 1977, Stolen 1982). Impacts attributable to soil compaction include:

- reduced crop yields
- restricted seedling emergence
- reduced soil aeration
- restricted root penetration
- alteretion of plant-water relationships
- increased runoff due to decreased porosity and permeability (Chancellor, W.J., 1977).

Further discussion of soil compaction and associated secondary impacts is needed, along with mitigating measures to reduce the problem.

AA The compaction of in-place soils caused by movement of heavy equipment will be confined to the top foot or so (Lambe, T.W. and Whitman, R.V., Soils Mechanics, 1969, John Wiley and Sons). If left uncorrected, compaction will cause a decrease in porosity and an increase in density of the soils and will result in reduced crop yields, restricted seedling emergency, reduced soil aeration, restricted root penetration, and alteration of plant with relationship to increased runoff. It will have similar effects on rangelands. Standard reclamation practice to alleviate compaction of disturbed soils includes deep ripping prior to seeding. This is especially important on agricultural land. Rangelands that have been affected enough to require reclamation should also be chiseled prior to seeding. Rangelands only slightly affected by compaction with vegetation mostly intact should not be chiseled.

BB 75-20-503 2g - "Geologic suitability of the site or route"

This is adequately addressed in the EIS and volume 2. Additional site specific work will take place prior to construction.

BB No response necessary.

CC 75-20-503 2h - "Seismologic characteristics"

This section is given adequate treatment in the EIS and volume 2.

CC No response necessary.

DD 75-20-503 2j - "Extent of erosion, scouring, wasting of land, both at the site and as a result of fossil fuel demands of the facility"

DD See response to Comment P above. Also, there are no fossil fuel demands of the facility.

20 (continued)

See discussion under "agriculture" above.

The source and amount of gravel and/or concrete needed should be mentioned. The Department of Health and Environmental Sciences needs this information for their review of rock crushing and concrete mixing operations. It should be clearly stated whether such operations are proposed as part of this project. Otherwise this section is adequately covered.

See response to Comment B in the Solid Waste Management, Air Quality and Water Quality section.

EE 75-20-503 2k - "Corridor design and construction precautions"

This section is discussed in both the EIS and volume 2 (USDOE 1982a, 1982c). DNRC suggests additional mitigating measures and construction guidelines at the end of this report.

EE Mitigation measures, in addition to those discussed in the DEIS, will be addressed in Western's Record of Decision for the project. The adoption of DNRC's proposed "construction guidelines" will be discussed as a separate issue between Western and the DNRC. The precautions and mitigation measures referenced in the DEIS and Record of Decision will be followed.

FF 75-20-503 3a - "Hydrologic studies of the adequacy of water supply and impact of facility on streamflow, lakes, and reservoirs"

Except for the short-term and long-term concern DNRC mentioned in the discussion of soil erosion, this section is adequately treated.

FF No response necessary.

GG 75-20-503 3b - "Hydrologic studies of impact of facilities on groundwater"

This section is inadequately addressed in the EIS and supporting documents. Although extensive mapping of aquifers was completed in relation to engineering constraints, no conclusions were reached as to impacts of the facility on groundwater.

75-20-503 3g - "Effects of changes in quantity and quality on water use by others, including both withdrawal and in situ uses"

GG See DEIS, page 5-7.

20 (continued)

HH his section is inadequately treated. Although an effect on water quality is mentioned, this change is not related to current or projected water use by others. No mention is made of changes in water quantity, although given the setting of this project, the changes probably would be small.

HH We agree with DNRC's statement thot "given the setting of this project the changes would probably be small." See DEIS, page 5-7.

II 75-20-503 3h - "Relationship to projected (water) uses"

Except for an impact to sprinkler irrigation systems and reduced water quality, construction of this transmission line is not expected to adversely affect projected consumptive water uses. The impacts to sprinkler irrigation systems are adequately quantified. Comments regarding water quality are mentioned above.

II No response necessary.

JJ 75-20-503 3i - "Relationship to water rights"

Construction of a transmission line is not expected to adversely affect water rights.

JJ No response necessary.

KK 75-20-503 3l - Monitoring programs"

Monitoring of reclamation success was mentioned briefly but was not included in the table of committed mitigeting measures.

KK Monitoring of reclamation success will occur until areas are reestablished.

20 (continued)

MAJOR CONCLUSIONS AND SUGGESTED MITIGATING MEASURES

Areas needing more work have been mentioned in the body of this report. The three most important points are listed below.

1. There should be a discussion of impacts resulting from construction and operation of the line. Generally the EIS discusses how impacts were measured or what the measurements were, rather than what the actual expected impacts are.

2. There should be clarification of how corridors and a preferred route were selected.

3. The discussion of mitigating measures is brief and general. Additional mitigating measures are suggested in Appendix A attached to this report.

20 (continued)

REFERENCES

Bonneville Power Administration, 1977.
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DRAFT
CONSTRUCTION STANDARDS FOR 230 KV
FORT PECK-HAVRE TRANSMISSION LINE

The following general guidelines are intended to mitigate impacts from construction and operation of transmission lines. The Board of Natural Resources and Conservation adopted similar construction guidelines for other large transmission lines. Some measures such as 10.11 are not applicable to lines less than 500 kV, and so would not effect the proposed 230 kV facilities.

DEFINITIONS

Western: Western Area Power Administration

Contractor: Constructors of the Facility

0.0 GENERAL

Construction of the proposed line shall require good construction practices reflecting the landowners' needs, environmental impacts, economics and engineering considerations. These guidelines for construction shall become part of the Contract with the successful bidder, and shall include the following: (1) general standards for CONTRACTOR performance; (2) planning and coordination; (3) construction camps or facilities (4) public safety and protection of property; (5) access roads and vehicle movement; (6) right-of-way clearing and site preparation; (7) tower design, tower erection, and conductor stringing; (8) timing of construction; (9) fences and cattleguards; (10) grounding; (11) erosion and sediment control; (12) archaeology and history; (13) control of fires; (14) waste disposal; (15) post-construction cleanup and reclamation; and (16) post-construction activity.

The CONTRACTOR shall conduct his operations in a manner to protect the quality of the environment. These standards contain provisions which shall be considered in all tha CONTRACTOR's operations.

The CONTRACTOR's specific responsibilities are described below.

1.0 GENERAL GUIDELINES FOR CONTRACTOR PERFORMANCE

1.1 The CONTRACTOR shall formally and informally brief all contractor supervisors and amployees on environmental constraints prior to and during construction, and shall post such reminders on job sites.

1.2 All activities of the CONTRACTOR shall comply with the Environmental Criteria and Electric Transmission Systems issued by U.S. Departmens of the Interior and Agriculture, and with all local, state, and federal environmental and sanitary requiremants.

2.0 PLANNING AND COORDINATION

Prior planning of all stages of construction and maintenance activities is essantial to ensure that construction-related impacts will be minimized. It also

See response to Comment EE above.

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provides the only means by which the line can adequately be evaluated and further mitigation suggested. It forces the CONTRACTOR to plan in advance the use of roads, timing of construction, and other details, and allows combination of roads and special use sites where possible. Prior planning by the CONTRACTOR shall include, but is not necessarily limited to, the following:

2.1 Maintenance and access roads shall be used jointly. Roads intended to be used as permanent maintenance roads should be initially designed as such.

2.2 Maintenance routes to all points on the line should be planned before construction ends.

2.3 All excavations for sand, gravel, clay, borrow or riprap materials may be subject to either the Open Cut Mining Act or Hard Rock Mining Act, and the CONTRACTOR shall apply for necessary permits at least sixty days in advance.

2.4 At least 60 days prior to beginning construction of the line, WAPA's field representative and the CONTRACTOR shall meet with local officials and service providers in each affected community to advise these persons of the temporary increase in population, when the increase is expected, and where the workers will be reporting in or stationed. Maps of the line and access roads must be available so that service providers can determine where and when any problems could arise. Service providers contacted shall include, as a minimum, the county commissioners, city commissions or coucils, law enforcement officials, fire departments, emergency service providers, school officials, motel or other transient lodging operators, and a representative of the Chamber of Commerce.

If problems relating to inadequate housing, schools, or other facilities are identified, this information can be provided by the CONTRACTOR to immigrant workers, advising them to locate where there are adequate facilities. Arrangements can be made for emergency or other services that might be needed during construction. If trespass problems on new access roads are foreseen as a problem, the need for gates or other solutions can be determined. If road or bridge upgrading, maintenance, or signing for safety are identified as needs, plans con be made to meet them.

3.0 CONSTRUCTION FACILITIES

3.1 The preservation of the landscape and environment shall be a primary consideration in the location of temporary construction camps, storage areas, and building required in the performance of the work.

3.2 Construction sites and staging areas shall be kept as small as possible and shall be located where most environmentally compatible, such as in areas having the flattest available slope and lacking fragile soil or vegetation types. Full restoration and reshaping of these areas including seeding and mulching shall be made following Section 15 of the Guidelines — "Post-Construction Cleanup and Reclamation."

3.3 All work areas shall be maintained in a neat, clean, and sanitary condition at all times.

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4.0 PUBLIC SAFETY AND PROTECTION OF PROPERTY

4.1 Construction operations shall not close or obstruct any portion of any railroad, public road, public trail, or other property until the necessary permits have been obtained from the authorities having jurisdiction.

4.2 Sensitive areas which have been identified, and all cultivated and planted areas and vegetation such as trees, plants, shrubs, and grass on or adjacent to the right-of-way which do not interfere with the performance of work, shall be preserved.

4.3 Reasonable precautions shall be taken to protect, in place, all public land monuments and private property corners or boundary markers. If any such land markers or monuments are destroyed, they shall be reestablished and referenced in accordance with the procedures outlined in the "Manual of Instruction for the Survey of the Public Land of the United States" or, in the case of private property, the specifications of the county engineer.

4.4 Firearms are not permitted to be carried in any vehicle or by personnel involved in this project while he/she is on or in the vicinity of the project right-of-way. Violators of any state, federal, or international law protecting wildlife shall be referred to the proper authorities.

4.5 Guard structures shall be installed over all existing transmission lines, distribution lines, telephone lines, and public roads that will be crossed by the conductors.

4.6 Care shall be taken to ensure that all gates are reclosed after entry or exit and that landowners incur no losses due to negligence on the part of the CONTRACTOR or his employees. Gates shall be inspected and repaired and missing padlocks shall be replaced when requested by landowner.

4.7 Public travel through and use of active construction areas shall be discouraged.

4.9 The requirements of the Historic Preservation Act must be met, including adherence to the recommendations of the Council on Historic Preservation.

5.0 ACCESS ROADS AND VEHICLE MOVEMENT

5.1 Construction of new roads shall be held to the absolute minimum reasonably required to construct the facility. State, county, and other existing roads shall be used for construction access wherever possible. Where new roads must be built for construction access, they shall also serve permanent maintenance access requirements, subject to the desires of the landowners. The location of access roads and towers shall be established in cooperation with affected landowners and landowner concerns shall be accommodated wherever reasonably possible.

5.2 All new roads both temporary and permanent shall be constructed with the minimum possible clearing and soil disturbance to minimize erosion, as specified in Section II of these standards, entitled "Erosion and Sediment Control."

5.3 All roads shall be initially designed to accommodate the largest piece of equipment that will eventually be required to use them; road width shall be no wider than necessary.

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5.4 During construction, unauthorized cross-country travel and the development of roads other than those approved shall be strictly prohibited. The CONTRACTOR shall be liable for any damage, destruction, or disruption of private property and land caused by his construction personnel and equipment as a result of unauthorized cross-country travel and road development.

5.5 The limits and location of access for construction equipment and vehicles shall be clearly marked at each new site before any equipment is moved to the site. Construction foremen and personnel shall recognize these markers and understand the restrictions on equipment movement.

5.6 Roads shall be located near the center of the right-of-way insofar as possible, enabling traffic to avoid cables and conductors during the wire-stringing operation. Necessary crossing of the right-of-way centerline should be near towers for the same reason.

5.7 Where practical, temporary roads shall be constructed on the levelest land available. Where roads cross flat land they shall not be graded or bladed unless necessary, but may be flagged to show their location.

5.8 Construction activities and travel shall be conducted to minimize dust. Water, straw, wood chips, dust pallative, gravel, combinations of these, or similar control measures may be used. Oil or similar petroluem-derivatives shall not be used.

6.0 RIGHT-OF-WAY CLEARING AND SITE PREPARATION

6.1 Clearing of survey lines shall be done using hand methods or small power tools only. During clearing of the right-of-way, shrubs shall be preserved to the greatest extent possible. Where shrub removal is necessary, brush blades and not dirt blades shall be used to minimize disturbance to roots.

6.2 Right-of-way clearing shall be kept to the minimum necessary to allow construction access and to ensure that the line will not be damaged by falling trees. In no case should the entire nominal width of the right-of-way be cleared right up to the edge; clearing should instead produce a "feathered edge" right-of-way configuration, where only specified hazard trees and those that interfere with construction or conductor clearance are removed. Smaller trees should be allowed to grow on the right-of-way and beneath the conductors. Where possible, small trees and brush cut during construction should be chipped and scattered, and merchantable timber should be sold.

6.3 Scalping of the earth or any unnecessary disturbances shall not be allowed on any clearing, except in rocky areas, or on slopes where cuts and fills are necessary.

6.4 No timber shall be cut or destroyed outside the right-of-way without first obtaining permission from the appropriate landowner. The CONTRACTOR shall be held liable for any unauthorized cutting, injury or destruction to timber whether such timber is on or off the right-of-way. The extent of such liability shall be to reimburse the landowner for such timber at the current market value.

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6.5 Cleared materials shall be cut as close to the ground as praticable, but not exceeding 6 inches above the ground. Stumps need not be removed unless they conflict with a structure or guy anchor.

6.6 Special logging techniques, hand clearing, or hand excavation may be required in certain highly sensitive or fragile areas (such as streams, scenic areas, highway crossings, and historical sites), as determined on a site-by-site basis.

6.7 Wherever appropriate, selective clearing shall be used to make curved, wavy, or irregular boundaries along the right-of-way limits. Where there is potential for long tunnel views of transmission lines or access roads, and where appropriate, spacial care shall be taken to screen the lines from view. This can be done by judicious use of screen planting. Where appropriate, special care shall be taken to leave a separating screen of vegatation where the right-of-way and highways and rivers are parallel (see USDI and USDA, "Environmental Criteria for Electric Transmission Systems").

6.8 All earth-moving equipment shall be operated only by qualified, experienced personnel.

6.9 The CONTRACTOR's general foreman shall make sure that crane pads are constructed in accordance with accepted construction practices, and that only one crane pad is constructed per tower site. Construction of crane pads on level ground is not necessary and shall not be allowed except for extreme conditions (such as soft or marshy ground).

6.10 No motorized travel on, scarification of, or displacement to stabilized talus slopes shall be allowed except where absolutely necessary.

6.11 The CONTRACTOR shall take reasonable measures to avoid the creation of noise levels that are safety or health hazards.

6.12 The CONTRACTOR shall take all necessary actions to avoid adverse impacts of sensitive areas which may include, but are not limited to, scenic, historical and archaeological areas, fish and wildlife refuges, water supply watersheds, and public recreational areas such as parks and monuments.

7.0 TOWER DESIGN, TOWER ERECTION, AND CONDUCTOR STRINGING

7.1 Helicopters shall be used to string socklines, transport tower structures, and to arect towers where warranted on an economic or environmental basis.

7.2 At certain wetlands heavily used by migratory birds, certain measures may be required to reduce the incidence of wire strikes. These changes may include but are not necessarily limited to use of self-supporting rather than guyed towers, local habitat modification, or installation of devices such as flags or marker balls on static wires.

8.0 TIMING OF CONSTRUCTION

8.1 Construction and motorized travel may be restricted or prohibited at certain times of the year at critical sites which differ seasonally in sensitivity to construction-related disturbances. They includes sites:

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a. in the vicinity of heavily used recreation sites on weekends or holidays;

b. on or near winter ranges or other areas important to moose, elk, deer, antelope, mountain sheep, and mountain goats during the appropriate months;

c. in or near streams during seasons of migratory fish spawning.

9.0 FENCES AND CATTLEGUARDS

9.1 All fences crossed by this powerline shall be provided with a gate not less than 16 feet wide. All fences crossed by the right-of-way or access roads shall be "H" braced, before the fence is cut.

9.2 Cattleguards, when required, shall be aligned at right angles with the roadway and shall be accompanied by an off-road gate wide enough for all construction equipment.

9.3 The CONTRACTOR shall immediately replace all fencing and gates that are cut, removed, damaged, or destroyed by him with new materials to the original standard, except that undamaged gates may be reused.

9.4 Reasonable requests of affected landowners regarding placement of fences, gates or cattleguards to improve access or to prevent trespass shall be followed.

10.0 GROUNDING

10.1 Barbed wire and woven wire fences on the right-of-way shall be grounded. At a minimum, fences which cross the right-of-way shall be grounded on each side of the gate opening and at each edge of the right-of-way. Fences which run on the right-of-way parallel to the centerline shall be grounded at a maximum of 200 foot intervals.

10.2 All metallic objects other than fences which are on the right-of-way, such as buildings with metallic roofs or sides and metallic piping systems installed above ground, shall be adequately grounded.

10.3 Generally, metallic objects off the right-of-way shall not require grounding; however, each metallic installation insulated from ground shall be reviewed on an individual basis to see if grounding is needed.

11.0 EROSION AND SEDIMENT CONTROL

11.1 Clearing and grubbing for roads and rights-of-way and excavations for stream crossings shall be carefully controlled to minimize silt or other water pollution downstream from the rights-of-way. Sediment retention basins may be required if silting occurs.

11.2 Roads shall cross drainage bottoms at sharp or nearly right angles and level with the streambed gradient whenever possible.

11.3 Under no circumstances shall streambed materials be removed for use as backfill, embankments, or for other construction purposes. No excavations shall be allowed on any river or live stream channels or floodways at locations likely to

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cause detrimental erosion or offer a new channel to the river or stream at times of flooding.

11.4 No blasting shall be allowed in streams. Blasting may be allowed near streams if precautions are taken to adequately protect the stream from debris.

11.5 The CONTRACTOR shall maintain roads while using them. All ruts made by machinery shall be filled to prevent channeling. In addition, the CONTRACTOR must take measures to prevent the occurrence of erosion caused by wind or water during and after use of these roads. Some erosion-preventive measures include but are not limited to installing or using cross logs, drain ditches, water bars, and wind erosion inhibitors such as water, straw, gravel, or combinations of these items.

11.6 The CONTRACTOR is required to prevent material from being deposited in any watercourse or stream channel. Where necessary, measures such as hauling of fill material, construction of temporary barriers, or other approved methods shall be used to keep slash, excavated materials, and other extraneous materials out of watercourses. Any escaped fill, slash, etc., shall be removed immediately from watercourses.

11.7 Where required, coarse rock encountered in the excavation shall be used as far as practicable for constructing the sides of new embankments adjacent or parallel with any affected stream where such material may serve as protection against slope or channel erosion. The CONTRACTOR shall be responsible for the stability of all embankments made under the contract until final acceptance of the work. Embankments and backfills shall contain no muck, frozen material, large roots, sod, or other deleterious matter. The CONTRACTOR shall prevent the escape of fill materiel by the construction of toe ditches or by the erection of rock, boulder, earth, or log barriers at the toes of embankments, or by other suitable methods.

11.8 Culverts or arch bridges shall be installed at all crossings of flowing or dry watercourses where fill is likely to wash out during the life of the road. Culvert or bridge installation is prohibited in areas of important fish spawning beds and during specified fish spawning seasons on less sensitive streams or rivers. Culverts shall be of sufficient size to handle approximately 15-year floods. Culvert size shall be determined following procedures given in the Hydraulics Manual of the Montana Department of Highways (Peil and Weaver 1975), or by equivalent standard procedures which take into account the variations in vegetation and climatic zones in Montana, the amount of fill, and the drainage area above the crossing.

11.9 No fill material other than that necessary for road construction shall be piled within the high water zone of streams where floods can transport it directly into the stream. Excess floatable debris shall be removed from areas immediately above crossings to prevent obstruction of culverts or bridges during periods of high water.

11.10 No skidding of logs or driving of vehicles across a perennial watercourse shall be allowed, except via authorized construction roads. No perennial watercourses shall be blocked or diverted.

11.11 Construction activities shall use methods that will prevent accidental spillage of solid matter, contaminants, debris, petroleum products, and other objectionable pollutants and wastes into watercourses, lakes, and underground water

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sources. Catchment basins shall be installed at storage areas to contain accidental spills of fuel, chemicals, oil, etc.

11.12 When operations in a work area are complete, all temporary structures or fills installed to aid stream crossing shall be removed and the thread of the stream reestablished to prevent future erosion.

11.13 All temporary dams built on the right-of-way shall be removed within five years of their construction or be upgraded to permanent structures with either spillways or culverts, and a continuous sod cover on their tops and downstream slopes. Spillways may be protected against erosion with riprap or equivalent means.

12.00 ARCHAEOLOGY AND HISTORY

12.1 Western shall engage a competent archaeologist familiar with the area to designate areas likely to be of archaeological and historical significance, and to design an appropriate field survey. Such field work and appropriate mitigating measures shall be completed for any finds prior to the start of construction.

12.2 If any artifacts or items of apparent archaeological or historic significance are discovered before or during construction, care shall be taken not to disturb the artifacts or surrounding area, and the archaeologist shall be notified immediately.

12.3 Any relics, artifacts, fossils or other items of historical or archaeological value shall be preserved in a manner agreeable to both the landowner and the State Historic Preservation Officer.

13.0 CONTROL OF FIRES

13.1 A fire plan shall be proposed that sets forth in detail the plan for prevention, control and extinguishing of fires on and near the project area.

13.2 The CONTRACTOR shall comply with any county, town, state or governing municipality having jurisdiction regarding fire laws and regulations.

13.3 Blasting caps and powder shall be stored only in approved areas and containers and always separate from each other.

13.4 The CONTRACTOR shall provide necessary equipment for fire prevention and suppression. Spark arresters and additional mufflers on some engines may be required in areas of high fire danger.

13.5 The CONTRACTOR shall properly store and handle combustible material which could create objectionable smoke, odors, or fumes. The CONTRACTOR shall not burn refuse such as trash, rags, tires, plastics, or other debris, except as may be permitted by the county, town, state, or governing municipality having jurisdiction.

14.0 WASTE DISPOSAL

14.1 General cleanup of the right-of-way and access roads shall be done by the CONTRACTOR for the duration of the project.

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14.2 Western must use licensed solid waste disposal sites for disposal of its wastes. Inert materials (Group III wastes) may be disposed of at Class III landfill sites; mixed refuse (Group II wastes) must be disposed of at Class II landfill sites.

14.3 Emptied pesticide containers or other chemical containers must be triple rinsed to render them acceptable for disposal in Class II landfills or for scrap recycling pursuant to ARM 16.44.202(12) for treatment or disposal.

14.4 All waste materials resulting from the construction and operation of the proposed transmission line project for either the primary location or alternate locations which constitute a hazardous waste defined in ARM 16.44.303, and wastes containing any concentration of polychlorinated biphenyls must be transported to an approved designated hazardous waste management facility (as defind in ARM 16.44.202(12) for treatment or disposal.

14.5 All used oil shall be hauled away and recycled or disposed of in accordance with 14.2 through 14.4 above. There shall be no release of crankcase oil or other toxic substances into streams or soil.

14.6 Sanitary waste shall not be discharged into streams or any streambeds. The CONTRACTOR shall provide refuse containers and sanitary chemical toilets, convenient to all principal points of operation. These facilities shall comply with applicable federal, state, and local health laws and regulations.

14.7 Water used in embankment material processing, aggregate processing, concrete curing, foundation and concrete lift cleanup, and other waste water processes shall not be discharged into surface waters.

14.8 Complete disposal of all slash made by the project shall be required pursuant to 76-13-401 through 76-13-413 MCA. Some slash may be used in constructing barriers to inhibit travel on closed roads along the right-of-way.

14.9 Generally, combustible wastes shall not be burned. In instances where disposal by burning seems prefereable, it shall require the prior approval of the landowner, and shall be done with small fires only to dispose of construction waste. Western must obtain a Montana Open Burning Permit.

14.10 Western must dispose of pesticide residue and pesticide containers in accordance with ARM 16.20.633(9).

15.0 POST-CONSTRUCTION CLEANUP AND RECLAMATION

15.1 Subject to the desire of the landowner and the integrity of the tower foundation and anchors, all signs of temporary construction facilities such as haul roads, work areas, buildings, foundations or temporary structures, stockpiles or excess or waste materials, or any other vestiges of construction shall be removed and the areas restored to as natural a condition as is practical.

15.2 Grading and scarifying of roadways shall be required where appropriate and required by the landowner to restore the area to near natural conditions that will permit the growth of vegetation and discourage future traffic.

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15.3 Any landscape feature scarred or damaged by equipment or operations shall be restored as nearly as practical to its original condition. Bare areas created by construction activities will be reseeded to prevent soil erosion.

15.4 In areas where no cut or fill was made, closure of roads, subject to landowner approval, shall be done by installing signs, constructing rock barriers, soil berms, planting trees, or other approved means after completion of scarifying, water-barring and revegetation in these areas.

15.5 Replacement of earth adjacent access roads crossing streams shall be at slopes less than the normal angle of repose for the soil type involved.

15.6 Disturbance of drainage bottoms shall be minimal, and all drainage bottoms shall be restored to their preconstruction gradient and width to prevent accelerated gully erosion.

15.7 Cross drains and water bars shall be added at an angle and as frequently as appropriate to satisfy road grades.

15.8 Interrupted drainage systems shall be restored for all cleared centerlines.

15.9 Species used in reseeding shall be as specified in the accompanying table.

Seeding Prescriptions

	Species	Seeding lbs/acre	Method
Dry site Low elevation	Western wheatgrass (Agr smi)	4.5	Drill[4]
	Bluebunch wheatgrass (Agr spi)	4.5	
	Thickspike wheatgrass (Agr das)	5.0	
	Prairie sandreed (Cal lon)	2.0	
	Little bluestem (Sch sco)[1]	-	
	Sideoats grama (Bou gra)[2]	3.0	
	Blue Grama (Bou gra)[2]	-	
	Eski sainfoil (Ono vic)	1.0	
Dry site High elevation	Bluebunch wheatgrass (Agr spi)	5.0	
	Green needlegrass (Sti vir)	3.0	
	Mountain brome (Bro mar)	8.0	
	Blue grama (Bou gra)	1.0	
	Little bluestem (Scho sco)	2.0	
	Eski Sainfoil (Ono vic)	1.0	
Wet site Low elevation	Switchgrass (Pan vir)	6.5	
	Reed canarygrass (Pha aru)	11.5	
	Sand dropseed (Spo cry)	1.0	
	Alkali sacaton (Spo air)[3]	-	
	Eski sainfoil (Ono vic)	1.0	

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Wet site	Garrison creeping meadow foxtail (Alo aru)	2.0
High elevation and Alpine	Mountain brome (Bro mar)	10.0
	Spike trisetum (Tri spi)	3.0
	Tufted hairgrass (Des cae)	2.0
	Orchard grass (Dac glo)	2.0
	Alpine timothy (Phl alp)	1.0

1 If prairie sandreed is unavailable use little bluestem at an equivalent seeding rata to prairie sandreed.

2 If sideoats grama is unavailable use blue grama at 1/3 the seeding rate of sideoats grama.

3 If sand dropseed is unavailable use alkali sacaton at 1/3 the seeding rate of sand dropseed.

4 If seed is hand-broadcast use twice (2X) the drill rate.

15.10 All litter is to be removed from the right-of-way and along access roads leading to the right-of-way within 30 days of completion of wire stringing and splicing. If raquested by the landowner, Western shall provide for removal cf any additional debris after this initial cleanup.

15.11 Any existing waste material moved or disturbed shall be placed on the right-of-way so that it does not form fire hazards or stock barriers, and not block access to the right-of-way or to structure sites. Waste material includes disposable material such as tops, limbs, brush, uprooted stumps, unmerchantable logs, buildings designated for disposal, building debris, and other disposable debris. The degree of disposal to be performed is dependent on the existing land use. Occasional tops, limbs, and brush to 3 inches in diameter and to 3 feet in length may be left on other than cropland and residential land.

15.12 Piling and windrowing of material for burning shall be by tractor equipped with a forked clearing blade except where equipment is prohibited. In areas where such equipment is prohibited, methods that will prevent soil from being included in the material to be burned shall be used to minimize destruction of ground cover, and to minimize erosion. Piles shall be relatively small and compact so as to minimize danger to timber and damage to ground cover.

15.13 Western is responsible for correcting cultivated land compacted by equipment and other land as requested by the landowner or managing agency.

15.14 If difficulties in revegetation are anticipated, stockpiling of topsoil to be spread on road cuts prior to reseeding is encouraged.

15.15 Sufficient seeds and fertilizer, of specific percentage purity, germination, anc inert material, shall be ordered early enough to ensure reseeding during the first agricultural planting season after construction ends for each segment of the line.

15.16 Where appropriate, hydroseeding or drilling and seeding shall be used to aid revegetation. Mulching with straw or wood chips shall be used where necessary.

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15.17 Revegetation shall not be considered complete until the following criteria are met:

a. In rangeland, coverage of perennial species shall be 30% or more of that on adjacent rangeland the year following revegetation, and 90% or more of the coverage of adjacent rangeland within the five years following revegetation.

b. In forest land, revegetated land exclusive of the right-of-way or permanent roads shall be stocked with trees by the end of five years so that the approximate stocking level of adjacent forest, or canopy closure, whichever is less, will be attained at maturity.

16.0 POST-CONSTRUCTION

As follow-up after construction, the following shall be done, subject to the desires of the landowner:

16.1 Vegetation, particularly that of value to fish and wildlife, which has been saved through the construction process and which does not pose a hazard to the powerline, shall be nurtured and allowed to grow on the right-of-way.

16.2 Vegetation cover shall be maintained, if appropriate, in the areas immediately adjacent transmission towers.

16.3 Native trees, shrubs, herbs and grass shall be kept; where ecologically appropriate in critical areas, vegetation of this type shall be placed under the direction of the appropriate land managament agent or a qualified ecologist.

16.4 If and where permitted, access roads snd service roads shall be maintained with grass covar, water bars, cross drains, and the proper slope in order to prevent soil arosion.

16.5 Maintenance inspections shall be timed so that routine maintenance will be done when access roads are firm, dry or frozen. Maintenance vegetative clearing in particularly critical areas shall be done on a short cycle to satisfy minimal requirements and to avoid heavy, long-term cutbacks.

16.6 Aircraft shall normally be used to inspect the powerline facility. Aerial inspection and ground maintenance activities of the power line facility shall include observations of soil erosion problems, fallen timber, and conditions of the vegetation that require attention.

16.7 Western shall advise all beekeepers alcng the proposed final route of the known affacts of electrical fields on bees and of the uncertainties involved. If necessary, Western shall assist the beekeepers in relocating hives prior to energizing the transmission line.

16.8 When radio and TV interference problems occur as a result of the construction or operation of the transmission line, Western should resolve the problems by appropriate methods, including mechanical corrections to insulators and antennas, installation of remote antennas or installation of repeater stations.

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16.9 If noise problems occur as a result of construction or operation of the transmission line, Western should resolve the noise problems by reconductoring or purchase of property, where appropriate.

17.0 USE OF PESTICIDES RESTRICTED

The following restrictions apply to the use of pesticides as defined in ARM 16.20.603(13):

17.1 No pesticides will be used in the right-of-way of Western's transmission line corridor unless Western is directed by the governing Montana county weed board, through its supervisor, to apply pesticides to control noxious weeds, as defined in section 7-22-2101(3), MCA, or unless Western is requested by a landowner to apply pesticides to his property to control noxious weeds, as defined in section 7-22-2101(3), MCA, and defined by each weed board.

17.2 No pesticides as defined in ARM 16.20.603(13) will be used on National forest lands unless for the control of noxious weeds as defined in section 7-22-2101(3), MCA, and then only with the prior concurrence of a Montana county weed board.

17.3 Only hand-spot spraying by land vehicle and through use of low pressure nozzles to prevent drift is permissible. Aerial spraying is prohibited.

17.4 Pesticides must be applied according to label specifications and by an applicator licensed by thh State of Montana. Only pesticides registered in compliance with applicable federal and state laws may be applied.

17.5 Pesticides shall not be applied during heavy rains or threat of heavy rains. Filter strips shall be left along all identifiable stream channels. Pesticides shall not be used in any public water supply watershed identified by the Department of Health and Environmental Sciences.

17.6 All surface areas disturbed by spraying activities shall be reclaimed. Reclamation shall be coordinated with the owners of the land in question.

17.7 Western shall annually submit to DNRC a report or environmental impact statement concerning the pesticides to be sprayed on the transmission line right-of-way. The report or EIS shall be submitted at least 30 days prior to any proposed spraying activities. The report or EIS shall include, as a minimum, the following:

a. A legal and geographical description of each area to be sprayed.

b. Tha pesticide to be sprayed, including the types, mixtures and concentrations of the chemicals to be sprayed.

c. The target weeds to be sprayed.

d. The method of application.

e. The name of the licensed applicator who will conduct each spraying operation.

f. The reclamation efforts, if any, that will be undertaken.

20 (continued)

g. The measures that will be taken to prevent pesticides from entering state waters as defined in the Montana Water Pollution Control Act, Section 75-5-101, et seq., MCA.

20 (continued)

REVIEW OF FORT PECK - HAVRE TRANSMISSION LINE:

LAND USE - RESIDENTIAL

INTRODUCTION

Section 75-20-503(2) of the Major Facility Siting Act (MFSA), specifies several land use concerns that must be evaluated to ensure that the location, construction, and operation of an energy facility will have minimal adverse effect on the environment. These concerns are:

(2)(a) area of land required and ultimate use;

(2)(b) consistency with areawide, state and regional land use plans; and

(2)(c) consistency with existing and projected nearby land use.

DNRC reviewed Western's assessment of these concerns for its proposed Fort Peck-Havre Transmission Line Project in three sections: a critique of methods for estimating land use impacts, adequacy of proposed mitigating measures, and a critique of methods used in choosing preferred and alternate corridors.

CRITIQUE OF METHODS FOR ESTIMATING IMPACTS

Western divided existing and planned land use into 11 categories (page 13, Chapter 8, Vol. 3) to identify constraints that could influence project location, with emphasis on urban areas, planned subdivisions, and future growth areas.

20 (continued)

A Western's definition and description of land uses are adequate, as are the data sources used to inventory them. However, where aerial photos are listed as a data source (page 3, Chapter 8, Vol. 3), the scale, source, and date of these photos should be stated. Otherwise, the potential usefulness of the photo information is reduced.

A The sources, dates and scales of the aerial photographs are as follows:

LANDSAT	IR-Color	1979	1:125,000
EROS	Black & White	1975-1977	1:80,000
Western	Black & White	1980-1981	1:18,000

B Western's effort was enhanced by its interviews with government officials at various levels throughout the study area and its review of county comprehensive plans. The designation of potential growth areas near some communities within the study area is an excellent method for estimating potential impacts to those areas.

B No response necessary.

C Definitions of types of potential adverse impacts are adequate (page 30, Chapter 8, Vol. 3). General impacts to current land uses are identified, as well as modification or elimination of future uses. However, more detail could be provided as to how and to what extent current and future land uses might change. For example, crossing proposed subdivisions might invelidate master plans for roads, utility, water, or other service delivery systems. Impacts to residential areas during construction might rasult from noise, smoke, dust and loss of privacy for nearby residants.

C Information has been provided to DNRC. (See Land Use - Factors Considered for Sensitivity Levels.)

Construction activities "would include dust-control measures in sensitive areas." DEIS, page 3-12.

D Descriptions of land use impacts in the Impact Assessment/Mitigation Planning charts are general, and provide little information on how current or future land uses may change. More deteil on impacts resulting in the preconstruction, construction, end operation phases would allow for better evaluation of their relative importance for the various route alternatives.

D Information has been provided to DNRC.

20 (continued)

E	Western's methods for estimating impacts were adequate (see Table IV, Chapter 8, Vol.3).	E No response necessary.
F	Where sensitivity levels are determined (Table II, Chapter 8, Vol. 3), factors incorporated into the determination are clearly stated. However, factors considered in determining sensitivity levels for all land uses should be presented within Chapter 8 or as an appendix. Resource sensitivity was the major consideration for predicting impact levels (page 35, Chapter 8, Vol. 3), so it is important to know how sensitivity was determined.	F Information has been provided to DNRC.
G	Potential effects on land use from abandonment of the existing 161 kV line should be presented and discussed. Although short-term impacts during dismantling may be adverse, long-term impacts may be beneficial for owners of the underlying fee titles. These impacts should be addressed within the impact statement.	G See FEIS Chapter 3.

In summary, there are minor inadequacies in the: (1) lack of information on the source, date, and scale of aerial photos; (2) lack of detail on specific land use impacts during the pre-construction, construction, and operation phases; (3) incomplete descriptions of factors considered when determining resource sensitivity for all land uses; and (4) lack of discussion of impacts associated with abandonment of the existing 161 kV line.

20 (continued)

CRITIQUE OF PROPOSED MITIGATION

H Western recommends the following mitigating measures for residential land use impacts (p. 39, Chapter 8, Vol. 3): (1) routing the line around sensitive features where urban areas are encountered, and (2) avoiding structures within a 2,000-foot corridor where residential or commercial establishments are encountered. It is unclear, however, whether this would mean maintaining a 1,000 foot clearance from all residential or commercial structures. The proposed action needs to be clearly stated.

H Where possible, Western will maintain a minimum of 500 feet between residences and the edge of the right-of-way. DEIS, page 5-11.

I It appears that the proposed measures are adequate for mitigating land use impacts. Western's Impact Assessment/Mitigation Planning charts clearly show where these measures were considered appropriate and how effective they would be. It is unclear, however, why mitigating measures are proposed for only high and moderate impact levels (p. 36, Chapter 8, Vol. 3), and not to low levels. Although low in magnitude, these impacts may be easily mitigated. Magnitude should not be the sole criterion for proposing mitigation.

I Generically committed mitigation measures will be adequate in areas of low impact. See DEIS Table 5-1.

CRITIQUE OF CORRIDOR SELECTION METHODS

J The process used in selecting preferred and alternate corridors is not detailed, but is adequate for determining compliance with MFSA standards. Though not entirely explicit, it seems evident that an attempt was made to select a route with the least adverse effect on the environment. Study of the Impact Assessment/Mitigation Planning charts shows which resource areas received more weight in corridor selection.

J See FEIS Chapter 3.

20 (continued)

CONCLUSION AND RECOMMENDATIONS

Consideration of impacts, information that was gathered and used, and methods employed in corridor selection for the residential land use resource concern are adequate for meeting the requirements of Section 75-20-503(2) of MFSA. It is recommended that minor identified inadequacies be corrected to improve the clarity of this document.

20 (continued)

REVIEW OF FORT PECK - HAVRE TRANSMISSION LINE:

RECREATION RESOURCES

INTRODUCTION

This report assesses the adequacy of the Western Area Power Administration (Western) analysis of recreation impacts for its Fort Peck - Havre transmission line project. The sections on recreation and preservation land-uses in the Draft Environmental Impact Statement (EIS) and Environmental Report (ER) are reviewed, and changes suggested to make these documents complete.

TECHNICAL ANALYSIS

The Major Facility Siting Act (MFSA) requires that the "Extent of recreation and related compatible uses" be evaluated for land affected by proposed energy development. The recreation impact assessment process generally has five steps:

1) Inventory existing and proposed recreation settings, both developed and dispersed;

2) Determine the range and type of impacts the proposed development could have on these settings;

20 (continued)

3) Determine the magnitude of potential impacts to the identified settings and the experiences that take place there;

4) Determine the significance of these impacts in a regional context;

5) Propose methods to reduce or avoid the potential impacts and, if necessary, a means of monitoring actual impacts and the effectiveness of mitigation strategies.

This report uses these five criterie to assess the adequacy of Western's recreation impact analysis. MFSA also requires discussion of the "Public recreation plan for the project." However, this is more relevant for site specific projects such as hydroelectric development than for linear facilities such as transmission lines. Management of any new or improved access roads through consultation with private landowners, the Montana Department of Fish, Wildlife, and Parks (DFWP), and the Bureau of Land Management (BLM) should address this concern adequately. Following is a discussion of how well the EIS and ER meet each of the five steps listed above.

Inventory of Recreation Resources

A An inventory of potentially-affected recreation settings was conducted, but its adequacy cannot be established because no list of information sources was provided. The land use bibliography contained only one obvious reference to recreation, the Montana Recreation Guide published by DFWP. Needed is a statement of the sources

A Recreation

A. Sources for recreation include the following:

- Montana Department of Fish & Game, 1978 Montana Statewide Comprehensive Outdoor Recreation Plan (SCORP), Volumes 1 and 2, March 1, 1978.
- Montana Department of Fish, Wildlife and Parks, n.d. Montana Recreation Guide.
- U.S. Department of the Interior, Bureau of Land Management, Prairie Potholes Draft EIS, March 1981.
- U.S. Department of the Interior, Bureau of Land Management, 1973, Management Framework Plan, Valley Resource Area.
- U.S. Department of the Interior, Bureau of Land Management, 1973, Management Framework Plan, Phillips Resource Area.
- U.S. Department of the Interior, Bureau of Land Management, 1973, Management Framework Plan, Havre Resource Area.
- U.S. Department of the Interior, Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, n.d. Bowdoine National Wildlife Refuge.

It should be noted that the BLM Management Framework Plans (MFP) contain specific sections on recreation. Data from the Havre, Phillips and Valley resource areas were obtained by copying available maps on file for recreation (scale 1½" = 1 mile) as well as MFP sections pertaining to recreation. These data are comprehensive for the entire Fort Peck to Havre study area. All data were updated and compiled for these BLM resource areas by the BLM in the preparation of the Prairie Potholes EIS, which also covers the entire study area.

Wirth Associates compiled all separate MFP data for each resource area and cross-referenced these data with the Prairie Potholes data, BLM Lewistown District. This data base was current for 1981, and incorporated 1978 Montana SCORP data. Local recreation data at the city-county level were compiled through contacts with county planners.

20 (continued)

B and methods used to identify recreation resources located in the study area. In addition, no mention was made of dispersed activities other than hunting. If there are few or no other dispersed recreation activities that take place in the study area, this should be stated explicitly.

B Dispersed recreation activities are limited to hunting and fishing on public and private lands, designated fishing sites, and Fort Peck Reservoir. Fishing is very popular in the study area as a result of a range of opportunities including stocked reservoirs, Nelson Reservoir, Milk River, Missouri River and Fort Peck Reservoir.

Range and Type of Impacts

C The EIS contained a description of what was considered to be an impact on recreation and preservation land uses (p. 3-12, 13). Missing, however, was a discussion of the transmission line's potential visual intrusion on recreation settings--an impact which can be as severe as actual physical alteration of the site. The section on visual resources defined one type of impact as affecting "The view from, or altering the visual setting of, any established or planned park, recreation, or preservation type of areas" (p. 5-13). Recreation sites were also included as " Key observation points" in the analysis of use volume for the visual sensitivity analyses. The failure to consider visual impacts to recreation sites as impacts to recreation resulted in an unclear description of impacts, as will be shown in the next section. Outdoor recreation in Montana often depends on scenic quality, and visual intrusions such as transmission lines, can definitely be inconsistent with desired recreation experiences.

C We agree with the concern for visual impacts to recreation sites. All visual-related impacts on land uses were treated in the visual resource section in an effort to maintain a consistent analysis approach.

Impact Magnitude

One of the most notable recreation resources in the study area is the Charles M. Russell National Wildlife Refuge. Western said that high initial impacts would result from the line crossings the refuge, but concluded that "Residual impacts will

20 (continued)

D be low as replacement of the line will cause no long-term impacts in addition to those already existing" (ER, p. 41). It was not specified how the impacts of the new line would be reduced from high to low. It may be that the high initial impacts were viewed as those related only to construction, but this cannot be determined because no description is given of the impacts expected.

E Apparently a smaller line also crosses the refuge, and would be paralleled by the upgraded 230 kV line, constituting a utility corridor of sorts. This fact was not mentioned in the recreation section, however, making it difficult for the reader to make the connection. Even so, it would be helpful to include a brief discussion of recreational uses in the portion of the refuge that would be crossed by the line. Do any special types of uses occur there--perhaps ones that are not available nearby? What is the level of use in this corner of the Refuge? Are there any particularly interesting sites from which the line would be visually obtrusive? Or are there no special problems? Information such as this is needed to allow estimation of impacts to the Refuge.

F The problem referred to earlier--not adequately integrating recreational and visual concerns--becomes more apparent in Western's discussion of impact magnitude. Western said that ten recreation sites could be affected: the Wildlife Refuge; two federal fishing sites; five roadside interpretive areas; one roadside rest area; and a KOA campground (ER Vol. 3, IA/MPP). Nowhere do the documents describe what will happen at these sites, or how recreational uses would be affected. Only the level of initial and residual impact is described, and there are seeming inconsistencies between the recreation and visuals sections. For example, the recreation section said that a roadside interpretive point on link 36 (Milepost 24.8-24.9) would be

D E Low residual impacts would result by rebuilding within an existing utility corridor. This corridor crosses the base of the Fort Peck Dam where there is no formal or informal recreation activity except for any tours of the Fort Peck Powerhouse, and along the northern boundary of the refuge to the west.

F The recreation sites mentioned occur along the existing 161kV transmission line corridor and the preferred corridor. The KOA campground is along Highway 2, where rebuilding in the existing corridor would result in a high visual impact due to close proximity and open visibility.

Four of the roadside interpretive points are along Highway 2, near Links 15, 26, 31 and 47 of the existing corridor. High visual impacts would occur along Links 15, 31 and 47, where rebuilding in the existing corridor would disrupt open views in close proximity to the viewpoints. Moderate visual impacts would result from rebuilding along Link 26, where the viewpoint is approximately one mile from the corridor. The fifth viewpoint is along the south side of Highway 87 where the existing line is immediately in front of the interpretive point for Fort Assinniboine, where high visual impacts would result from rebuilding in this corridor. The proposed corridor is now located on the north side of Highway 87, leaving views toward Fort Assinniboine open (see Chapter 1).

The roadside rest area is along the existing corridor within Link 15, where high visual impacts would occur due to open views toward the link in close proximity to the rest area.

Federal fishing areas are located along Link 1b of the preferred corridor, where moderate visual impacts would occur. These fishing sites are associated with small reservoirs within one-half mile of the line where views would be modified by local terrain.

Both the existing and preferred routes are located within the Charles M. Russell National Wildlife Refuge (CMR). Low visual impacts were addressed as a result of rebuilding within an existing corridor along the northern edge of CMR, away from recreation activities along the edge of Fort Peck Lake.

20 (continued)

subjected to a high initial impact. Once the recommended mitigation was enacted--rerouting the line to avoid physical disruption of the site--residual impacts were rated as low. However, the visuals IA/MPC for this portion of the line said that both initial and residual impacts would be high, because other land uses precluded rerouting the line enough to reduce impact levels even to moderate. The reader can only reason that the line would indeed stand out along this segment, and remain visually obtrusive. Yet the IA/MPC said that impacts to the recreation setting would be low.

Given that the line could not be moved very far, it would remain quite close to the interpretive site; how could the area sustain only a low level of recreational impacts? More information is needed. How is the line located relative to recreational use of the site? Would it be situated so that anyone using the site is staring right at the line, or would it be unobtrusive? Does the line cross the portion of the landscape that is being interpreted? A brief discussion of the recreational setting, how it is commonly used, and how the line would fit in with this use is needed before judgements about the level of impact can be made.

Impacts to the two fishing sites and the KOA are also listed as being low. Based on the definition of recreation impacts, this means that the line does not cross the actual site, and could presumably be anywhere from 10 feet to several miles away, and in any type of landscape. Without considering the visual impact to the recreation settings, a determination of low impact should not be made. None of these three resources are mentioned in the Visuals IA/MPC, and the presence of other specific recreation sites seemed to make little difference in the impact rating level.

20 (continued)

Western said that only 10 recreation settings could be affected by the various routes. With so few sites affected, it seems each could be treated in more detail, with a description of what the impacts would be to each site (and why) instead of only saying that there would be impacts. If such work has already been done, it should be documented in the ER. The potential for long-term visual impacts to hunting areas also should be addressed.

Impact Significance

G Given that there are few outdoor recreation opportunity settings in the study area (except for the hunting areas that are well-documented in the ER), the settings that do exist become more important. However, only the Charles M. Russell Wildlife Refuge seems important enough to warrant a discussion of impact significance in a regional context. If the extended section on impact magnitude still concludes that impacts would not be substantial, then a treatment of impact significance is probably unnecessary.

G Impacts would not be substantial.

Mitigation

H BPA said the line would be moved far enough to avoid physically disrupting recreation sites, but the actual distance was not specified, and substantial visual impacts to recreational uses seem likely to remain. The potential for additional mitigation at these sites should be explored.

H We agree as reflected in our selection of the preferred route which totally avoids all recreation sites in the study area except Charles M. Russell National Wildlife Refuge, which was unavoidable (see response to Comments D and E).

20 (continued)

CONCLUSION

The EIS and ER could be made adequate by following the suggestions made in this report. The most important additions needed are a list of references or methods used to locate and map recreation resources, and a clear discussion of how each setting would likely be affected by the transmission line.

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REVIEW OF FORT PECK – HAVRE TRANSMISSION LINE:

VISUAL RESOURCES

INTRODUCTION

Section 75-20-503(2)(l) of the Major Facility Siting Act specifies scenic impacts as one of the environmental concerns that must be evaluated to ensure that the location, construction, and operation of an energy facility will have minimal adverse affects on the environment. In accordance with section (2)(l), ONRC evaluated Western's assessment of potential scenic impacts for the proposed Fort Peck to Havre Trensmission Line Project. ONRC's report critiques the methods used for assessing impacts and selecting a corridor, and the adequacy of proposed mitigating measures. Inadequacies are identified, and ONRC's conclusions are summarized at the end.

CRITIQUE OF METHOOS FOR ASSESSING IMPACTS

A Methods used for estimating visual impacts associated with this project are the same as those in the Bureau of Land Management's Visual Resource Management System. Though complex, this system does incorporate both landscape-related factors and viewer-related factors at various steps within the process in order to estimate potential visual impacts. In this respect, information collected and methods employed to estimate visual impacts are adequate. Matrices in the text demonstrate clearly how various factors were integrated and which received more weight. Additional clarification of information would avoid possible reader confusion. These problem areas are idantified as follows.

A No response necessary.

20 (continued)

B 1) The BLM Prairie Pothole Environmental Impact Statement is mentioned as an information source and served as a basis for scenic quality evaluations, viewer sensitivity, and distance zone designations in the study area. Since it served as a primary information source, it should be cited as a reference for visual resources. Any other supplementary documents that were used should also be cited.

B See response to Comment A in Recreation Resources section and FEIS Chapter 4.

C 2) Visual sensitivity was determined from integration of use volume information with user attitudes. For both of these items, the existing BLM inventory was used with some additions and refinements. Where an "extensive low level survey" (p. 6, Chapter 9, Vol. 3) is cited for identifying user attitudes toward modifications in the landscape, further clarification would be helpful to identify persons or groups contacted and validity of information that was obtained. Further description of the various user attitudes toward potential visual change (p. 10, Chapter 9, Vol. 3) also would be helpful, since this is the focus of this section.

C The BLM held in-house visual sensitivity workshops to project the public's sensitivity to changes in scenic quality. Federal, state and local agency and planning officials were questioned concerning visually sensitive areas. See Table IV for results.

D 3) Some confusion may be introduced due to imprecise terminology for sensitivity descriptions (pages 5-6, Fig. VR-3, and Table 1 in Chapter 9, Vol. 3). For example, user attitude attempts to measure public concern about proposed changes in scenic quality, i.e., the sensitivity of the viewer toward potential visual change. How sensitivity is related to volume of use is much less clear, however. Does a high volume of use for a recreation site or travel route also connote a high sensitivity level? Table 1 seems to be saying this. However, Western subsequently combines high use volume with low user attitude to determine a final sensitivity level of moderate (Fig. VR-3). Such multiple use of the word "sensitivity" leaves the reader in doubt as to which step ectually incorporates sensitivity estimates.

D This process is consistent with the BLM's VRM system.

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E 4) Where distance zones were defined in more datail than in the BLM inventory, it should be clearly noted which primary or secondary use areas or travel routes were added, and how these additions may have modified management class determinations. Also, any key observation points selected in these modified distance zones, should be noted.

E An explanation of distance zone refinement is provided in the ER, Volume 3, Chapter 9, pages 11-12. Distance zones for all KOPs listed on Table III were refined. The modifications to management classes were variable, but generally the pattern was to lower VRM classes due to seldom seen areas.

F 5) Residual visual impacts are not adequately identified in the Recreation and Preservation Impact Assessment/Mitigation Planning Charts (see Recreation Review section). Specifically, where residual visual impacts are identified in one set of charts, they should also be noted in the other. Currently, only three of the six recreation sites identified as having residual visual impacts are listed in the visual charts. Complicating this assessment is the somewhat artificial separation between "visual impacts to recreation sites" and "recreation land use impacts". This separation does not allow a consolidated assessment of potential changes in recreation use due to the visual intrusion of a transmission line.

F The recreation-related impacts are related to physical disruption, while visual impacts to recreation includes consideration for visibility factors. For this reason, they have been separately assessed. We agree that they could be consolidated. Recreation sites were assessed for visibility/visual impacts, but some were dropped from the DEIS. These data will appear in the FEIS.

See response to Comment F, Recreation Resources section.

G 6) Where aerial photographs are listed as an information source (p: 1, Chapter 9, Vol.3), the scale, source, and date of these photos should be statad. Potential usefulness of information extracted from aerial photos can be limited by omission of these items.

G See response to Comment A in the Land Use-Residential section.

H 7) There should be a discussion of visual impacts associated with dismantling the existing 161kV line. Disassembly and removal of woodpole structures and other hardware would cause localized short-term impacts.

H See FEIS Chapter 3 for a discussion of long-term cumulative impacts. We agree with the comment on short-term visual distraction.

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CRITIQUE OF PROPOSED MITIGATION

Western proposed a variety of mitigating measures (p. 21-22, Chapter 9, Vol. 3).

It is evident that Western attempted to site the line to take advantage of landform screening and backdrops, and to avoid impact-susceptible areas.

I One other possible mitigating measure - the use of nonshiny conductors - should be considered for sensitive areas such as VRM Class 2 landscapes. If such a measure was considered but dropped, justification should be provided.

I Western will use nonspecular conductors for the entire length of the proposed line.

CRITIQUE OF CORRIDOR SELECTION METHODS

J The process used in selecting preferred and alternative corridors is not detailed, but is adequate to comply with MFSA standards. High constraint areas were avoided as much as possible, and corridor alignment was refined through fieldwork and public contact. Preferred corridor selection was accomplished through an interdisciplinary team approach, where all resource concerns were considered and significance of each concern was valued. Though not entirely explicit, it seems evident that an attempt was made to select a route with the least adverse effect on the environment. Study of the Impact Assessment/Mitigation Planning Charts readily shows which resource areas received more weight in corridor selection.

J No response necessary.

20 (continued)

CONCLUSION AND RECOMMENDATIONS

Consideration of impacts, information that was gathered and used, and methodology employed in corridor selection for the visual resource area is adequate for meeting the requirements of Section 75-20-503(2)(1) of MFSA. It is recommended that minor identified inadequacies be corrected to improve the clarity of this impact statement.

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REVIEW OF FORT PECK–HAVRE TRANSIMISSION LINE:

SOCIAL AND ECONOMIC IMPACTS

SUMMARY

The draft EIS for the Fort Peck to Havre Transmission Project recommends an option with the least social and economic impact, but neither the EIS nor supplemental information WAPA submitted to DNRC provides adequate identification and description of these impacts. Therefore, additional information is necessary in order for the EIS to fulfill requirements of the Major Facility Siting Act (MFSA).

In evaluating the EIS, DNRC interviewed county commissioners and planners from Hill, Blaine, Phillips and Valley counties. These officials agreed with WAPA's corridor choice. The officials said there was little opposition to development of the new corridor in their counties and generally viawed removal of the existing 161 kV transmission lina as a benefit of the project, though they noted there was some protest because of concern over possible cropland impacts from the new corridor.

Independent DNRC evaluations of impact indicators used in the EIS and supplemental documents appear to verify the EIS conclusions that the preferred route would have the least impact of any option. However, the EIS does not adequately identify and describe the types of social and economic impacts likely to occur as a result of project cnstruction and operation. This information is necessary if the Board of Natural Resources and Conservation and the general public is to understand the environmantal consaquences of project development.

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INTRODUCTION

The Major Facility Siting Act (MFSA) requires that the environmental impacts of a proposed facility be identified and described sufficiently to allow the Board of Natural Resources and Conservation to verify that the facility would cause minimal adverse environmental impacts.

MFSA requires that socioeconomic impacts and impacts pertaining to other environmantal resources be comprehensively described and compared with the impacts of other alternatives. Socioeconomic concerns specified in MFSA and administrative rules include effects on population, social structure, lifestyles, economic characteristics, taxes, public and private services and expenditures, and housing. MFSA and DNRC rules also require identification and analysis of any other socioeconomic impacts affecting public health, safety and welfare. Relevant sections of the MFSA are 75-20-301 [2][b-i], [3][b-d], [4], and 75-20-503 [2][a,e,f,g,s], [5][a,b,c], [6][a]. Relevant sections of the DNRC administrative rules are 36.7.304 (1), (4), (5), [6][a,b,], [8][a], and [9][b].

BASE INFORMATION

A

WAPA's information on population, demographics and economics for the study area are adequate but outdated. Reliance on 1970 census data and Bureau of Census population and demographic projections was necessary because the results of the 1980 census were not available in time to be included. However, for a final EIS to be published in 1983, information should use the more current and accurate 1980 census data.

As stated in the Fort Peck-Havre Transmission Line Study Environmental Report Socioeconomic Resources, the socioeconomic impact report was prepared in 1980 prior to the availability of 1980 Census information. In addition, the most detailed employment data available for the region were for 1978, prior to major oil and gas activity. Consequently, the socioeconomic report included the best available data and forecasts at that time. The determination of construction job capture rates are presented in the study area based upon the labor force charocteristics in the region, discussions with local labor union officials, transmission line contractors, and available data on other transmission line projects.

A B C

Table I incorporates the 1980 census data on population and demographics for the five-county study area. The census data for the 1970 ond 1980 period is consistent with the projected 1980 population projections and growth rates that were presented in the DEIS and Socioeconomic backup report, Table III. In addition, there are no significant changes in the distribution of the population by age structure, ethnicity or places of residence that occurred between the 1970 to 1980 census period, compared to the previous 1960 to 1970 decade.

Between the 1970 and 1980 census, the population of the study area declined by 1.2 percent, compared to a 17.6 percent decline for the previous 1960 to 1970 census period. Two counties, Blain and Hill counties, experienced population increases of 4 percent and 3.6 percent respectively. Increased activity in the oil and gas industry was a primary contributor to the population growths in these counties. The population of Phillips County declined slightly, 0.4 percent, while the population of Valley County and McCone County declined by 10.6 percent ond 6.0 percent respectively.

The most current available data on employment and labor force characteristics is for 1980. Between 1978 and 1980, the total wage and salary employment in mining increased employment from 58 to 92 in Hill County. With respect to percentage of total employment in the county, mining-related employment in Hill County increased from 0.4 percent to 1.0 percent during this two-yeor period. Phillips County also experienced increased employment in mining between 1978 and 1980. Wage ond salary employment for mining Phillips County increased from 20 to 219, which represented 0.9 percent of the county's total employment in 1978 compared to 8.5 percent in 1980.

No other significant changes in overall employment chorocteristics occurred within the study orea between 1978 and 1980. Agriculture remains the predominant industry in oll five counties. In 1980, farm related employment constituted 47.1 percent of total employment in McCone County, 21.7 percent in Valley County, 31.6 percent in Phillips County, 25.8 percent in Blaine County and 11.8 percent in Hill County. Per capita personal incomes remained below the state average in all counties, except McCone in 1980. The per capita personal incomes were $8,927 in McCone County, $7,969 in Valley County, $7,536 in Phillips County, $6,239 in Blaine County and $8,561 in Hill County.

20 (continued)

B More current and detailed information on labor force characteristics would be particularly useful. This is necessary in order to develop more defensible analysis of construction job capture rates for the study area and instate residents. 1980 census data should be supplemented by information obtained though interviews with appropriate labor union officials in Montana.

C Further, there should be a more thorough discussion of the economic and population effects of recent oil and natural gas exploration and development in the region. Hill County, and the others in the study area to a lesser extent, experienced notable socioeconomic impacts from energy activities in 1979–1982. Energy exploration and development caused increases in economic activity in the region, contributing to substantial though possibly temporary population growth, resulting in impacts on public and private services; housing shortfalls being most notable.

D Documents supporting the EIS provide an inventory of transient housing facilities in the study area. Base information on transient housing does not provide occupancy rate data, which would be useful in identifying possible housing shortfalls. Occupancy rate information is often available from local chambers of commerce.

E The EIS assumes that the direct and indirect impacts of construction activities on public services would be minimal; therefore, it does not provide a discussion of existing public service delivery characteristics within the region. DNRC experience with other major transmission projects indicates local government officials are generally concerned about possible effects of project construction on public roads and bridges (due to movement of heavy equipment and commuter traffic), solid waste and weed control, and city and county law enforcement. Base information on delivery

TABLE 1
DISTRIBUTION OF THE POPULATION
BY AGE GROUPS, RACE, AND PLACE OF RESIDENCE - 1970 & 1980

	McCone County		Valley County		Phillips County		Blaine County		Hill County	
	1970	1980	1970	1980	1970	1980	1970	1980	1970	1980
Age Group										
Under 5	239	245	1,051	912	439	485	545	662	1,399	1,617
5 - 17/19*	879	749	3,606	2,740	1,617	1,364	2,131	1,982	5,090	4,633
18/20 - 59*	1,361	1,282	5,402	4,968	2,371	2,510	3,011	3,212	8,771	9,285
60 - 64	109	148	416	471	239	254	282	297	637	774
65+	287	278	996	1,159	720	734	758	846	1,461	1,678
Race										
White	2,857	2,690	10,458	9,292	5,115	4,971	5,143	4,764	15,957	15,534
Nonwhite	18	12	1,013	958	271	396	1,584	2,235	1,761	2,451
Indian	17	8	972	889	258	362	1,562	2,214	1,607	2,283
Other	1	4	41	69	13	34	22	21	154	168
Residence										
Rural	2,875	2,702	6,848	5,795	5,386	5,367	6,727	6,999	6,735	7,094
Urban	--	--	4,623	4,455	--	--	--	--	10,623	10,891
TOTAL POPULATION	2,875	2,702	11,471	10,250	5,386	5,367	6,727	6,999	17,358	17,985

*1970 Census Age Groups 5-17; 1980 Census Age Group 5-19

D Given the characteristics of transmission line construction projects and the predominant transient housing preference to transmission line workers, the principal transient housing facilities to be impacted would be motels. Interviews with local motel operators indicated that providing the number of rooms necessary to house the transmission line workers would not be a problem if sufficient notice was given as to the number of rooms required. The inventory of other transient housing alternatives such as RV campgrounds and mobile home parks reflected similar responses. For example, if a future peak in oil and gas activities in the region happen to coincide with construction schedule for the Fort Peck to Havre line, there could be an impact on transient housing. Occupancy-rate trends fluctuate depending upon demands of regional construction activities.

E The direct and indirect impacts of construction activity on public services would be minimal due to the characteristics of the project and the study area. The location of major staging areas close to the rail transportation system could minimize the movement of materials and heavy equipment on public roads and bridges. The relatively small work force requirements of the project and the availability of local housing are not expected to significantly impact the existing transportation system, solid waste or law enforcement. Discussions with local officials indicated that no significant problems or needs were anticipated with a project of this nature.

The contractor will be responsible for all damage to public roads.

As stated in the DEIS (page 3-13) "All rubbish and waste material would be hauled away and disposed of at approved sites."

Regarding weed control, see response to Comments D, F, G, H, I and K of Agricultural/Land Use and Geology/Soils section.

20 (continued)

capabilities of these services and other potentialy affected services would be useful in assessing the possibility of service impacts and the need for local government to be compensated.

F A transmission project can cause a variety of social and economic impacts on persons living near the right-of-way or owning land there. Possible adverse effects on health and safety, reduction in property values, and interference with television and radio reception are common concerns, along with the decline in scenic values. The EIS provides an inventory of housing units within 500 feet of a reference centerline, which is useful in measuring some non-visual social impacts. A count of the homes located within 100 feet of the reference centerline would allow estimation of populations possibly subject to high social impacts.

F Western's right-of-way siting criteria included a requirement to maintain a minimum of 500 feet from residences. There are a few cases where it was not possible to maintain a 500-foot distance from the edge of the right-of-way.

No residences are within 100 feet from the edge of the right-of-way.

G The EIS provides base information on miles of sprinkler irrigated cropland, flood irrigated cropland, dry cropland, and rangeland crossed by alternative right-of-ways for the transmission project. This information is useful in identifying and comparing interference and nuisance effects on agriculture activity. Nowhere in the EIS are agricultural land productivity levels and values of farm production discussed for different types of agri-land uses. This information could be used to quantify possible differentials in productivity displacement due to tower and line locations.

G Soil capability classification and crop yield reduction factors can be derived through generalized soil capability classifications. This requires detailed data on individual fields to reflect crop production capabilities. For the Fort Peck to Havre project, agricultural studies focused on avoiding or minimizing disturbance to cultivation and irrigation systems. Through extensive meeting with farmers, there was no differentiation made between flood-irrigated cropland and non-irrigated cropland in terms of sensitivity to transmission lines, so they were treated equally in the impact assessment. Land productivity data were found to be difficult to obtain on on individual field basis.

General crop yield data are provided in Chapter 3, FEIS, under land use cumulative impacts, Table 3-1F.

H Information on location of public and private airfields would be useful for validation of EIS conclusions regarding impects on aerodromes (no conflicts are acknowledged).

H The line would avoid all airports and airstrips. Figure 4-8 (DEIS, Maps, Diagrams and Tables) shows the locations of airports/airstrips and interference zones. Airports and airstrips are addressed in the ER, Volume 3, Chapter 8.

A discussion of the social and economic effects of the existing 161 kV transmission line would also be useful. Highline county commissions cite increasing

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I problems resulting from the line's current location. Expanding residential areas have encroached upon the line, causing visual and other social impacts. Commissioners also cite the line's interference with agricultural activities in an intensively farmed and highly productive area, possibly precluding upgrading of agricultural uses. The line's location along Highway 2 interferes with automobile radio reception.

I See FEIS Chapter 3.

PREDICTING AND DESCRIBING IMPACTS

J The EIS discussions of socioeconomic impacts focuses on short-term employment, population, income and housing effects of the transmission project. The EIS analyses of these effects are based on assumptions of employment opportunities to be created by project construction and on estimates about the portion of the workforce that would come from the study area and the state. Experience with other transmission projects indicate EIS assumptions about the number of study area and state residents that would be hired may not be accurate.

J The assumption is that the construction work force will not come from the local area and will require transient housing.

K The number of Montana residents hired on recent transmission line construction projects has depended strongly on whether the contractor uses unionized workers. A high proportion of workers is likely to be from instate when a project is constructed by a union contractor. The opposite is true for lines built by non-union contractors. If WAPA awards the project construction contract to a union contractor, then the analyses of employment, income, population and housing effects are adequate. If not, the analyses may understate population and housing impacts, and overstate employment and income benefits to instate residents.

K No response necessary.

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L The EIS does an inadequate job of identifying and describing other types of social and economic impacts likely to occur as a result of project construction and operation. During project construction, the transmission project could interfere with agricultural operations and reduce agricultural productivity. For example, construction could disrupt agricultural operations by blocking movement of farm equipment along the right-of-way and along access roads, new access roads might increase trespass problems, and construction activities could damage gates, fences, and other farm facilities. Movement of heavy construction equipment might compact the highly clay soils in the area, which could reduce land productivity.

L Regarding construction, refer to comments in the Agricultural/Land Use and Geology/Soils section, response to Comments D, F, G, H, I and K.

Regarding soil compaction, see response to Comment AA in the Agricultural/Land Use and Geology/Soils section.

Western recognizes that trespassing and damage from construction activities could be a problem. Mitigation of damage caused by construction activities would be the repair of damaged gates, fences and other farm equipment.

M Construction activities would also cause temporary reduction of aesthetic qualities near residential and recreation areas. Dust, noise, and adverse visual effects of construction could conflict with values and expectations of residents or recreationists.

M We agree. See FEIS, Chapter 3.

N Potential short-term impacts on local services are not discussed. Most important are possible effects of construction activites on roods and bridges, solid waste disposal, and law enforcement. Analysis should discuss whether the project would increase costs of local government services.

N See response to Comment E above.

O The EIS does not discuss whether the removal of the existing 161 kV transmission line would have notable short-term employment and population impacts.

O The removal of the existing transmission line is included as part of the construction of the new transmission line. The employment and population impacts associated with the removal of the existing line are discussed in the Socioeconomic Resource Report.

P The routing option selected as the environmentally preferred corridor implies long-term social concerns were given a high priority in the route ranking processes. However, the EIS provides virtually no discussion of the social concerns accommodated by the decision to develop a new corridor away from populated areas.

P We disagree. Social concerns are the focal point of the DEIS with regard to the relocation of the existing Fort Peck to Havre transmission line. A total of 17 planning meetings were held with landowners concerning the location of the preferred corridor and abandonment of the existing corridor. (See DEIS Chapter 2 and Appendix E, Effects of Public Involvement. Also see Volume I of ER for a listing of all participants.) Social concerns were incorporated into the land use and visual resource assessment and were instrumental in decision-making as discussed in Chapter 3 of the FEIS.

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Q Public concern over health, safety and property value impacts has been an important consideration in evaluating other transmission projects in Montana. Appendix D of the draft EIS discusses a variety of electrical effects, but does not adequately allay public concerns regarding a major transmission project. Failure to deal with public concerns is a major omission of the EIS.

R Avoidance of irrigated cropland apparently was a high priority in the siting process, though the EIS does not adequately describe the problems the transmission project would cause to irrigation operations. These would include disruption of mechanical system movement, increased labor requirements, potential worker exposure to nuisance shocks, concerns over possible safety hazards, possible disruptions of tilling and spraying practices, encouragement of noxious weed infestations, and trespass problems due to new access roads and gates.

S An important oversight of the EIS is its failure to discuss the long-term implications of removing of the existing 161 kV transmission line. Removal of this line is seen as an important benefit contingent on construction of the new line. County commissioners and planners from impact area counties suggest that decommissioning the line would reduce radio interference along a major travel corridor, cut down on conflicts with agriculture, allow upgrading of agricultural land uses, and reduce visual and other general social impacts on existing and future residential areas.

Q During the public involvement process, some concern was expressed over safety and health considerations. In order to further educate the public on this issue, Western sponsored and widely publicized a series of demonstrations by Mr. Jay Franklin of the Midcontinent Area Power Pool staff under the existing 161kV line at Glasgow, Malta, Harlem and Havre during the period of August 19 to August 24, 1981. The demonstrations discussed and exhibited the various electrical and magnetic affects associated with high voltage lines. Despite the publicity and landowner letters advertising these demonstrations, public attendance was poor. This would appear to reflect a lack of substantial public concern over this issue.

R See responses to Agricultural/Land Use section.

S See FEIS Chapter 3.

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MAGNITUDE

T Impact magnitude depends on impact frequency and severity. For human resources, impact magnitude relates to the number of people affected and the intensity of the impacts. The EIS provides useful impact indicator data, such as the number of housing units within 500 feet, and miles of various kinds of agricultural land. Unfortunately, there is little explanation of how these indicators relate to impacts. Furthermore, no attempt is made to differentiate between indicators that suggest high potential impacts (miles of sprinkler irrigated land), and indicators of minor impacts (rangeland crossed). An explanation of impacts being measured and how they were weighted would be useful in justifying the EIS recommendation of an evironmentally preferred corridor.

T See FEIS Chapter 3.

U The data provided appear to make a strong case for selection of WAPA's preferred corridor. The advantages of selecting this corridor would be enhanced by socioeconomic benefits resulting from decommissioning of the 161 kV line.

U See FEIS Chapter 3.

DETERMINATION OF SIGNIFICANCE

V There is no explanation of how socioeconomic concerns were factored into the ultimate routing recommendation, though it appears that avoidance of social impacts was given priority over impacts to other resources in the study area. Again, in order to validate EIS conclusions it would be useful for the final EIS to contain a discussion of priority given to social and economic considerations and how this was factored into the siting recommendation.

V See FEIS Chapter 3.

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MITIGATION

W	The most effective methods for mitigating potential socioecnomic impacts is to avoid populated areas and agricultural operations. The preferred routing alternative appears to accomplish this.	W No response necessary.
X	WAPA and its consultants were complimented by local officials for conscientious response to landowner concerns. WAPA apparently made several routing adjustments to reduce or eliminate social impacts.	X No response necessary.
Y	A basic weakness in the EIS mitigation discussion is its inadequate identification and description of socioeconomic impacts likely to result from the project. Without better discussion of impacts, it is difficult to justify implementation of mitigating measures.	Y See response to comments above.

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REVEIW OF FORT PECK - HAVRE TRANSMISSION LINE:

MONTANA HISTORICAL PRESERVATION OFFICE

INTRODUCTION

The Western Area Power Administation proposes to construct, operate and maintain a 230 kV transmission line to replace an existing 161 kV transmission line between Fort Peck and Havre, Montana. They proposed and studied, both at regional end corridor scale, over 600 miles of alternative transmission line routes between Fort Peck and Hevre. Following is the Montana State Office of Historic Preservation's review of the adequacy of cultural resource information in the Draft Environmental Impact Statement for compliance with the substantive requirements of the Montana Major Facility Siting Act. The analysis is conducted under contract with the Montana Department of Natural Resources and Conservation and is based on the following documents:

U.S. Department of Energy, 1982.
Draft Environmental Impact Statement for the Fort Peck-Havre Transmission Line Project.

Environmental Report for the Fort Peck-Havre Transmission Line Project, Montana--Volume 4, Culturel Environment.

DeHaas, John, 1981.
Environmental Report for the Fort Peck-Havre Transmission Line Study--Historical Architecture.

Dolman, Arthur, 1981.
Environmental Report for the Fort Peck-Havre Transmission Line Study--Historical Resources.

Fox, Richard and Wirth Associates, Inc., 1981.
Environmental Report for the Fort Peck-Havre Transmission Line Study--Archaeological Resources, Volume 1.

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Woods, Clyde M., 1981.
Environmental Report for the Fort Peck-Havre Transmission Line Study--Native American Cultural Resources.

Following are three subsections which describe the alternatives, analyze the methods used to arrive at a preferred alternative and describe the extent to which the studies conducted to date are adequate for compliance with the Major Facility Siting Act. This report concludes with a brief summary of the analysis and our recommendations.

THE PROPOSED ACTION WITH ROUTING ALTERNATIVES

Preferred Route

The preferred route (179.6 miles), originating at the Fort Peck Power Generating Plant, would proceed west along Highway 24 north of the Charles M. Russell Wildlife Refuge, traverse parcels of agricultural land and proceed into the prairies west of the valley. The route would then turn northwest through the dissected uplands and cross the Burlington Northern Railroad before connecting with the site of the Richardson Coulee Substation Alternative #32. From this point the route would proceed west through the upland rolling hills grasslands, through the southern portion of the Larb Hills, cross Beaver Creek and turn northwest into the Malta substation. From Malta the route would proceed west through the hills north of the Milk River valley, turn northwest at Dodson and run north of the railroad into Harlem. Finally, the route would proceed west and south across the Milk River, run northwest across the northern portion of the Fort Belknap Indian Reservation, continue west through the upland rolling grasslands south of the valley to just west

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of Staten Coulee where the route would be south of Saddle Butte, continue west through the northern foothills of the Bearpaw Mountains, turn north across U.S. Highway 87 and then west and south into the Havre substation.

H-frame woodpole structures, with two overhead ground-wires would be used for construction of the proposed 230 kV transmission line. Generally, structures would be placed in two holes augered in the ground and backfilled. About 75 square feet would be required for each tower base and two or three acres of land will be temporarily disturbed per site for conductor reel and pole storage yards. Existing roads and trails will be used for access onto the right-of-way. WAPA anticipates that line construction will be accomplished through overland travel, therefore a graded surface access road is not planned. However, where steep slopes (12 to 15 percent) would restrict overland travel, roads for construction access would either be graded or outside the right-of-way on more gentle terrain. The contractor's first activities will be the installation of gates, construction of access approaches and clearing of the right-of-way. A relocated (new) 230/69 kV electric substation requiring approximately three acres is proposed at Richardson Coulee.

WAPA's least potential impact or "environmentally preferred" corridor from Fort Peck to Havre is composed of links 1, 1b, 1c, 13a, 13, 23, 28, 28a, 31c, 30a, 35, 38, 38a, 42a, 48, 51, and 54a. For convenience of presentation, the various links are combined into four (4) sets (Table 1). Within each set of combination of contiguous links constitutes a "path" that shares common beginning points and end points with other paths in the same set.

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ANALYSIS OF METHODS USED

The analysis of cultural resources first divides up the field of interest into four areas – Archaeological Resources, Historical Resources, Architectural History and Native American Cultural Resources. These studies provide data to assist the planning of alternative transmission corridors within the study area.

ARCHAEOLOGY

Records and literature sources maintained under contract to the Montana SHPO at Missoula were consulted first. Further investigation included the National Register of Historic Places, records maintained by Emmett Stallcop of the Milk River Archaeological Society and materials on file at the Malta and Lewistown offices of the Bureau of Land Management. The records search resulted in compilation of a list of 170 sites within the boundaries of the study area. The Cultural Environment portion of the Environmental Report (Volume 4) contains a tabular listing of the sites and their site types, and the locations of archaeological surveys reported within the study area. A theory of site location was developed based on an analysis of setting for the 170 sites. The theory presents some measure of the likelihood of finding cultural resources within the area of interest. The results of this analysis were used to compile the map shown in Figure 1.

Briefly, the high probability level applies to areas where site distribution is expected or known to be dense or extends over a large area. Only one situation resulted in a high probability level and that is where the alternative corridors crossed transitional environmental zones (i.e., the breaks and associated rugged

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terrain). The moderate probability level applies to areas where site density is projected to be limited. Several different combinations of environmental veriables resulted in a moderate probability. Areas in uncultivated uplands, uncultivated lowlands and uncultivated areas along major drainages were all assigned a moderate probability level. The low probability level indicates areas where few sites are expected to be encounterd.

A I find the site compilation to be a reasonably good assessment of the likelihood of encountering cultural resources. A sample survey subsequently conducted by WAPA's archaeologists supports its efficiency.

The theory of site location attempts to not only predict the numbers of sites found but also sita significance. Four levels of significance were used.

S1 properties have already yielded highly significant scientific/education/ recreational information, and they are clearly important in terms of national and regional (prehistoric) sites and state or local (historic sites) cultural events. These properties typically have buried manifestations (single or multiple component) or surface featues that are relatively well-preserved and are either unique or representative and display one or a combination of assessment attributes 1 through 6. S1 properties are considered eligibile for nomination to the National Register.

S2 properties include those which, by reason of preservation by burial (single or multiple component historic and/or prehistoric sites), hold high pctential for yielding significant information values; some may be elevated to S1 upon further evaluation. These properties are, when taken at face value, potentially unique and representative. Some of the S2 properties are valued essentially because of the

A Your comment has been noted.

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extensive surface area they occupy, but this is a criterion of only secondary importance. Antiquity may be comparable and relatable to that known or estimated at S1 sites, whether or not antiquity per se is considered important. Limited depth of burial is characteristic of local deposits; thus, depth or burial alone is not regarded as a necessary limitation of S2 sites.

S3 properties are valued primarily for their potential for contributing data toward the solution or testing of basic problems such as settlement pattern, resource utilization, and paleoenvironmental reconstruction. These properties typically have little depth, if any, but they may have many features. They may show more than minimal time depth (due to deep exposure by erosion), and they may be localized or extensive. They usually lack definite concentrations of evidence other than features and lithic waste. Most S3 sites are seasonally occupied habitation sites at or near locations where hunting and gathering occurred. Few S3 sites hold potential for upgrading by further work to S2 or S1.

S4 properties possess minimal information values and little retrieval potential, such that few, if any, additional records of value can be developed at these sites given the present ability and readiness of responsible agencies to commit funds for the preservation of cultural resources that qualify at this low value level.

B Because these levels of significance are (1) not recognized by the National Register of Historic Places, (2) relatively vague, and (3) have no legal standing within either state or federal historic preservation law I recommend that they be replaced by a nominally scaled variable that simply designates whether or not a cultural property is eligible for listing in the National Register. Such a

B Detailed information for compliance has been achieved and provided to the SHPO. This information includes:

Wirth Associates, Inc. Determination of Eligibility Document: Fort Peck-Havre Multiple Resource Area. Prepared for Western Area Power Administration. January 26, 1983.

Wirth Associates, Inc. Determination of Eligibility Document: Fort Assinniboine/ Agricultural Experiment Station Historic Site, Hill County, Montana. Prepared for Western Area Power Administration. February 1983.

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description would combine the S1, S2 and S3 ratings into a "significant" category and retain the S4 rating for insignificant.

The next step in a study of this kind is to identify the kinds of activities expected to affect the cultural environment. The relative effects of one route or another are believed to be largely influenced by road construction and road grading. Three kinds of impacts are identifed. These classes are independent of site significance and are used only to define impacts on the predicted cultural environment.

A high level of impact indicates that an area should, if possible, be avoided. A high level of impact resulted when a portion of the routing system had a high probability of encountering sites and new access roads will be necessary. Within the Fort Peck to Havre alternative corridors, areas of high impact fall in broad areas where grading and road construction will be necessary. These are also areas where buffalo jumps and associated sites might be expected.

A high-to-moderate level of impact was applied to areas that should also be avoided if possible but where actual project impacts are expected to range from high to moderate. High-to-moderate impact is associated with transitional zone areas where overland access is indicated. Since the site types vary in the transition zone from perhaps relatively insignificant sites to highly significant sites (such as buffalo jumps with associated featues and sites), and since overland access can result in a wide range of impact depending on the exact nature of sites and their location, the impact level high-to-moderate was used.

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Construction activity should be minimized in portions of the routing system designated has having a moderate impact. Moderate impact was assigned to those areas having a moderate probability of encountering sites and the construction of new access roads projected. There are very few of these areas within the alternative corridors because new access is generally in association with the break areas which by definition would have a high probability level.

A moderate-to-low impact level was applied to those areas in the alternative corridors where there is a moderate probability of encountering sites and the access is expected to be overland. Actual levels of impact, depending on the specific site encountered and the specific nature of the overland access, will likely range from moderate to high.

The portions of the corridor system were assessed at a low impact level where there is little, if any, expected conflict between the predicted archaeological remains and the construction and operation of transmission towers. The low probability level suggests that few sites will probably be encountered, and also suggests that these sites may be easily avoided. Using an evaluation of the probability levels and the levels of access, the impact on archaeological resources in areas with low probability levels and low overland access was considered to be low.

C WAPA's system of measurement for impact assessment appears to be fair and if properly applied will yield reasonable accurate results.

C Your comment has been noted.

The final step in an analysis of this kind is to match the expected cultural resources with the expected impacts identified earlier. This is that difficult final

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D step in determining whether one route will have a greater effect on the cultural environment than another. I find this final step is missing from the WAPA's study. Whether by intent or oversight, the study accurately paints a picture of the kinds of resources likely to be found and the nature of the impacts, but fails to combine these two factors in a way that allows a determination of the route of least enviornmental impact from the standpoint of cultural resources. WAPA should make clear how the information was combined to determine the probable route of least impact to cultural resources.

HISTORICAL RESOURCES

The analysis of Historical Resources begins with a search of records in the Montana State Historic Preservation Office, the Montana Department of State Lands, the Montana Department of Fish, Wildlife and Parks, and the National Register. Further research was done in the Montana Historical Society Library, the Bleine, Hill, Phillips, and Valley County Libraries, the Havre City Library and the Northern Montana College Library. Finally the WAPA consultants contacted interested and knowledgeable individuals and institutions for information on historic settlements in the area.

The above-mentioned research resulted in the identification of 70 historic sites which were thought to be of interest. For the most part, the sites consist of trading posts, Indian Agencies, dams, cemeteries, townsites, and railroad stations.

Relative degree of visual impact to the historic sites was measured using 4 ranked levels:

D The methodology used to match the expected cultural resources with the expected impacts is adequately described in the ER, Volume 4, Chapter 11, pages 25-37. Results of the assessment are provided on pages 62-68, on the Impact Assessment/Mitigation Planning Chart for archaeology. Resource data and impact levels for corridor links are provided on Figures 4-13 and 5-9, respectively. Inventory and impact data for each link were aggregated to combine the data into routes (DEIS Tables C-91 and C-131).

Table 3-7 of the Draft Environmental Statement shows how all of the routes were ranked by the archaeologist. The ranking was determined by the number of miles of high, moderate or low impacts. For example, if Route 1 had 20 miles of high impact and Route 2 had 25 miles of high impact, then Route 1 was preferred over Route 2. If Route 4 had 10 miles of high impact and 5 miles of moderate impact and Route 5 had 10 miles of high impact and 8 miles of moderate impact, then Route 4 was preferred over Route 5. If Route 6 had 10 miles of low impact and Route 7 had 15 miles of low impact, then Route 6 was preferred because of its shorter distance.

Cultural Resources: Archaeology

	Probability of Encountering Sites		
Route ID	High	Moderate	Low
Existing	16.5	81.9	94.7
Preferred	80.5	72.8	26.3
Least Probability	15.5	85.4	90.3

Set I, Path 1 - Links 1, 1a, 2, 4, 7, 8, 8a, 10
Set II, Path 1 - Links 15, 16, 26, 29
Set III, Path 1 - Links 31c, 31, 31a, 34, 36, 39a, 38c
Set IV, Path 6 - Links 40, 42, 43, 43a, 48, 51, 51a, 52, 53, 55

Cultural Resources: Archaeology

	Impact Levels		
Route ID	High	Moderate	Low
Existing	16.5	81.9	94.7
Preferred	80.7	72.6	26.3
Least Impact	15.5	85.4	90.3

The route exhibiting the least probability of encountering sites and least impact to archaeological resources is the same as the existing route with the exception of Set IV.

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Maximum: Maximum sensitivity was assigned to those sites where the introduction of a transmission line would most likely result in an unacceptable level of impact due to high historical value of the site.

Major: Major sensitivity was assigned to those sites where the introduction of a transmission line would most likely result in a high level of impact due to the secondary historical value of the site.

Moderate: Moderate sensitivity was assigned to those sites where the introduction of a transmission line would most likely result in an average level of impact due to the limited historical value of the site.

Minimal: Minimal sensitivity was assigned to those sites where the introduction of a transmission line would most likely result in a low level of impact due to the minor historical value of the site.

E My major criticism of this system is that it bases impact on the "historical value of the site" and not on the significance of the site and the degree to which setting contributes to that significance. Some of the 70 identified properties may not be eligible for listing in the National Register of Historic Places and impacts to these sites may well be insignificant. However, I recommend that WAPA devise a new system which reflects the above-stated concern for impacts to sites that may be found eligible for listing in the Register. I believe that such information is necessary for the Board's consideration of historic resources.

E See response to Comment B above.

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F A final point concerns the omission of an historic site type that I believe will be commonly encountered in the course of transmission line construction -- the historic homestead. Such sites are found throughout the area and represent an important part of our historic environment. Rather than asking WAPA to return to the field to collect information on these sites I recommend that they analyze existing sources including surveys by agencies like the BLM, historic maps, USDA/SCS aerial photographs, and historic records of settlement. I believe that such an analysis will provide the Board with the information needed to determine the likelihood of encountering these sites, their integrity and relative impacts to them.

F The historic homestead was not excluded from the historic inventory. All homesteads recorded in the SHPO site files were included in the inventory (see pages 39 and 40, Table II). In addition, 10 percent of the alternative centerlines were surveyed for historic resources as well as archaeological resources. This sampling procedure is just as valid for the historic resources as for the archaeological resources. Projections can easily be made from this sample data. Homesteads and trash dumps are the most common historic sites located in the back country.

The statement beginning "Rather than asking..." leads one to believe that site surveys, historic maps and historic records were not consulted. A more than adequate job was done in collecting data. The sources are outlined on pages 4 and 5 and there is a comprehensive 10-page "References" section. The data are more than sufficient to contribute to the selection of alternative corridors and the environmentally preferred route.

Additional information about homestead sites 24VL570, 24VL1113, 24VL1118, 24PH1998, 24BL565, 24BL568, 24BL574 and 24BL577 will be provided to the SHPO at a later date to assist in the determination of eligibility of the sites (per request of March 28, 1983).

ARCHITECTURAL HISTORY

This study begins with a literature search in the Special Collections of Montana State University, a field inspection and a reconnaissance of proposed and present corridors for the transmission line.

G As both studies are principally concerned with the material manifestations resulting from historic events, I first recommend that this section be combined with the Historical Resources Analysis.

G See response to Comment B above.

H While the types of impacts (Table 2) are measured the report does not clearly explain how the classification system relates to the "level of impact" determination of low, medium or high. I recommend such a discussion be included in the final document.

H There is no Table 2 in the Architectural History report (ER, Volume 4, Chapter 13). The types of impacts are outlined on page 4 of the report. The impact levels and sites having each level are described on pages 12, 13 and 14. In addition, the Impact Assessment/ Mitigation Planning Charts show (by site and milepast) the combination of impact factors that went into determining impact level.

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NATIVE AMERICAN CULTURAL RESOURCES

Most of the information in this part of the discussion is not germane to the Montana State Historic Preservation Office review. The material which pertains to historic and cultural resources is included in the Historic Resource section.

DETERMINATION OF COMPLIANCE WITH THE MONTANA MAJOR FACILITY SITING ACT

Except for the missing information on historic homesteads, I believe that the Draft Environmental Impact Statement and supporting documents contain the information necessary to begin compliance with the Montana Major Facility Siting Act (75-20-301 and 75-20-503). However, I don't believe that the data is organized or presented in such a way that provides the fullest and most complete information available on effects of each alternative on cultural and historic sites. I believe that such information is necessary and required in order for the Board, under the Major Facility Siting Act, to make a decision on this project.

CONCLUSION AND SUMMARY

Review of the Draft Environmental Impact Statement for the proposed Fort Peck to Havre electrical Transmission Project and its effects on Cultural Resources resulted in the following five broad recommendations:

1. The levels of site significance for archaeological sites should be directly related to the National Register. I recommend that S1, S2 and S3 be combined

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into one rating indicating "significant" or "eligible for listing" and S4 be retained as "insignificant" or "ineligible."

2. The system used for judging the relative degree of visual impact to historic sites should be changed to reflect site significance and the degree to which setting contributes to that significance.

3. An analysis of historic homesteads should be conducted. Such an analysis should indicate the likelihood of encountering these kinds of sites, their integrity, and relative impacts to them.

4. The Environmental Impact Statement should clearly explain how the classification systems used for measuring types of impact relate to the "level of impacts" descriptions used in Table 3-13R.

5. Architectural history, Native American Cultural Resources, and Historical Resources should be combined into one section.

I Related to point number four, I recommend that WAPA analyze all paths within each set in the same manner as done for Table C-13R (Table 3) in the Draft Document. I believe that such an analysis will be useful for assessing the relative impacts to each of the possible alternatives. Table 4 (Table S-1, page 4 of 6 in the Draft EIS) is a summary made from the information presented in Table 3. Reference to Table 4 shows that in terms of archaeology the existing route is favored over the WAPA preferred route. The preferred route has approximately 4.8 times the number of miles rated as "high" impact as the existing route. Forty-four percent of the 179.6 mile preferred route is rated as "high" impact as opposed to eight percent of the 193.1

I See response to Comment D above.

20 (continued)

mile existing route. Conversely only fourteen percent of the preferred route is classified as low impact area while 49 percent of the existing route is classified as the same.

As stated earlier, I believe that most of the essential evidence is within the documents under review. Some changes in organization and presentation of this information should provide the Board with a useful planning tool that will enable them to detect clear difference in route impacts.

20 (continued)

TABLE 1
ALTERNATIVE ROUTES

Set I - Fort Peck to Existing Richardson Coulee Substation

Path 1 (Links 1, 1a, 2, 4, 7, 8, 8a, 10) 25.2 miles (existing corridor)
Path 2 (Links 1, 1a, 2, 4, 6, 8, 8a, 10) 25.4 miles
Path 3 (Links 1, 1a, 2, 5, 6, 8, 8a, 10) 26.2 miles
Path 4 (Links 1, 1a, 2, 5, 6, 8, 8a, 10) 26.4 miles
Path 5 (Links 1, 1a, 3, 4, 7, 8, 8a, 10) 27.0 miles
Path 6 (Links 1, 1a, 3, 5, 6, 8, 8a, 10) 27.2 miles
Path 7 (Links 1, 1a, 3, 5, 6, 8, 8a, 10(28.2 miles
Path 9 (Links 1, 1a, 3, 4, 7, 8) 24.4 miles
Path 10 (Links 1, 1b, 1c) 28.4 miles (Preferred corridor)

Set II - Existing Richardson Coulee Substation to Malta Substation

Path 1 (Links 15, 16, 26, 29) 64.9 miles (existing corridor)
Path 2 (Links 15, 17, 18, 19, 24, 25, 26, 29) 66.1 miles
Path 3 (Links 15, 17, 18, 21, 20, 24, 25, 26, 29) 68.0 miles
Path 4 (Links 15, 16, 25, 27 28, 28b, 29) 72.1 miles
Path 5 (Links 15, 17, 18, 19, 20, 22, 23, 28, 28b, 29) 67.0 miles
Path 6 (Links 15, 17, 18, 19, 24, 27, 28, 28b, 29) 71.1 miles
Path 7 (Links 15, 17, 18, 21, 20, 24, 27, 28, 28b, 29) 73.6 miles
Path 8 (Links 15, 17, 18, 21, 22, 23, 28, 28bb, 29) 66.7 miles
Path 9 (Links 12, 13a, 13, 23, 28, 28b, 29) 56.2 miles
Path 10 (Links 12, 14, 17, 16, 26, 29) 65.5 miles
Path 11 (Links 12, 14, 18, 19, 24, 25, 26, 29) 64.7 miles
Path 12 (Links 12, 14, 18, 21, 20, 24, 25, 26, 29) 66.6 miles
Path 13 (Links 12, 14, 18, 19, 20, 22, 23, 28, 28b, 29) 65.6 miles
Path 14 (Links 12, 14, 18, 21, 22, 23, 28, 28b, 29) 65.3 miles
Path 15 (Links 12, 14, 18, 19, 24, 27, 28, 28b, 29) 70.3 miles
Path 16 (Links 12, 14, 18, 21, 20, 24, 27, 28b, 29) 72.2 miles
Path 17 (Links 12, 14, 17, 16, 25, 27, 28, 28b, 29) 72.7 miles
Path 18 (Links 13a, 13, 23, 28, 28a) 50.4 miles (preferred corridor)
Path 19 (Links 12a, 12b, 13, 23, 28, 28a) 55.3 miles

Set III - Malta Substation to Harlem Substation

Path 1 (Links 31c, 31, 31a, 34, 36, 39a, 38c) 50.4 miles (existing corridor)
Path 2 (Links 31c, 31, 31a, 34, 33, 35a, 35, 38, 38b, 39, 39a, 38c) 51.0 miles
Path 3 (Links 31c, 31, 31a, 34, 33, 35a, 35, 37, 39a, 38c) 50.4 miles
Path 4 (Links 31c, 31, 31b, 35a, 35, 38, 38b, 39, 39a, 38c) 48.8 miles
Path 5 (Links 31c, 31, 31b, 35a, 35, 37, 39, 39a, 38c) 48.2 miles
Path 6 (Links 31c, 30, 35a, 38, 38b, 39, 39a, 38c) 53.3 miles
Path 7 (Links 31c, 30, 35a, 35, 37, 39, 39a, 38c) 52.7 miles
Path 8 (Links 32, 24, 33, 35a, 35, 38, 38b, 39, 39a, 38c) 54.6 miles
Path 9 (Links 32, 34, 33, 35a, 35, 37, 39, 39a, 38c) 54.0 miles
Path 10 (Links 32, 34, 36, 39a, 38c) 54.0 miles
Path 11 (Links 31c, 30a, 35, 38, 38a, 38c) 48.9 miles (preferred corridor)
Path 12 (Links 31c, 30a, 35, 38, 38b, 39, 39a, 38c) 48.6 miles
Path 13 (Links 31c, 31, 31b, 35a, 35, 38, 38a, 38c) 49.1 miles

20 (continued)

Set IV

Path 1	(Links 40, 42, 44, 46, 47, 50, 53, 55) 52.6 miles (existing corridor)
Path 2	(Links 40, 41, 47, 50, 53, 55) 53.2 miles
Path 3	(Links 40, 42, 44, 45, 48, 51, 51a, 52, 53, 55) 51.8 miles
Path 4	(Links 40, 42, 44, 45, 48, 51, 51a, 54, 55) 52.0 miles
Path 5	(Links 40, 42, 44, 45, 48, 49, 50, 53, 55) 56.8 miles
Path 6	(Links 40, 42, 43, 43a, 48, 51, 51a, 52, 52, 55) 50.7 miles
Path 7	(Links 40, 42, 43, 43a, 48, 51, 51a, 54, 55) 50.9 miles
Path 8	(Links 40, 42, 43, 43a, 48, 49, 50, 53, 55) 55.7 miles
Path 9	(Links 42c, 43a, 48, 51, 51a, 54, 55) 48.7 miles
Path 10	(Links 42a, 48, 51, 54a, 54b) 51.9 miles (preferred corridor)
Path 11	(Links 42b, 48, 51, 54a, 54b) 50.4 miles

TABLE 2

B-1: Eliminate, alter or otherwise affect the physical integrity of a property possessing historic, architactural value.

B-2: Affect the view from or modify the visual setting of a visually sensitive property.

B-3: Affect a property that is included on or is known to be eligible for inclusion on the National Register of Historic Places.

B-4: Affect a property possessing other official status.

APPENDIX B
ENVIRONMENTAL DATA TABLES

TABLE B-2
VISUAL RESOURCES
(Miles by Path)

Visual Dominance

Path ID	Dominate	Co-Dominate	Subordinate	Detectable	Total
A1	1.67	1.47	0.30	0.16	3.60
A2	0.68	1.09	0.27	0.16	2.20
A3*	0.30	1.37	0.27	0.16	2.10
A4	1.06	1.82	0.42	0.35	3.65
A5	1.96	1.04	0.42	0.35	3.77
A6	0.55	3.35	0.43	0.26	4.59

*Environmentally preferred route.

Source: Wirth Associates, Inc., December 1982

TABLE B-3
CULTURAL RESOURCES
ARCHAEOLOGY

Probability of Encountering Sites

Path ID	High	Moderate	Low
A1	0.00	0.57	3.03
A2	0.14	0.79	1.27
A3*	0.14	0.62	1.34
A4	0.11	1.56	1.98
A5	0.11	1.56	2.10
A6	0.09	3.17	1.33

*Environmentally preferred route.

Source: Wirth Associates, Inc., December 1982

TABLE B-4
CULTURAL RESOURCES
HISTORY

Visual Dominance

Path ID	Dominate	Co-Dominate	Subordinate	Detectable	Undetectable	Total
A1	0.00	1.52	0.94	1.04	0.10	3.60
A2	0.52	1.26	0.17	0.15	0.10	2.20
A3*	0.16	1.52	0.17	0.15	0.10	2.10
A4	1.01	1.67	0.62	0.35	0.00	3.65
A5	1.91	1.32	0.19	0.35	0.00	3.77
A6	0.55	1.29	2.54	0.21	0.00	4.59

*Environmentally preferred route.

Source: Wirth Associates, Inc., December 1982

TABLE B-5
NATIVE AMERICAN CULTURAL RESOURCES
(Sites by Path)

Site Categories

a = Religion and Ritual
c = Habitation
h = Multiple Resource Area

Path ID	Site ID	Site Category	Site Type
A1	036	a	Burial Ground
	113	h	Multiple Resource Area
A2	011	a	Burial Ground
	113	h	Multiple Resource Area
	045	c	Military Fort
A3*	011	a	Burial Ground
	113	h	Multiple Resource Area
	045	c	Military Fort
A4	113	h	Multiple Resource Area
A5	113	h	Multiple Resource Area
	035	a	Burial Ground
A6	113	h	Multiple Resource Area
	035	a	Burial Ground

*Environmentally preferred route.

Source: Wirth Associates, Inc., December 1982

TABLE B-6
SUMMARY OF ENVIRONMENTAL IMPACTS
(Total Miles by Path)

Legend

1	=	Overland Access	H	=	High Impact
2	=	New Access	M	=	Moderate Impact
			L	=	Low Impact
T	=	Total	N	=	No Identifiable Impact

Path ID	Access Type	Access Miles	Impact	HUMAN ENVIRONMENT Land Use	HUMAN ENVIRONMENT Visual	CULTURAL ENVIRONMENT Archaeology	CULTURAL ENVIRONMENT History	CULTURAL ENVIRONMENT Native American
A1	1	3.60	H	0.01	2.39	0.00	0.58	0.00
	2	0.00	M	2.00	0.75	0.00	0.94	0.00
			L	0.00	0.46	3.60	2.08	0.00
			N	1.59	0.00	0.00	0.00	3.60
	T	3.60	T	3.60	3.60	3.60	3.60	3.60
A2	1	2.20	H	0.00	1.37	0.00	0.99	0.19
	2	0.00	M	0.59	0.57	0.14	0.96	0.00
			L	0.10	0.26	2.06	0.25	0.00
			N	1.51	0.00	0.00	0.00	2.01
	T	2.20	T	2.20	2.20	2.20	2.20	2.20
A3*	1	2.10	H	0.00	0.99	0.00	0.63	0.19
	2	0.00	M	0.59	0.85	0.14	1.22	0.00
			L	0.10	0.26	1.96	0.25	0.00
			N	1.41	0.00	0.00	0.00	1.81
	T	2.10	T	2.10	2.10	2.10	2.10	2.10
A4	1	3.65	H	0.00	1.21	0.00	1.40	0.07
	2	0.00	M	0.97	2.44	0.11	2.25	0.00
			L	0.37	0.00	3.54	0.00	0.00
			N	2.31	0.00	0.00	0.00	3.58
	T	3.65	T	3.65	3.65	3.65	3.65	3.65

Table B-6 (continued)

Path ID	Access Type	Access Miles	Impact	HUMAN ENVIRONMENT Land Use	HUMAN ENVIRONMENT Visual	CULTURAL ENVIRONMENT Archaeology	CULTURAL ENVIRONMENT History	CULTURAL ENVIRONMENT Native American
A5	1	3.77	H	0.00	2.11	0.00	2.30	0.07
	2	0.00	M	1.55	1.66	0.11	1.47	0.00
			L	0.37	0.00	3.66	0.00	0.00
			N	1.85	0.00	0.00	0.00	3.70
	T	3.77	T	3.77	3.77	3.77	3.77	3.77
A6	1	4.59	H	0.00	1.57	0.00	1.80	0.00
	2	0.00	M	0.52	3.01	0.09	0.87	0.00
			L	0.00	0.01	4.50	1.92	0.00
			N	4.07	0.00	0.00	0.00	4.59
	T	4.59	T	4.59	4.59	4.59	4.59	4.59

*Environmentally preferred route.

Source: Wirth Associates Inc., December 1982

TABLE 2-3F
DRAFT ENVIRONMENTAL IMPACT STATEMENT
Comments at Public Hearings

Summaries of Comments and Responses

Speaker No.	Name	Issue/Concern	Response
Glasgow, Montana - 26 July 1982			
1	Muncie Taylor	Comments that Western has obligation to provide electricity to Montana Power Company and the proposed project would take care of the obligation.	None.
2	James DeDobbeleer	Questions if the route has been selected or if there are still three proposals.	The DEIS and FEIS respond to question. The environmentally preferred route is depicted on Figure 3-10 of Maps, Diagrams & Tables volume of the DEIS.
Malta, Montana - 27 July 1982			
3	Fred Olson	Opposes disrespect for private landowners' rights and property during survey and construction activities; disturbance of fences.	See response to Comment H of Letter No. 16 reproduced in Table 2-2F. During the hearing a representative of Western apologized for any discourteous actions towards landowners and indicated that they will make their best efforts in the future to work with landowners.
4	Nellie Spencer	Opposes close proximity of Malta Substation to Spencer residents.	See response to Comment J of Letter No. 16 reproduced in Table 2-2F.

Table 2-3F (continued)
Summaries of Comments and Responses

Speaker No.	Name	Issue/Concern	Response
	Spencer (continued)	Electrical effects - health and safety.	Refer to DEIS, pages 5-8 and 5-9, 5-24 through 5-32 and Appendix D.
		Property value - aesthetic and visual impacts.	We recognize that visual impacts would occur that can potentially affect existing or future property values. While various studies on these impacts have been conducted, some have found no substantial decrease in value attributable to transmission lines while others have shown the market value of adjacent property to be depressed.
5	Ms. Chamberlin	Opposes close proximity of proposed transmission line to spring. Construction of line may cause damage to spring where cattle drink. Prefers line be routed at least one-half mile to north.	The proposed alignment has been rerouted to the north to avoid the spring as staked in the field.
		Opposes disrespect of landowners' property rights.	See response to comment of Speaker No. 3.
6	Phil Sims	Opposes disrespect of landowners' property rights.	See response to comment of Speaker No. 3.

Table 2-3F (continued)
Summaries of Comments and Responses

Speaker No.	Name	Issue/Concern	Response
7	William Hubble	Opposes close proximity of Malta Substation to Spencer residences (Speaker No. 4). Suggests that substation be relocated so that proposed transmission line can be routed around town of Malta.	See response to Comment J of Letter No. 16 reproduced in in Table 2-2F.
Harlem, Montana - 28 July 1982			
8	Bruce Johnson	Requests to see location of proposed transmission line.	Mr. Johnson was shown the map with location of the proposed transmission line and had no further comments.
9	Larry Nissen	Are there any regulations as to how far a transmission line should be from a county road?	Western meets or exceeds nationally accepted safety standards in designing and constructing its transmission lines. Those standards specify electrical conductor clearance for road crossings and other similar actions. For reasons of public safety, avoidance of future problems should a road be widened or relocated, etc., Western's policy is to avoid overlapping road right-of-ways or otherwise constructing lines in close proximity to roads.
10	Roger Snyder	Opposes proposed transmission line crossing Snyder property. Suggests that proposed alignment be moved to section line.	The line crossing was reviewed in detail and was not relocated in order to avoid adverse impacts to an adjacent residence.

Table 2-3F (continued)
Summaries of Comments and Responses

Speaker No.	Name	Issue/Concern	Response
11	Bernard Norheim	Opposes proposed transmission line crossing Norheim property. Suggests proposed alignment be rerouted one-half mile to the north along fence line between Johnson and Norheim properties.	This line crossing was reviewed in detail and was not relocated in order to avoid impacts to potentially irrigable crop lands.
Havre, Montana - 29 July 1982			
12	Robert and Ruth Burchett	Do the people's comments have any weight in the final decision?	Yes. Refer to DEIS, Chapter 2 and Appendix E.
13	D. H. Peterson	Opposes disrespect for landowner's property rights and insufficient notice of survey activities to landowners.	See response to Comments H and A of Letter No. 16 reproduced in Table 2-2F.
		Opposed to proposed transmission line crossing Peterson property and residential development (Herron Park subdivision). Suggests a shorter route through an unpopulated area.	See FEIS Chapter 1.
14	M. S. Marra	Opposes proposed transmission line crossing Marra property. Suggests less expensive route avoiding Marra property, main highway and residential area (Herron Park subdivision).	See response to Comment I of Letter No. 16 reproduced in Table 2-2F. See also FEIS Chapter 1.
15	Walt Dion	Opposes proposed transmission line crossing Dion property. Suggests rerouting one-half mile to the south on grassland.	Western has rerouted alignment to the south onto State land.

Table 2-3F (continued)
Summaries of Comments and Responses

Speaker No.	Name	Issue/Concern	Response
	Walt Dion (continued)	Ground sterelin should be provided annually for areas around transmission line poles on cultivated land to eliminate weed growth.	Refer to DEIS, pages 3-8 and 3-9.
		Uncompensated property damages caused during transmission line survey.	See response to Comment H of Letter No. 16 reproduced in Table 2-2F.
16	Ralph Anderson	Comments that ground is sterilized around the base of the poles of an existing transmission line on Anderson property.	None.
17	Paul Kuhr	Opposes proposed transmission line crossing Kuhr property. Same suggestion as Mr. Marra (Speaker No. 14).	Refer to FEIS Chapter 1.
18	Pete Passon	Opposes disrespect for private landowners' property rights and property. Uncompensated property damages caused during survey activities.	See response to comment of Speaker No. 3.
19	Giles L. Majerus	Questions use of access roads after construction.	Refer to DEIS page 3-6.

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CHAPTER 3 - ENVIRONMENTAL ASSESSMENT APPROACH, CUMULATIVE IMPACTS AND OTHER ISSUES

INTRODUCTION

The Fort Peck-Havre DEIS was reviewed by the Montana Department of Natural Resources and Conservation (DNRC) to determine whether the document meets the substantive standards of the Montana Major Facility Siting Act. All DNRC comments on the DEIS and related responses have been incorporated into Chapter 2 of the FEIS. There were a number of comments by the DNRC concerning the environmental study methodology and cumulative impacts that will result from the proposed action. Rather than respond to each of these comments separately in Chapter 2, they have been referenced to this chapter for a complete and comprehensive discussion.

The purpose of Chapter 3 is to address the cumulative impacts of the project and other related issues associated with corridor selection, impact assessment and agriculture. The following sections provide a summary of the Fort Peck to Havre environmental assessment approach, cumulative impact issues and agricultural issues.

ENVIRONMENTAL ASSESSMENT SUMMARY

Information contained in the Fort Peck-Havre DEIS and appended environmental report support documents describe the intent, approach and results of the environmental assessment. In order to clarify the approach for the selection of alternative corridors and determination of impact levels, Table 3-1F, Environmental Assessment Summary, has been compiled from data contained in the DEIS. Table 3-1F provides the following information:

Corridor Selection

- A listing of each specific resource data category considered and assessed in the Fort Peck to Havre environmental studies.

- Corridor selection data, including those resource categories involved in the regional study area baseline data collection, the level of environmental sensitivity assigned to each resource and importance of each resource in corridor siting.

Corridor Impact Summary

- Corridor impact data, including each specific resource category involved in corridor data refinement and miles or numbers of resource features that would be affected by utilizing either the existing Fort Peck to Havre transmission corridor or the proposed transmission corridor.

- Miles of high, moderate, low or no identifiable impacts for each corridor.

- An interpretation of the cumulative resource impacts that would be expected from the abandonment of the existing corridor and construction and operation of the 230kV line in the proposed corridor. Types of cumulative impacts anticipated for each general resource category are depicted as either beneficial, no significant change, or adverse.

Summary of Resource Issues and Concerns

Corridor Selection Issues

- A brief description of the key resources influential in the selection of alternative corridors.

- The types of sensitive resources that were either avoided or affected by the proposed corridor.

Impact Assessment Issues

- The types of potential short-term and long-term impacts for each general resource category that could be caused by the proposed action.

- Levels of environmental impact are defined for each general resource topic.

Cumulative Impact Issues

A discussion of the cumulative impacts for each resource category, including an explanation of the beneficial, neutral (no significant change) or adverse consequences of the proposed action.

CORRIDOR SELECTION OVERVIEW

The selection of alternative transmission corridors involved a process of avoiding or minimizing conflicts where possible with resource features of maximum and major sensitivity. Four sets of alternative corridors were selected between the interconnecting substations of Fort Peck, Richardson Coulee, Malta, Harlem and Havre. The principal environmental issues involved with selecting alternative corridors between these five substations relate to the sensitivity of the Milk River valley in contrast to the adjacent upland prairie. Where possible, alternative corridors were selected to avoid impacts to the Milk River valley which is currently traversed by the existing 161kV line between Fort Peck and Havre. The interconnection requirements with the

Malta and Harlem substations would result in unavoidable conflicts with sensitive resources within the Milk River valley.

The Milk River valley is generally more sensitive than the upland prairie due to concentrations of floodplains and wetlands, cropland, urban and residential areas, airports and airstrips, recreation sites, transportation routes, scenic areas, historic sites and trails and Native American resources. Archaeological resources are more concentrated in the upland prairie along with important wildlife habitat for grouse, prairie dogs, deer and antelope (see Table 3-1F for a discussion of corridor selection issues for each resource).

IMPACT ASSESSMENT ISSUES

Impact Assessment Overview

The impact assessment of final alternative corridors provided the basis for identifying specific impacts and comparing alternative corridors. After initial impacts were identified, selective mitigation measures (committed to by Western) were applied to offset potential impacts from transmission line construction, operation and maintenance. Residual impacts were defined along each alternative corridor for specific resources, based on the effectiveness of each mitigation measure.

The results of the assessment were utilized in a process that led to the identification of an initial environmentally preferred corridor. The corridor comparison was made during an interdisciplinary study team workshop, where all resource impacts were considered and their significance weighed. The selection of the final environmentally preferred corridor was a process of integrating interdisciplinary resource data with public involvement and preliminary engineering studies. In the selection of the proposed corridor, general preference was given to the alternative that minimized impacts to land use, recreation, visual, biological and historic resources in the Milk River valley.

CUMULATIVE IMPACT OVERVIEW

The cumulative environmental impact of removing the existing Fort Peck to Havre 161kV transmission line and introducing the proposed 230kV transmission line within the preferred corridor is generally considered to be beneficial. Cumulative impacts will be beneficial to land use, visual, vegetation, wildlife, wetland and Native American cultural resources. There would be no significant change to historic, paleontological or earth resources, while cumulative impacts to archaeological resources will be adverse. Beneficial cumulative land use and visual impacts include: (1) reduced agricultural impacts, (2) reduced visual impacts to residents, highway travelers and recreation sites and use areas, (3) reduced noise and radio interference, (4) improved electrical service to area residents, and (5) remove conflicts to the City of Havre's future growth area. Elimination of existing long-term

impacts to the Bowdoin National Wildlife Refuge, riparian vegetation and marsh areas will reduce potential transmission collision hazards for waterfowl, resulting in beneficial cumulative impacts to biological resources. Native American cultural resources will be beneficial as a result of the removal of the existing line from the Fort Belknap Indian Reservation.

Adverse cumulative impacts to archaeological resources will result from the construction of the proposed line in areas of predominantly high site probability. Cumulative impact issues associated with each resource are described on Table 3-1F for each resource.

AGRICULTURAL ISSUES

Identification of alternative corridors, the agricultural studies, and the planning workshops for the Fort Peck to Havre Project focused on avoiding or minimizing disturbance to agricultural resources, including cultivation and irrigation systems. Based on extensive planning meetings with farmers, the sensitivity of flood irrigated cropland and nonirrigated cropland to transmission lines was found to be equal, consequently they were treated equally in the impact assessment. In addition, land productivity data on an individual field basis were not obtainable through secondary data sources, including Soil Conservation Service and Agricultural Stabilization and Conservation Service.

Disturbance to agricultural operations have been further mitigated as a result of the landowner workshops which included numerous modification of tower locations. In addition, Western has committed to the generic mitigation measure on agricultural land, right-of-way will be aligned, insofar as practical, to reduce the impact to farm operations and agricultural production.

Based on the comments received from DNRC, the following six major topics were identified and are discussed below:

1. Reduced yields
2. Irrigation Operations
3. Agricultural Aircraft Operations
4. Farm Equipment Operations
5. Weed and Pest Control
6. Compensation for Crop Losses

(1) Reduced Yields

One factor that may contribute to yield reduction is soil compaction, which results from construction and operation activities and from maneuvering farm equipment around transmission towers. We believe that no long-term soil compaction would result from the operation of the proposed transmission line, although there is no data available to quantify yield reduction during operation of transmission lines. Previous agricultural studies have recommended deep ripping as mitigation where soil compaction occurs.

Mitigation for reduced crop yields should be each landowner's responsibility.

Research has indicated ("The Effects of Electric Transmission Lines and Towers on Agriculture," Resources International, Inc. 1978) that whether reduced crop yield around transmission towers is attributed to soil compaction, double planting, improper irrigation or inadequate spray-coverage, the area of influence is less than approximately one-quarter acre.

(2) Irrigation Operations

Additional time in handling furrow irrigation within and around towers is a major concern to farmers. The most common problem among growers of row crops is achieving uniform water application rates on the upstream and downstream sides of furrows impinged upon by tower footings. This often results in additional hand labor to shovel, direct and adjust furrow flows around and/or through the towers.

Growers of alfalfa, and grains indicate that very few, if any, additional problems are encountered in performing flood irrigation operations within and around towers. All mechanically irrigated fields have been avoided.

(3) Agricultural Aircraft Operations

Transmission lines and towers present difficulties to aerial applications and additional cost. The transmission lines and towers are also a hazard or safety problem to pilots, especially at night or early morning.

Aerial applications in areas where there are transmission lines and towers have attendant costs for additional time, fuel and labor. Generally, aerial applicators do not charge farmers for additional time, labor or fuel costs. However, farmers are charged for the additional amount of pesticide materials used in performing clean-up passes.

Barring the presence of other obstacles--such as haystacks, trees, other transmission lines, and telephone poles--and given adequate visibility, aerial applicators typically fly beneath high-voltage transmission lines, make clean-up passes around transmission towers or sidedress parallel to transmission lines in order to optimize coverage.

In the interest of general safety, most aerial applicators first familiarize themselves with terrain and potential hazards where they are scheduled to fly, and allow adequate margins of safety between their aircraft and transmission lines and towers (APS/SDG&E Interconnection Project, Final Environmental Document 1981).

At present there is no consensus on how best to increase visibility of conductors and towers, although pilots have recommended the use of

reflective tape and tower lighting. The only known instances where utilities illuminate transmission towers in agricultural areas are in the vicinity of airstrips controlled by the Federal Aviation Administration (FAA), whose regulations do not apply to farm or rural airstrips used by aerial applicators and located outside FAA jurisdiction.

The Civil Aeronautics Act of 1958 established a minimum flying height of 500 feet for all civil aircraft. However, the 500-foot requirement has been waived for aerial applicators, and there are, at present, no legal restrictions on such pilots for flying under high-voltage transmission lines or near transmission towers.

(4) Farm Equipment Operations

Transmission towers are a hindrance to the operation of farm equipment. Additional time is therefore required to farm around these towers. However, the various operations involved in producing a particular crop will vary among farmers. This variation is due, in part, to professional differences in farming practices, tower and field orientation, and to seasonal variations in the weather. For example, excessive or insufficient rainfall will change both the numbers and types of operations a farmer will perform on his crop. In addition, a variety of equipment sizes, operating speeds could affect operation time loss.

Finally, farm equipment operations within and around transmission towers are a concern to most farmers. One of the primary concerns is the amount of additional compaction that may occur as a result of additional equipment operations within and/or around towers including additional time required for turning and making cleanup passes around the towers. Although many crops can be planted close to or even under towers, some harvesters cannot harvest as close to the tower as crops can be planted. Damage to equipment is another concern.

(5) Weed and Pest Control

Interviews with farmers in other areas, concerning weed control within and around towers, have revealed that weed control is perhaps their major item of concern. Virtually every farmer indicated that additional time was spent in discing and/or hand-spraying weeds within and around towers. Weeds are a concern not only because matured weeds may spread weed seed into the field, but because the weeds may serve as a harborage for harmful insects or "pests."

The landowner is responsible for weed control on and off the right-of-way.

(6) Compensation for Crop Losses

Permanent easements would be acquired for transmission line and access roads rights-of-way. Landowners would be paid fair market value for rights acquired to their property. All easements acquired would provide for the payment of damages caused by the construction of the line (DEIS, page 3-11).

CHAPTER 4 - ERRATA AND CHANGES

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Page 3-6, first paragraph following indented items,
line four: change "0.9-2.9 MW" to "1.4-2.2 MW";
line six: change "1kV to 5kV" to "3kV to above 3kV";
line eight: change "8kV to 9kV" to "4kV to 5kV."

Page 3-8, third paragraph, line two, "they were not considered because of their relatively high cost (130-150 percent of lattice steel) with no offsetting benefits." Change to read: "they were not considered to general application on the project because of their relatively high cost. However, Western may use structure types other than H-frame woodpoles in some specific applications to provide for increased safety, reduced impacts to sensitive areas, etc."

Table 3-1 has been revised. See Table 3-1(R) in this chapter.

Table 3-3 has been revised. See Table 3-3(R) in this chapter.

Page 3-9, line two: change "8 percent" to "9.5 percent";
line six: change "Average cost of energy" to "Average value of energy."

Page 3-9, first paragraph,
line six: change "$257,000 to $546,000 in annual cost and $3,225,000" to "$552,000 to $874,000 in annual cost and $5,803,000";
line ten: change "$11,000 to $37,000" to "$28,000 to $82,000"
line eleven: change "$170,000 to $502,000" to "$300,000 to $858,000"

Page 4-5, paragraph headed by "Seismicity," line seven, "There are no active faults in all of Montana east of the Rocky Mountains." Change to read: Fault investigations in south-central Montana indicate levels of active faulting are relatively low in central Montana (Johns 1980). Faulting in the project region occurs near Hinsdale and at Tiger Butte about 6.5 miles southeast of Glasgow. The Hinsdale fault is 25 miles long and has had four seismic events, one of which was clearly an earthquake (see Figure 4-2), while the other three are believed to be earthquakes (Northern Border Pipeline EIS).

Figure 4-2
Note:
The 1968 event of magnitude 5.0 was caused by an explosion detonated by the Corps of Engineers.

Page 4-29, Table 4-12, 5-21
Change: Fort Assiniboine to Fort Assinniboine

Page 5-7, under the heading Biological Resources, the entire paragraph should be replaced by the following:

"Impact types were generally found to be adverse, direct and indirect, and long- and short-term with respect to biological resources (see Table 2, Chapter 7). Short-term impacts would result primarily from removal of vegetation along the centerline and disturbances (e.g. access roads, noise, etc.) during the construction phase. These impacts would include disruption of sensitive species such as the sage and sharp-tailed grouse and raptorial species if siting of the transmission line is too close to nesting areas and if construction activities during the breeding season exceed tolerance levels. Siting of the proposed corridors has taken into account these potential impacts; therefore, the resultant routing will minimize short-term impacts to wildlife and vegetation. Also for this reason, most long-term residual impacts will be low occurring where transmission lines are close to grouse leks, grouse breeding habitat, and waterfowl breeding habitat. In addition, unavoidable (low) residual impacts will result from clearing of vegetation along the right-of-way and potential introduction of noxious weeds."

Page 5-8, paragraph three, line 16, change "breeding habitat." to "breeding habitat and leks."

Appendix D, page D-5, line 18: change "will be" to "could."

Table S-2, Summary of Environmental Consequences, under column headed by "Historic," change: "5.3" to "0.0"
"9.5" to "3.2"
"1.1" to "1.7"
"163.7" to "174.7"

Tables 5-3 and C-131, Summary of Environmental Consequences, Set III, Malta Substation to Harlem Substation, under column headed by "Historic," change:
"5.3" to "0.0"
"6.3" to "0.0"
"0.9" to "0.0"
"36.4" to "48.9"

Tables S-1, 4-6, C-61, Existing and Planned Land Uses, under column headed by "H" (Airstrip/Airport Interference Zone); all numbers in that column should read "0.0." There would be no airports affected.

Tables S-1, 4-6, C-61 and C-6R, Existing and Planned Land Uses, the positions of the headings "I" and "J" should be reversed.

TABLE B-1
EXISTING AND PLANNED LAND USES CROSSED
(Miles by Path)

Legend

A = Alfalfa
B = Corn
C = Wheat
D = Hay/Pasture
E = Range
F = Future Range/Research
G = Potential Agronomy Research
H = Winter Grazing
I = Wetlands
J = Farmstead
K = Highway
L = Road
M = Mixed Use

Path ID	A	B	C	D	E	F	G	H	I	J	K	L	M	Total
A1	0.62	0.00	0.36	0.38	1.63	0.47	0.00	0.00	0.03	0.06	0.03	0.02	0.00	3.60
A2	0.52	0.00	0.00	0.07	0.82	0.12	0.00	0.00	0.07	0.00	0.02	0.02	0.56	2.20
A3*	0.52	0.00	0.00	0.07	1.02	0.12	0.00	0.00	0.07	0.00	0.02	0.01	0.27	2.10
A4	0.47	0.21	0.29	0.00	1.91	0.00	0.37	0.36	0.00	0.00	0.02	0.02	0.00	3.65
A5	1.10	0.16	0.29	0.00	1.45	0.00	0.37	0.36	0.00	0.00	0.02	0.02	0.00	3.77
A6	0.03	0.21	0.31	0.00	3.75	0.00	0.00	0.23	0.00	0.00	0.02	0.04	0.00	4.59

*Environmentally preferred route.

Source: Wirth Associates, Inc., December 1982

TABLE 3-1R
COSTS OF DESIGN ALTERNATIVES
($1,000)

Voltage	161kV	161kV	230kV	230kV[2]	230kV	230kV
Structure	Wood	Wood	Wood	Wood	Steel	Steel
Conductor (kcmil)	Drake (795)	Rail (954)	Drake (795)	Rail (954)	Rail (954)	Bittern (1272)
Total Investment[1]	21,600	22,230	22,428	23,094	29,376	32,346
Annual Costs						
Investment	2,074	2,135	2,153	2,217	2,791	3,073
Maintenance	80	80	95	95	73	73
Losses	135	118	69	59	59	45
Total	2,289	2,333	2,317	2,371	2,423	3,191
Present Worth						
Investment	21,831	22,468	22,668	23,341	29,376	32,346
Maintenance	842	842	1,000	1,000	768	768
Losses	1,421	1,241	726	621	621	474
Total	24,094	24,551	24,394	24,962	30,765	33,588

[1]Excludes right-of-way and demolition charges.

[2]Proposed voltage and structure type.

TABLE 3-3R
CONSTRUCTION AND MAINTENANCE COSTS[1] AND ANNUAL LOSSES FOR DESIGN ALTERNATIVES

Voltage	161kV	161kV	230kV	230kV	230kV	230kV
Structure Type	Wood	Wood	Wood	Wood	Steel	Steel
Conductor (kcmil)	Drake (795)	Rail (954)	Drake (795)	Rail (954)	Rail (954)	Bittern (1272)
Construction Costs ($/mile)	120,000	123,500	124,600	128,300	163,200	179,700
Maintenance Costs ($/mile/year)	445	445	525	525	405	405
Estimated Losses						
(MWH/year)	11,274	9,828	5,782	4,914	4,914	3,758
(MW peak)	3.9	3.4	2.0	1.7	1.7	1.3

[1] All costs in 1983 dollars.

TABLE II

IMPACT TYPES RELEVANT TO BIOLOGICAL RESOURCES

IMPACT TYPES	IMPACT CHARACTERISTICS					
	Adverse	Beneficial	Direct	Indirect	Short-term	Long-term
1. Affect any federally classified threatened or endangered species or critical habitats:						
a.	x		x			x
b.	x			x		x
c.	x		x		x	
d.		x		x		x
2. Affect any state-listed protected, threatened, unique or otherwise sensitive species or habitat thereof:						
a.	x		x			x
b.	x			x		x
c.	x		x		x	
d.		x		x		x
3. Affect any relatively undisturbed, rare or unique vegetation types, species, communities, or areas:						
a.	x		x			x
b.	x			x		x
4. Create a barrier to the migration or movement of any wildlife species:	x		x			x
5. Alter the diversity of any biotic community or population numbers of any plant or animal species:						
a.	x		x			x
b.	x			x		x
6. Affect any important or highly productive habitat of wildlife species of sport, spectator, commercial or educational value:						
a.	x		x			x
b.	x			x		x
c.	x		x		x	
d.		x		x		x
7. Affect any areas of low revegetation potential:						
a.	x		x			x
b.	x			x		x
8. Increase potential for wild fires:	x		x			x

ENVIRONMENTAL REPORT

Volume 2, Chapter 3, Table III, Map Unit Characteristics, page 2 of 2, revise Map Unit 5 to read as shown on Table III: Revisions.

Volume 2, Chapter 3, Table IV, page 1 of 2, for Map Unit 6, in column headed "Revegetation," change "moderate in fine soils; minor in coarse soils" to read "major in fine soils; minimal in coarse soils." Page 2 of 2 for Map Unit 13, in column headed by "Revegetation," change "moderate" to "major."

Volume 2, Chapter 3, page 17, paragraph three, line five, "Units 3 and 4 have major revegetation sensitivity." Change to read "Units 3, 4 and 13 have major revegetation sensitivity."

Volume 2, Chapter 6, page 2, lines two and three, change "(Weaver and Albertson 1956); however, these plants are not important in most of the study area." to read "(Weaver and Albertson 1956). Although these plants are not abundant in most of the study area, they contribute very important wildlife habitat where present, such as in the Larb Hills."

Volume 2, Chapter 6, page 2, the following should be changed:
line 10: "situation" to "situations"
line 11: "is" to "are"
line 12: "Boldt 1978)" to "Boldt 1978) and in the Charles M. Russell National Wildlife Refuge."

Volume 2, Chapter 6, page 3, following the last sentence of paragraph three, add "Because the entire Milk River valley is a floodplain, vegetation habitat types rather than flood hazard maps were used to assess impacts to biological resources."

Volume 2, Chapter 6, page 9, paragraph four, change "problem species that is associated with road graders." to read "problem species that is probably introduced by and/or dispersed by road graders."

Volume 2, Chapter 6, page 19. The discussion of the playa lake should be modified. According to BLM and SCS (Steve Shuck, BLM, and Roy Dunbar, SCS, personal communication), the lake is dry except in particularly wet years the center of the basin may be wet. The vegetation types occurring around the edge of the playa include western wheat grass, rushes, sedges and grass-like species. The last sentence of that paragraph ("The grass-like vegetation is used...in the study area.") should be deleted.

Volume 2, Chapter 7, following Table I:
Add: Table II: Impact Types Relevant to Biological Resources.

Volume 2, Chapter 7, page 19, line one: change "grouse breeding area" to read "grouse lek or breeding habitat." Following that sentence, add: "As mapped in

this study, the leks (Figure 4-4) include a buffer zone (1.5-2.0 miles) around them and is considered to be the area in which the majority of grouse using the lek breed. Thus, even though a lek is not surrounded by a mapped (patterned) breeding habitat, an inferred breeding area is included in the assessment. Breeding areas for grouse are only mapped where there is sage brush cover, which is considered to be optimum grouse nesting habitat."

Volume 2, Chapter 7, page 19, lines three and four, after "by" insert "noise and removal of habitat resulting from."

Volume 2, Chapter 7, page 19, line four, after "powerline" insert "Long-term residual impact to the grouse would include bird mortality from collisions with the transmission lines particularly when the grouse move to and from leks; however, the potential or impact in this case will remain low if the corridor is sited more than 0.5 mile from a grouse lek. Another possible short-term impact is the disturbance to nesting raptors during the construction phase; however, the potential for this impact is considered to be low because of the avoidance by the corridors of prime raptor nesting habitat such as rough breaks and riparian habitats. Because of the potential for disturbance to raptors, construction noise should be kept within tolerance levels."

Volume 2, Chapter 7, page 19, following line 13, add "A potential residual impact of construction-related activities would be the establishment and propagation of noxious weeds that would be detrimental to the adjacent cropland. The magnitude of this impact will be low if clearing of vegetation is kept to a minimum acreage and if weed proliferation is closely monitored during construction and post-construction (one to two years) phases."

Volume 2, Chapter 7, Appendix B, a sage grouse lek is located along the preferred route and should be added to this table: "T28N R38E Section 34 NW¼ NW¼ NE¼."

Volume 2, Natural Environment, Chapter 7

(A) Table 1: Wildlife and Vegetation Impact Model footnote number 2
Change: See Table 1, Chapter 1 to See Table 4, Chapter 1

(B) Table 1: Wildlife and Vegetation Impact Model
In column headed by Selected Mitigations
Change: 8 to 7

(C) Table 1: Wildlife and Vegetation Impact Model
For Grouse breeding area under column headed by Selected Mitigations
Add: 12

Volume 3, Chapter 8, page 24, "The park is managed by the Hill County Kiwanis Club." Change to read: "The park is managed by the Hill County Park Board."

TABLE III: REVISIONS
Map Unit Characteristics

Map Unit	Components[1]	Shrink-swell Potential	Flooding Frequency	Slumping Hazard	Water Erosion[2]	Wind Erodibility[3] Group (WEG)	Compaction Susceptibility	Revegetation Constraints
5	35% Delpoint	low	none	stable	moderate-high	(4L)	moderate	minor
	20% Marmarth-	moderate	none	-	slight-high	(6)	moderate	minor
	Reeder	moderate	none	-	slight-moderate	(6)	moderate	minor
	5% Cambert	moderate	none	-	slight-high	(6)	moderate	minor
	40% Cabbart-	low-moderate	none	-	slight-high	(4L)	low	minor
	Rentsac	low	none	-	slight-high	(4L)	variable	minor
	Rock outcrop	not available	not available	-	high	(4)	variable	maximum
	Torriorthents	not available	not available	-	slight-moderate	(4L)	variable	variable
	Other soils	not available	not available	-	variable	various	variable	variable

Volume 3, Chapter 8, throughout the chapter, there was reference to both the Charles M. Russell Wildlife Range and Charles M. Russell Wildlife Refuge which are one and the same. The official title is the Charles M. Russell National Wildlife Refuge.

Volume 3, Chapter 8, in "References," sources for Recreation include the following:

Montana Department of Fish & Game. 1978 Montana Statewide Comprehensive Outdoor Recreation Plan (SCORP), Volumes I and 2, March I, 1978.

Montana Department of Fish, Wildlife and Parks. n.d. Montana Recreation Guide.

U.S. Department of the Interior, Bureau of Land Management. Prairie Potholes Draft EIS, March 1981.

U.S. Department of the Interior, Bureau of Land Management. 1973. Management Framework Plan, Valley Resource Area.

U.S. Department of the Interior, Bureau of Land Management. 1973. Management Framework Plan, Phillips Resource Area.

U.S. Department of the Interior, Bureau of Land Management. Management Framework Plan, 1973, Havre Resource Area.

U.S. Department of the Interior, Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife. n.d. Bowdoin National Wildlife Refuge.

Volume 3, Chapter 9, Table IV, the positions of the headings "Wirth Associates Revisions" and "BLM Ratings" should be reversed.

APPENDICES

APPENDIX A
LIST OF AGENCIES CONTACTED

APPENDIX A
LIST OF AGENCIES CONTACTED

AGENCY	STUDY COMPONENT	DATE	TYPE OF CONTACT	SUMMARY
Federal				
Department of the Interior				
Bureau of Land Management				
Burt Williams, State Archaeologist	CR	10/21/82	Letter	Native American cultural resources data collection.
State				
Montana State University				
William Tietz, President	CR,LU, VR,PM	10/15/82	Meeting	Meet with President Tietz and the MSU Committee on Fort Assinniboine to discuss eligibility boundary criteria and location and land use inventory data.
	CR,LU, VR,PM	11/15/82	Meeting	Presented the results of the environmental studies and preferred route selection to the MSU Fort Assinniboine committee.

List of Agencies Contacted (continued)

AGENCY	STUDY COMPONENT	DATE	TYPE OF CONTACT	SUMMARY
State (continued)				
Leslie B. Davis, Professor	CR	10/21/82	Letter	Native American cultural resources data collection.
		10/27/82	Telephone	Native American cultural resources data collection.
		11/5/82	Telephone	Native American cultural resources data collection.
		11/8/82	Meeting	Native American cultural resources data collection.
		11/15/82	Meeting	Native American cultural resources data collection.
Northern Montana Agricultural Research Center				
Donald Anderson	LU,VR, CR,PM	9/16/82	Meeting	Discussed the sensitive areas within the Research Center related to land uses, visual concerns, historic uses and adjacent and ownership.
	LU,VR, CR,PM	10/3/82	Meeting	Discussed alternative corridors and made adjustments relative to agricultural use considerations.

List of Agencies Contacted (continued)

AGENCY	STUDY COMPONENT	DATE	TYPE OF CONTACT	SUMMARY
State (continued)				
State Historic Preservation Office				
Marcella Sherfy, Deputy SHPO	CR	8/31/82	Meeting	Discussed scope of work for eligibility determination focusing on Fort Assinniboine.
	CR	9/29/82	Meeting	Discussed findings of file search on Fort Assinniboine eligibility issue and basis for initial boundary determination.
	CR	10/21/82	Letter	Native American cultural resources data collection.
	CR	11/03/82	Telephone	Discussed status of eligibility boundary determination.
	CR	11/05/82	Letter	Invitation to attend public meetings in Havre on November 16 regarding alternative routes in the vicinity of Fort Assinniboine.
	CR	11/16/82	Meeting	Presented the results of the environmental studies and preferred route selection.

List of Agencies Contacted (continued)

AGENCY	STUDY COMPONENT	DATE	TYPE OF CONTACT	SUMMARY
County				
Hill County Health and Planning Office				
Terry Schultz	LU	10/27/82 10/28/82	Meetings	Gathered current data on Herron Park Subdivision and Evergreen Campground
Havre City - County Airport Board				
Neal Brennd	LU	10/28/82	Meeting	Discussed airport plans and determined that there are no current airport expansion plans. There are no potential conflicts with the proposed transmission line with or without the airport expansion plans.
Special Interest Groups				
Individuals				
James W. Spangelo, Attorney	CR	10/21/82	Letter	Native American cultural resources data collection.
		11/3/82	Telephone	Native American cultural resources data collection.

List of Agencies Contacted (continued)

AGENCY	STUDY COMPONENT	DATE	TYPE OF CONTACT	SUMMARY
Special Interest Groups (continued)				
		11/4/82	Meeting	Native American cultural resources data collection.
		11/6/82	Meeting	Native American cultural resources data collection.
James W. Zion, General Council Montana Indian Rights Advocates		10/21/82	Letter	Native American cultural resources data collection.
Institutional				
University of Montana, Missoula				
Katherine M. Weist, Associate Professor	CR	10/21/82	Letter	Native American cultural resources data collection.
		10/28/82	Telephone	Native American cultural resources data collection.
		11/22/82	Telephone	Native American cultural resources data collection.
Buffalo Bill Museum				
George Horse Capture, Curator - Plains Indians		10/21/82	Letter	Native American cultural resources data collection.
		10/28/82	Telephone	Native American cultural resources data collection.
		11/29/82	Letter	Native American cultural resources data collection.

List of Agencies Contacted (continued)

AGENCY	STUDY COMPONENT	DATE	TYPE OF CONTACT	SUMMARY
Native American				
Fort Belknap Agency				
Henry Brockie, Chairman Fort Belknap Tribal Council	CR	10/21/82	Letter	Native American cultural resources data collection.
		10/28/82	Telephone	Native American cultural resources data collection.
John Capture, Member Fort Belknap Indian Community	CR	10/21/82	Letter	Native American cultural resources data collection.
		11/6/82	Telephone	Native American cultural resources data collection.
Preston Stiffarm, Director Fort Belknap Cultural Commission	CR	10/21/82	Letter	Native American cultural resources data collection.
		11/3/82	Telephone	Native American cultural resources data collection.
Fort Peck Agency				
Jerome Fourstar, Member Fort Peck Indian Reservation	CR	10/21/82	Letter	Native American cultural resources data collection.
Norman Hollow, Chairman Fort Peck Tribal Council	CR	10/21/82	Letter	Native American cultural resources data collection.
		10/28/82	Telephone	Native American cultural resources data collection.

List of Agencies Contacted (continued)

AGENCY	STUDY COMPONENT	DATE	TYPE OF CONTACT	SUMMARY
Native American (continued)				
Rocky Boy Agency - Chippewa-Cree Tribe				
Delia Day Sleep, Member	CR	11/6/82	Meeting	Native American cultural resources data collection.
Francis Four Souls, Member	CR	11/4/82	Telephone	Native American cultural resources data collection.
		11/5/82	Meeting	Native American cultural resources data collection.
Florence Standing Rock, Member	CR	11/4/82	Meeting	Native American cultural resources data collection.
		11/5/82	Meeting	Native American cultural resources data collection.
Geneva Stumpf, Member	CR	10/21/82	Letter	Native American cultural resources data collection.
		10/27/82	Telephone	Native American cultural resources data collection.
		11/3/82	Meeting	Native American cultural resources data collection.
		11/4/82	Meeting	Native American cultural resources data collection.
		11/5/82	Meeting	Native American cultural resources data collection.
		11/6/82	Meeting	Native American cultural resources data collection.
		11/7/82	Meeting	Native American cultural resources data collection.
		11/22/82	Telephone	Native American cultural resources data collection.

List of Agencies Contacted (continued)

AGENCY	STUDY COMPONENT	DATE	TYPE OF CONTACT	SUMMARY
Native American (continued)				
Tribal Council (7 members)	CR	10/21/82	Letter	Native American cultural resources data collection.
		11/3/82	Meeting	Native American cultural resources data collection.
John Windy Boy, Tribal Council Chairman	CR	10/21/82	Letter	Native American cultural resources data collection.
		10/27/82	Telephone	Native American cultural resources data collection.
		11/3/82	Meeting	Native American cultural resources data collection.
Old Man Windy Boy, Member	CR	11/6/82	Telephone	Native American cultural resources data collection.
		11/6/82	Meeting	Native American cultural resources data collection.
		11/7/82	Meeting	Native American cultural resources data collection.

FORT ASSINNIBDINE ADDENDUM STUDY AREA

54b
60
54c
56
59
57
61
65
66
Havre Substation
58
63
64
62

FORT ASSINNIBOINE ADDENDUM STUDY

Fort Peck-Havre Transmission Line Project

0 .25 .5 .75 1 miles

NORTH

Northern Agricultural Research Center

Fort Assinniboine National Eligibility Boundary

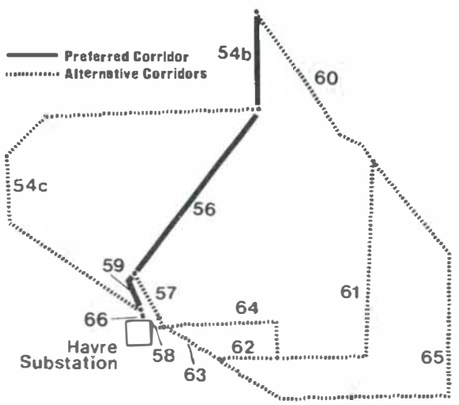
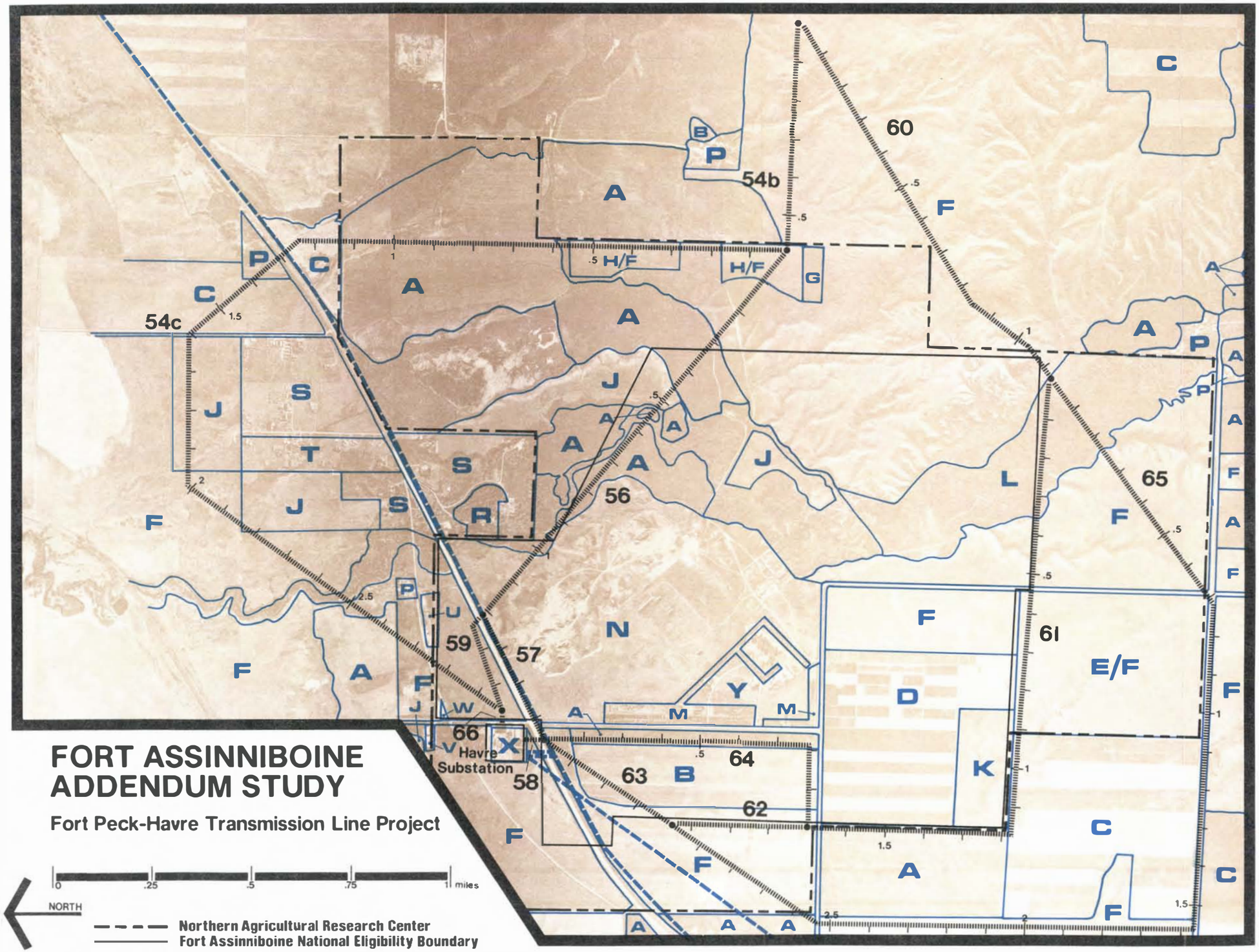


Figure 1-1AF



FORT ASSINNIBOINE ADDENDUM STUDY

Fort Peck-Havre Transmission Line Project

AFFECTED ENVIRONMENT: EXISTING AND PLANNED LAND USE

- A Irrigated Alfalfa
- B Irrigated Corn
- C Wheat
- O Agronomy Research Plots
- E Potential Agronomy Research Site
- F Range
- G Range Research Site
- H Future Range Research Site
- J Hay/Pasture
- K Historic Native Prairie Plot (ungrazed since 1915)
- L Winter Grazing Area
- M Shelter Belt
- N Multiple Use Agriculture Area
- P Farmstead
- R Evergreen Campground
- S Residential
- T Herron Park Subdivision
- U Stockyard
- V Commercial Warehouse
- W Highway Department Sand Pile
- X Havre Substation
- Y Experimental Station Headquarters
- H-Frame Transmission Line

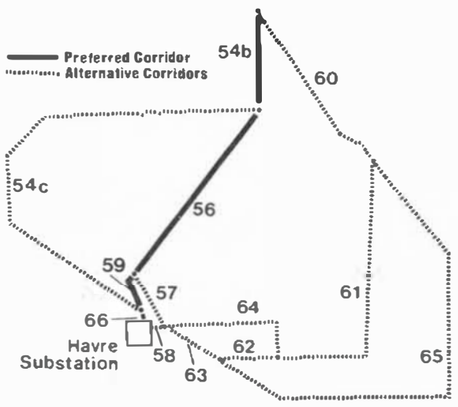
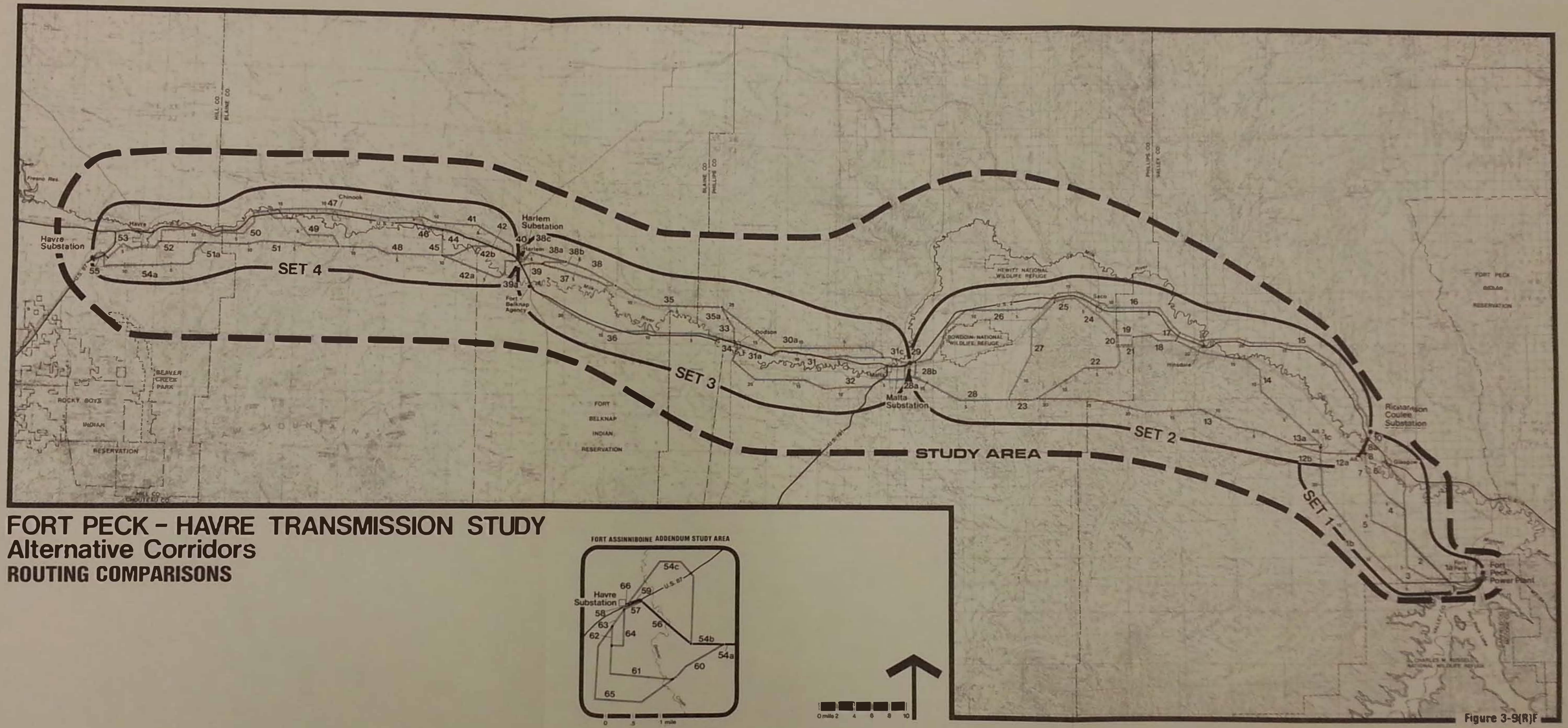


Figure 1-2AF

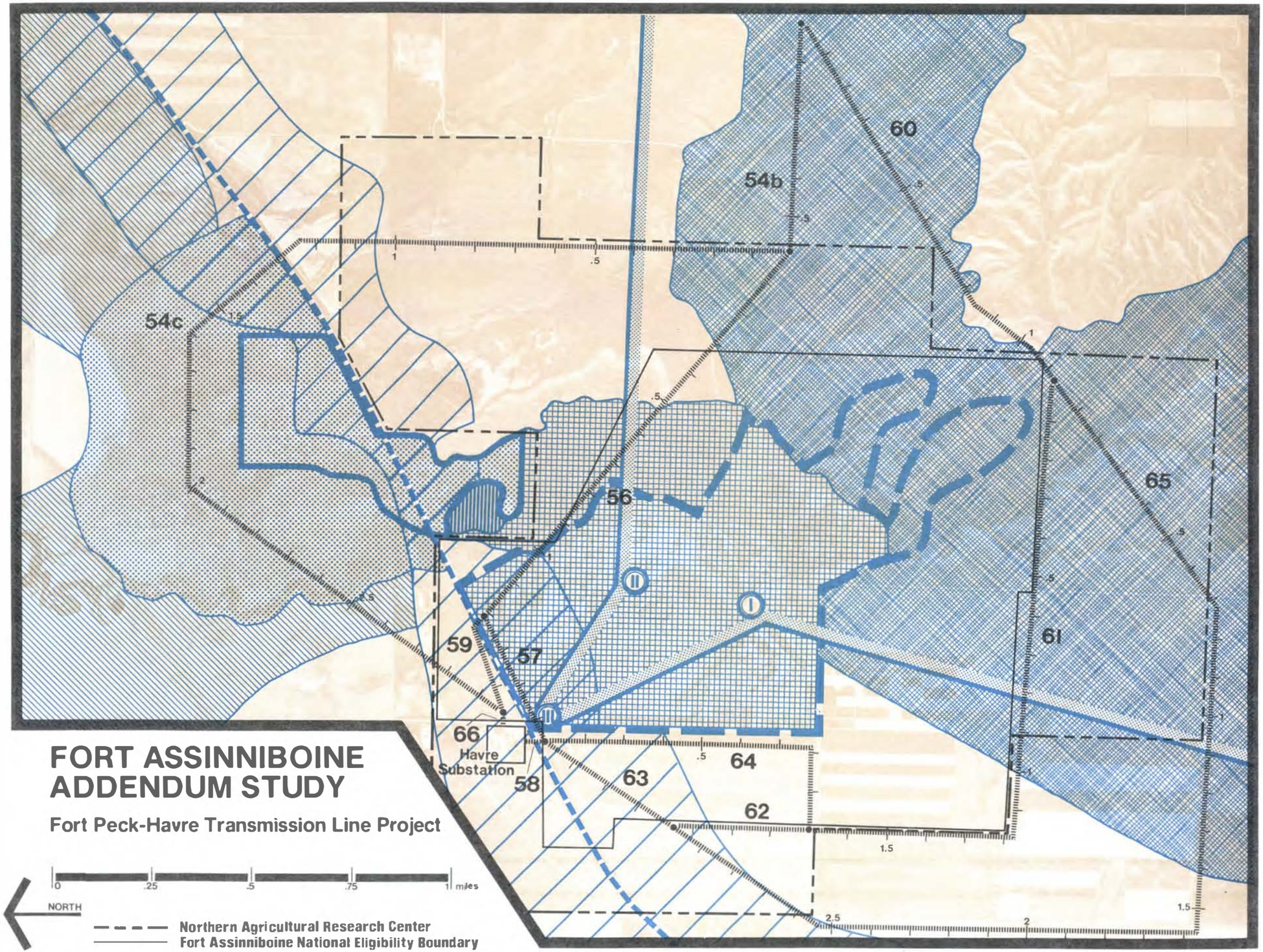


FORT PECK - HAVRE TRANSMISSION STUDY

Alternative Corridors

ROUTING COMPARISONS

Figure 3-9(R)F



FORT ASSINNIBOINE ADDENDUM STUDY

Fort Peck-Havre Transmission Line Project

0 .25 .5 .75 1 miles

NORTH

Northern Agricultural Research Center

Fort Assinniboine National Eligibility Boundary

AFFECTED ENVIRONMENT: VISUAL RESOURCES

Key Viewing Areas and Visual Influence Zones

- Historic Related
  - Fort Assinniboine
    - Foreground
    - Middleground
- Residential/Highway Related
  - Herron Park Residential Area
    - Foreground
    - Middleground
  - Evergreen Campground
    - Foreground
  - Highway 87
    - Foreground
- Viewpoints I, II and III
- Zone of Visual Integrity

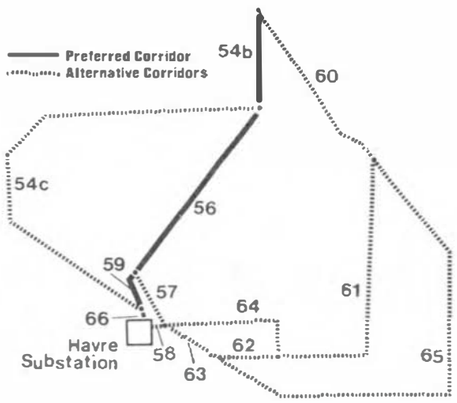
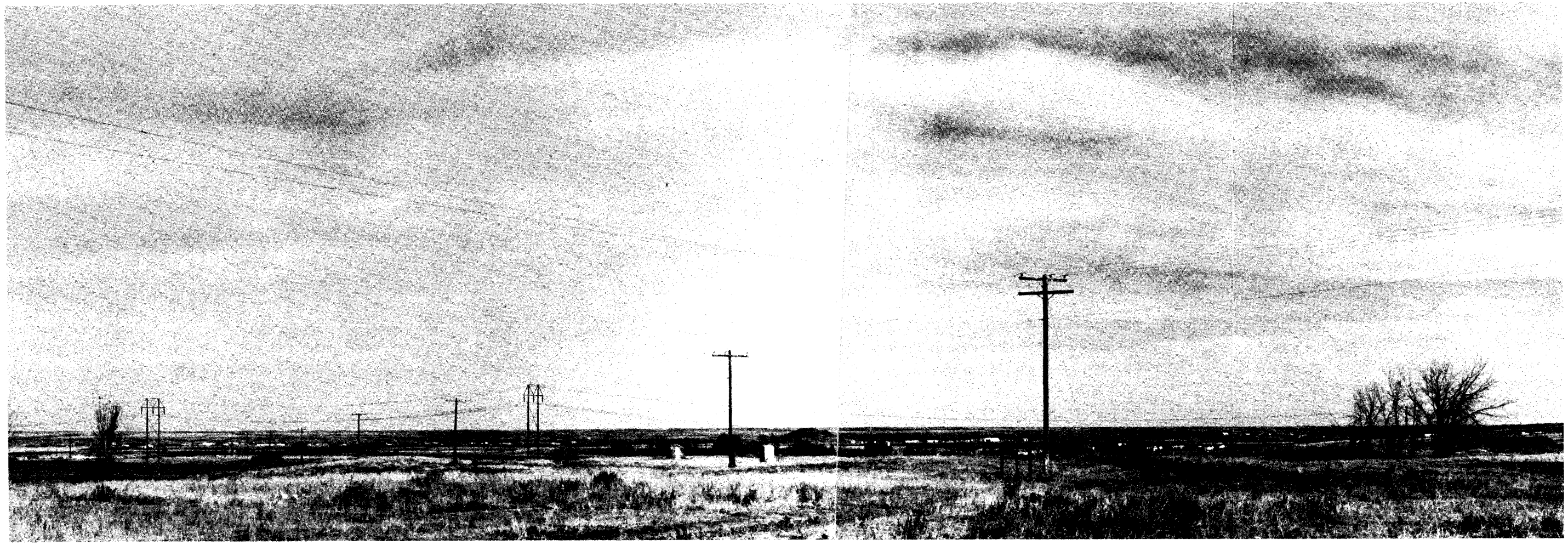


Figure 1-3AF



VIEW TOWARD LINKS 56 AND 54b FROM FORT ASSINNIBOINE

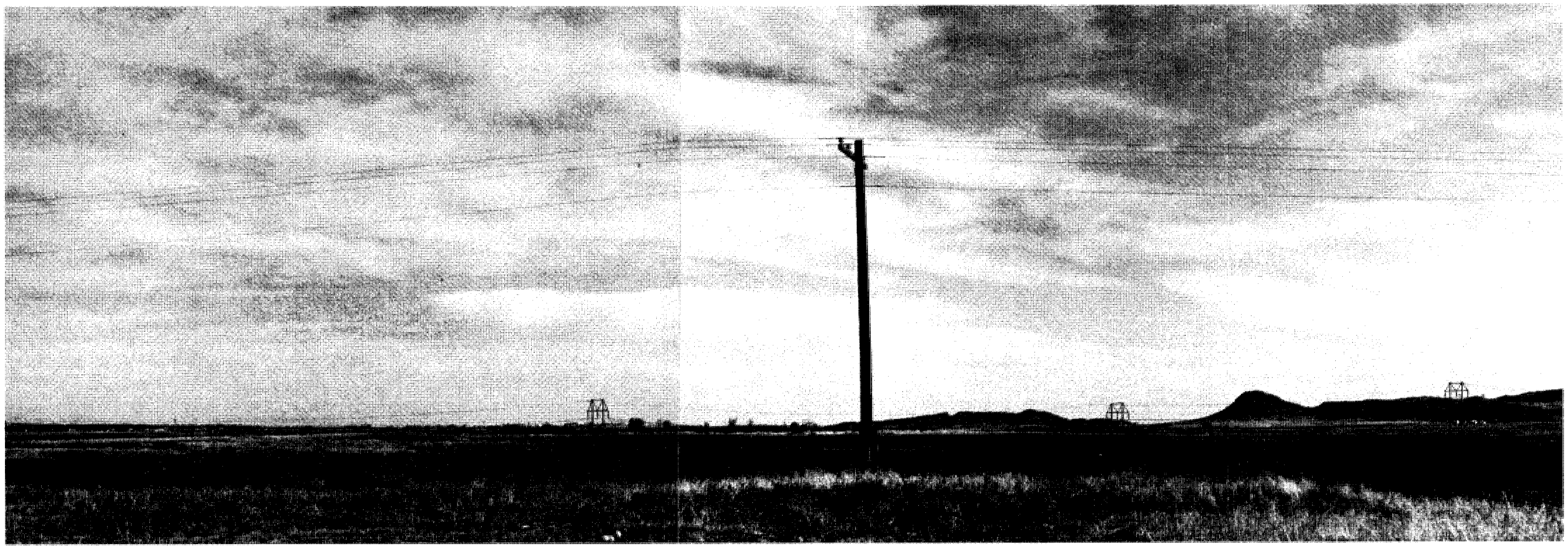
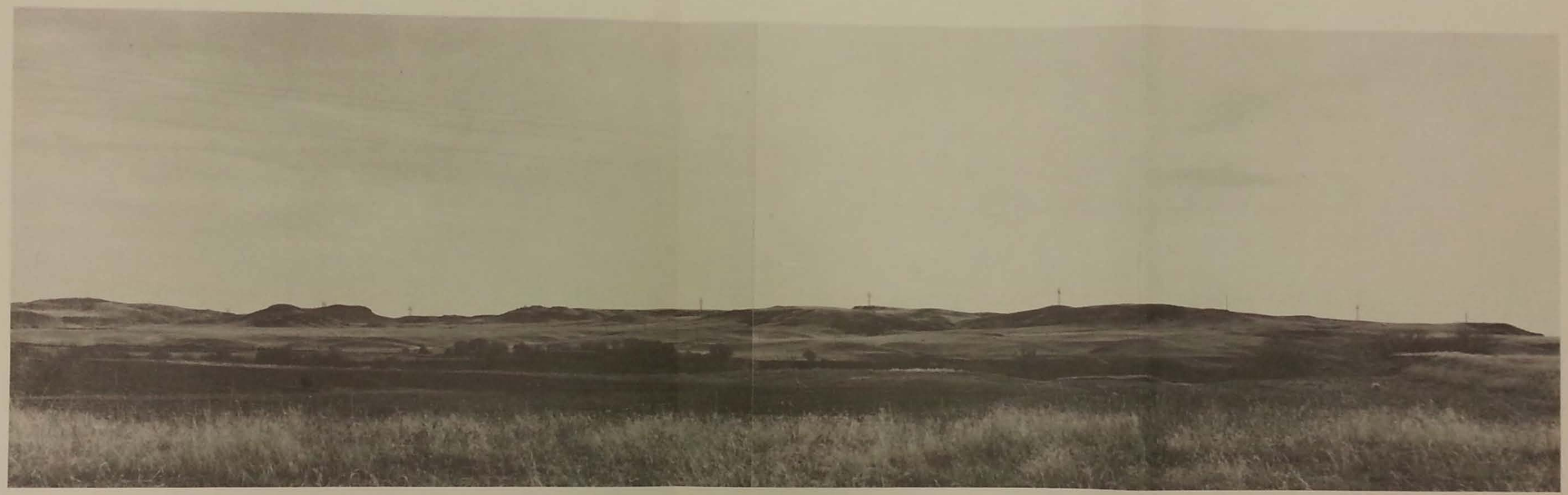


Figure 1-4AF



VIEW TOWARD LINK 60 FROM FORT ASSINNIBOINE

Figure 1-SAF

VIEW TOWARD LINK 61 FROM FORT ASSINNIBOINE

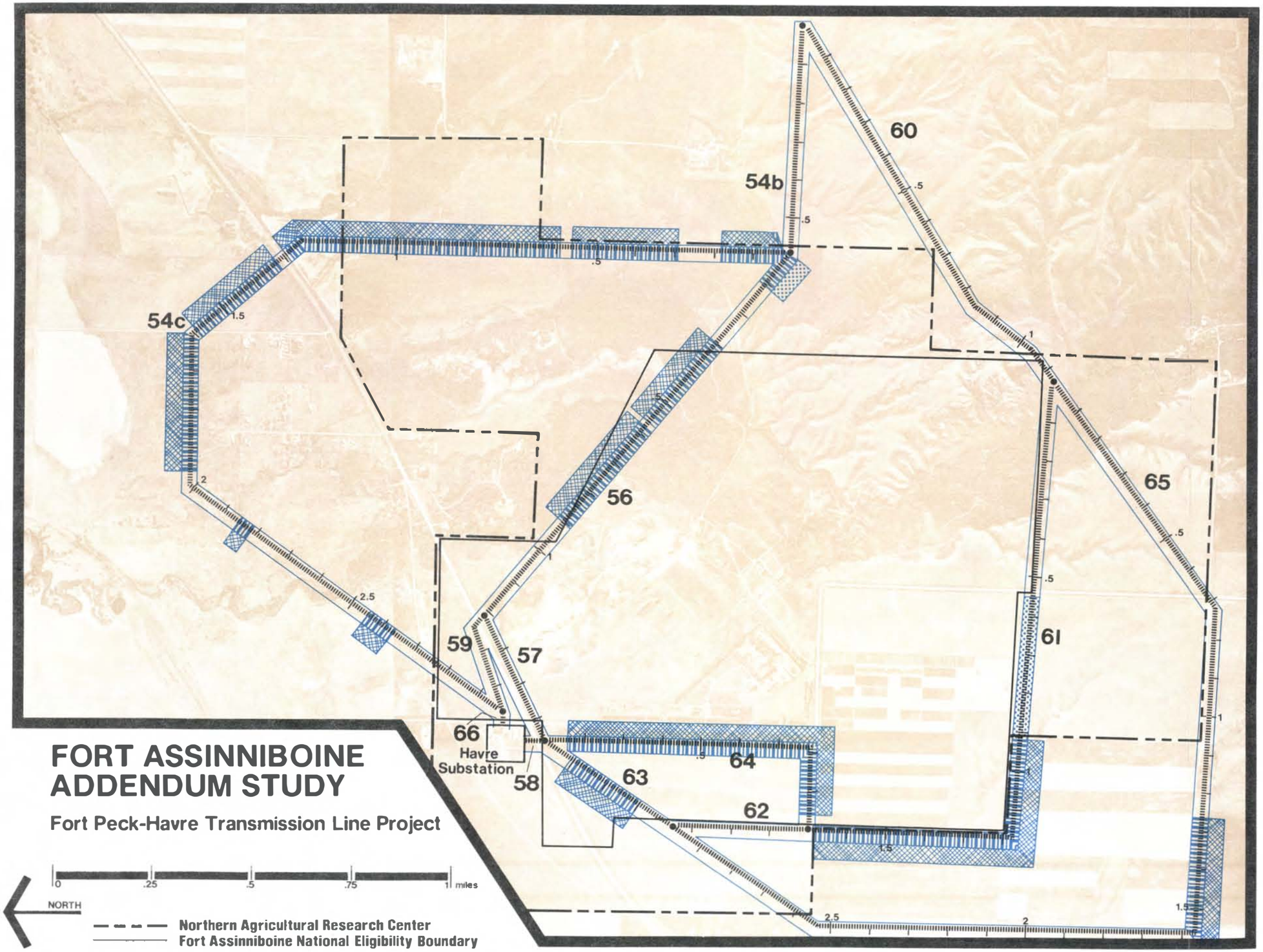
Figure 1-6AF

VIEW TOWARD LINK 54c FROM HERRON PARK

Figure 1-7AF

ENVIRONMENTAL CONSEQUENCES: EXISTING AND PLANNED LAND USE

- High Impact
- Moderate Impact
- Low Impact
- No Identifiable Impact



FORT ASSINNIBOINE ADDENDUM STUDY

Fort Peck-Havre Transmission Line Project

0 .25 .5 .75 1 miles

NORTH

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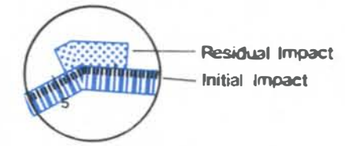
Fort Assinniboine National Eligibility Boundary



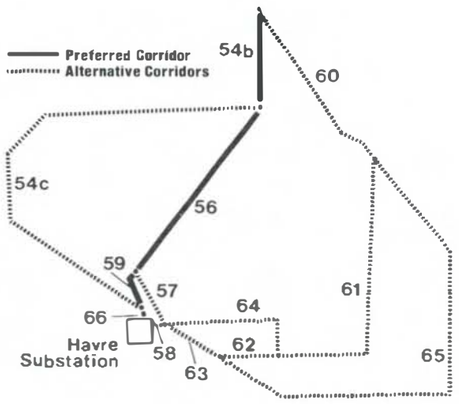


Figure 1-8AF

ENVIRONMENTAL CONSEQUENCES: VISUAL RESOURCES

Impact Levels

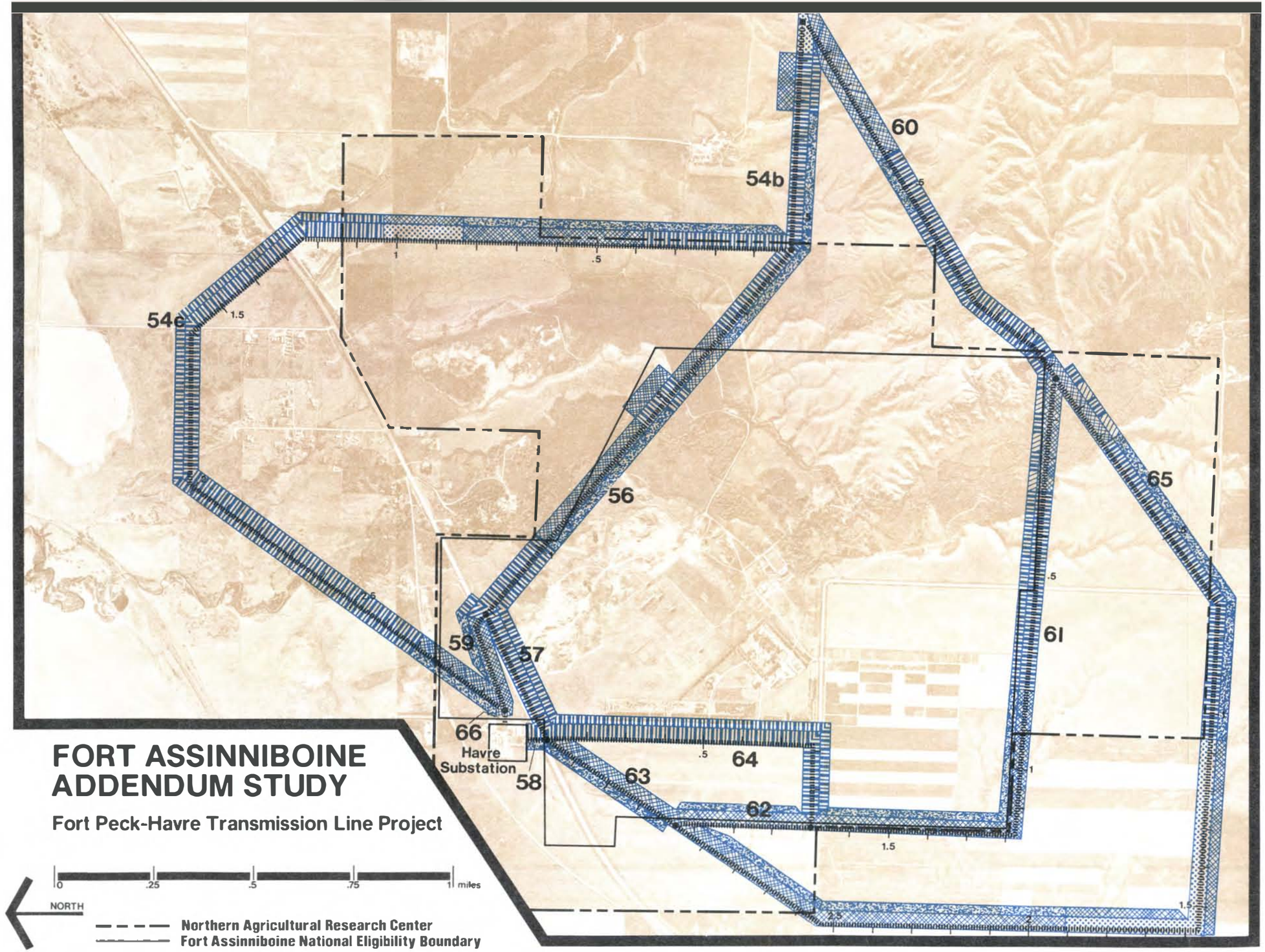
- High Impact
- Moderate Impact
- Low Impact
- No Identifiable Impact

Visual Dominance Levels

- Dominant
- Co-dominant
- Subordinate
- Detectable
- Undetectable

FORT ASSINNIBOINE ADDENDUM STUDY

Fort Peck-Havre Transmission Line Project



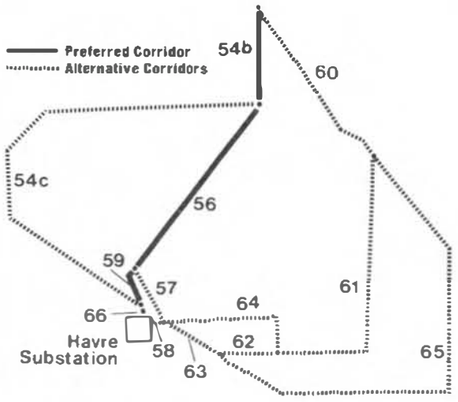


Figure 1-9AF

ARCHAEOLOGICAL RESOURCES

AFFECTED ENVIRONMENT

Probability of Encountering Sites

- High
- Moderate
- Low

ENVIRONMENTAL CONSEQUENCES

- High Impact
- Moderate Impact
- Low Impact
- No Identifiable Impact

FORT ASSINNIBOINE ADDENDUM STUDY

Fort Peck-Havre Transmission Line Project

0 .25 .5 .75 1 miles

NORTH

Northern Agricultural Research Center

Fort Assinniboine National Eligibility Boundary

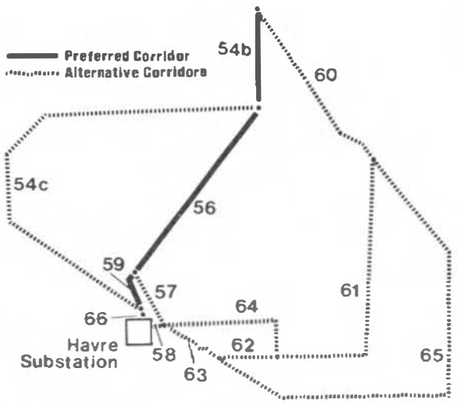


Figure 1-10AF

HISTORICAL RESOURCES

AFFECTED ENVIRONMENT

- Fort Assinniboine/Agricultural Experiment Station Historic-Site Area
- Fenced Area of Fort Assinniboine (1908)

ENVIRONMENTAL CONSEQUENCES

Visual Dominance of Alternative Corridors From Historic Areas

- Dominant
- Co-dominant
- Subordinate
- Detectable
- Undetectable

- Representative Viewpoints
- Zone of Historic Visual Integrity

FORT ASSINNIBOINE ADDENDUM STUDY

Fort Peck-Havre Transmission Line Project

0 .25 .5 .75 1 miles

NORTH

Northern Agricultural Research Center

Fort Assinniboine National Eligibility Boundary

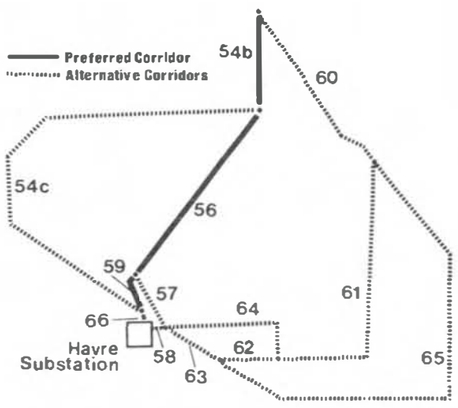
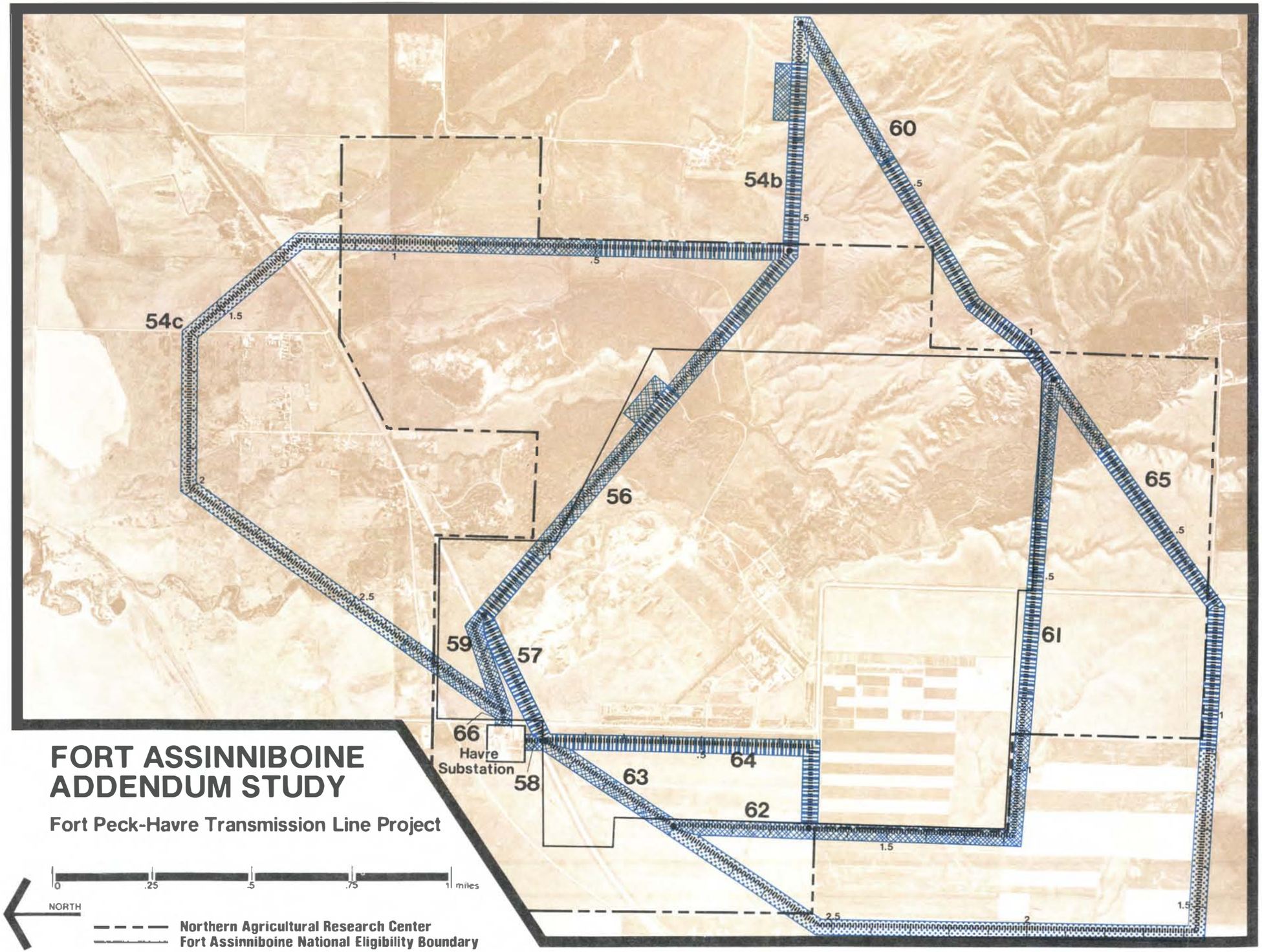


Figure 1-11AF

ENVIRONMENTAL CONSEQUENCES: HISTORICAL RESOURCES

- High Impact
- Moderate Impact
- Low Impact
- No Identifiable Impact



FORT ASSINNIBOINE ADDENDUM STUDY

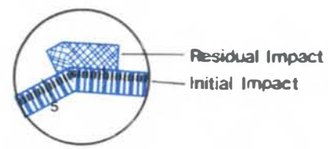
Fort Peck-Havre Transmission Line Project

0 .25 .5 .75 1 miles

NORTH

Northern Agricultural Research Center

Fort Assinniboine National Eligibility Boundary



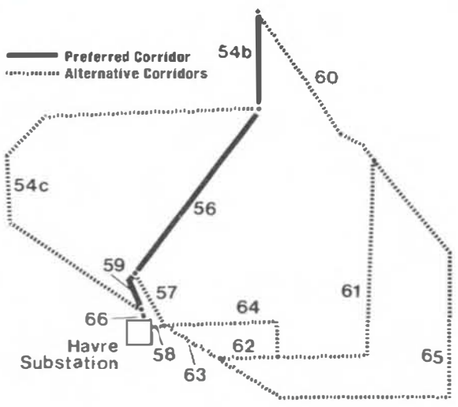
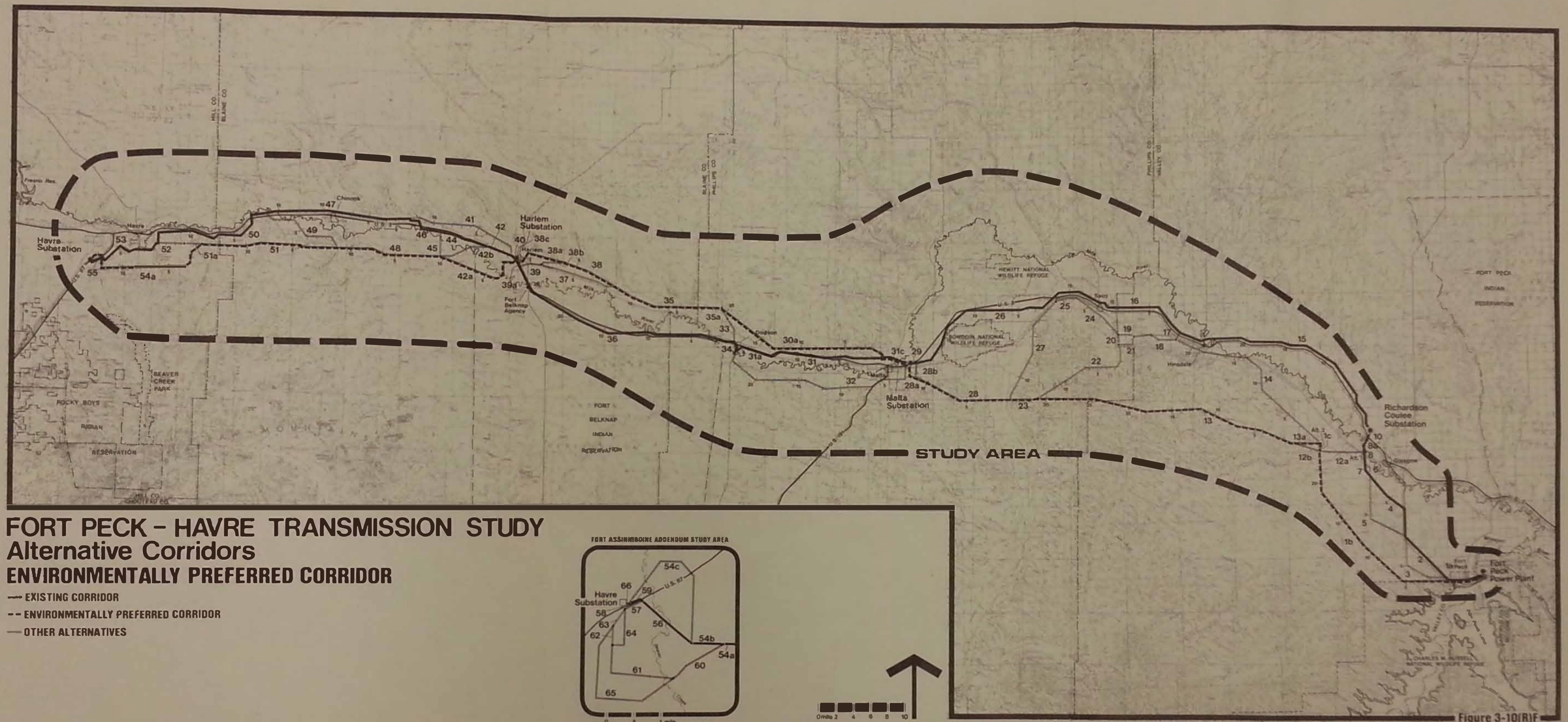


Figure 1-12AF



FORT PECK - HAVRE TRANSMISSION STUDY

Alternative Corridors

ENVIRONMENTALLY PREFERRED CORRIDOR

— EXISTING CORRIDOR

-- ENVIRONMENTALLY PREFERRED CORRIDOR

— OTHER ALTERNATIVES

Figure 3-10(R)F

TABLE 3-IF
FORT PECK-HAVRE ENVIRONMENTAL STUDY
ENVIRONMENTAL ASSESSMENT SUMMARY

RESOURCES	CORRIDOR SELECTION: Baseline Data Collection	Sensitivity Level: Maximum	Sensitivity Level: Major	Sensitivity Level: Moderate	Sensitivity Level: Minimal	Corridor Siting: Primary Siting Factor	Corridor Siting: Siting Refinement Factor	CORRIDOR IMPACT SUMMARY: Corridor Data Refinement	CORRIDOR IMPACT SUMMARY: Existing 161kV Line Route	CORRIDOR IMPACT SUMMARY: Preferred Route	CORRIDOR IMPACT SUMMARY: Cumulative Resource Impacts		
EARTH RESOURCES													
INVENTORY													
Map Unit 1 - Loamy Glacial Till Soils On Uplands													
Wind Erodibility	●			●									
Water Erosion													
Class 1 - 0-8% slope	●			●				●	68.2	62.8			
Class 2 - 8-15% slope	●			●				●	4.1	27.2			
Class 3 - 15-25% slope	●		●			●		●	1.1	9.3			
Class 4 - Greater than 25% slope	●		●			●		●	0.0	0.1			
Revegetation Constraints	●			●									
Map Unit 2 - Dominantly Clay - Pan Soil On Glaciol Till Uplands													
Wind Erodibility	●			●									
Water Erosion													
Class 1 - 0-8% slope	●			●				●	0.0	15.1			
Class 2 - 8-15% slope	●			●				●	0.0	2.9			
Class 3 - 15-25% slope	●		●			●		●	0.0	0.6			
Class 4 - Greater than 25% slope	●		●			●		●					
Revegetation Constraints	●			●									
Map Unit 3 - Acid Shale Upland Soils						●							
Wind Erodibility	●			●									
Water Erosion													
Class 1 - 0-8% slope	●			●				●	2.4	5.3			
Class 2 - 8-15% slope	●		●					●	0.0	4.7			
Class 3 - 15-25% slope	●		●			●		●	0.0	0.0			
Class 4 - Greater than 25% slope	●		●			●		●					
Revegetation Constraints	●		●										
Map Unit 4 - Calcareous Or Bentonite Shale Upland Soils						●							
Wind Erodibility	●			●									
Water Erosion													
Class 1 - 0-8% slope	●			●				●	3.6	13.3			
Class 2 - 8-15% slope	●		●					●					
Class 3 - 15-25% slope	●		●			●		●					
Class 4 - Greater than 25% slope	●		●			●		●	0.5	0.5			
Revegetation Constraints	●		●										
Map Unit 5 - Loamy Sedimentary Upland Soils													
Wind Erodibility	●			●									
Water Erosion													
Class 1 - 0-8% slope	●				●			●	0.0	11.0			
Class 2 - 8-15% slope	●			●				●	0.0	5.3			
Class 3 - 15-25% slope	●		●			●		●					
Class 4 - Greater than 25% slope	●		●			●		●	0.01	3.4			
Revegetation Constraints	●				●								
Map Unit 6 - Loamy And Clayey Alluvial Soils On Floodplains And Low Terraces													
Wind Erodibility	●			●									
Water Erosion													
Class 1 - 0-8% slope	●				●			●	100.7	16.4			
Class 2 - 8-15% slope	●		●					●	4.5	0.2			
Class 3 - 15-25% slope	●		●			●		●	0.9	0.0			
Class 4 - Greater than 25% slope	●		●			●		●	0.0	0.1			
Revegetation Constraints	●		●		●								

Corridor Selection Issues

EARTH RESOURCES

The key features for earth resources in corridor selection were:

Slopes

Class 3 - 15 to 25 percent slopes
Class 4 - greater than 25 percent slopes

Soil Types with Major Revegetation and Water Erosion Constraints

Units 3, 4, 6 and 13

Soil Types with Major Slumping Potential

Units 3 and 4

The primary concern in corridor selection was to avoid or minimize contact with the soil units and slope classes listed above. Due to the regional patterning of these soil units, it was not possible to completely avoid Units 3, 4 and 6. In general, slopes greater than 25 percent were avoided and contact with slopes between 15-25 percent were minimized with respect to the entire length of the preferred route.

Impact Assessment Issues

EARTH RESOURCES

Impact Types

The types of impacts assessed for earth resources included the potential for increased soil erosion resulting from direct effects of vegetation removal, soil grading for substations, transmission towers and access roads, and indirect effects of wind and water erosion, and slumping.

Water erosion impacts are related primarily to slopes of greater than eight percent, while wind erosion impacts are primarily related to soils (Map Unit 6). Impacts from wind and water are short-term, although areas of steep slopes and revegetation constraints will require additional times to reclaim. Impacts from slumping are long-term and are associated with portions of acid shales (Map Unit 3).

Impact Levels

Initial high impact levels were identified in acid shales (Map Unit 3) susceptible to slumping, on steep slopes (more than 15 percent) susceptible to water erosion, and in loamy and clayey alluvial soils (Map Unit 6) susceptible to wind and water erosion. Most impacts could be avoided by spanning or rerouting, and consequently low residual impacts were identified for most of these areas. Moderate residual impacts were identified in a few localities where acid shale (Map Unit 3) and steep slopes could not be avoided.

Cumulative Impact Issues

EARTH RESOURCES

The long-term soil erosion impacts resulting from the construction of the proposed 230kV transmission line will be minor, and comparable in magnitude, to conditions existing along the 161kV transmission line route.

The preferred 230kV transmission line corridor is located through more sensitive soil areas with respect to steep slopes (15 percent or greater), areas susceptible to slumping, and soils with revegetation constraints. The long-term impacts on soil erosion should be similar to the existing 161kV transmission line route, however, since potential impacts in these soils sensitive areas will be mitigated through careful tower replacements, minor route realignments and reclamation procedures. Increased short-term soil erosion impacts will result in both localities from the removal of the existing 161kV line and construction of the proposed 230kV line.

Table 3-1F (continued)
Environmental Assessment Summary

RESOURCES	CORRIDOR SELECTION: Baseline Data Collection	Sensitivity Level: Maximum	Sensitivity Level: Major	Sensitivity Level: Moderate	Sensitivity Level: Minimal	Corridor Siting: Primary Siting Factor	Corridor Siting: Siting Refinement Factor	Corridor Siting: Corridor Data Refinement	CORRIDOR IMPACT SUMMARY: Existing 161kV Line Route	CORRIDOR IMPACT SUMMARY: Preferred Route	CORRIDOR IMPACT SUMMARY: Cumulative Resource Impacts	SUMMARY OF RESOURCE ISSUES AND CONCERNS: Corridor Selection Issues	Impact Assessment Issues	Cumulative Impact Issues
(continued)														
Map Unit 8 - Moderotely Coarse And Coarse Textured Soils On Terraces, Fans and Foot Slopes														
Wind Erodibility	●			●										
Water Erosion														
Class 1 - 0-8% slope	●				●			●						
Class 2 - 8-15% slope	●			●				●						
Class 3 - 15-25% slope	●			●		●		●						
Class 4 - Greater than 25% slope	●		●					●						
Revegetation Constraints	●				●									
Map Unit 13 - Very Slowly Permeable Clay Alluvial Soils On Terraces And Fans														
Wind Erodibility	●			●										
Water Erosion														
Class 1 - 0-8% slope	●			●				●	7.1	0.0				
Class 2 - 8-15% slope	●		●					●	0.0	0.0				
Class 3 - 15-25% slope	●		●			●		●						
Class 4 - Greater than 25% slope	●		●			●		●						
Revegetation Constraints	●		●											
IMPACT RESULTS														
High									0.0	0.0				
Moderate									0.0	3.4				
Low									193.1	176.2				
None														
VEGETATION & WILDLIFE RESOURCES														
INVENTORY														
Vegetation (miles)														
Riparian	●	●				●		●	17.5	14.0				
Shrub Prairie (Upland)	●		●				●	●	2.7	16.5				
Prairie Dog Towns	●		●			●								
Rough Breaks	●		●			●		●	3.2	3.7				
Prairie (Upland)	●				●			●	66.5	135.6				
Irrigated Agriculture	●			●				●	59.3	9.5				
Dryland Agriculture	●				●			●	36.8	26.4				
Open Water	●		●			●		●	1.6	1.4				
Wildlife Habitat (miles)														
Marsh	●	●				●		●	1.2	0.8				
Grouse Breeding Area and Leks	●		●			●		●	0.0	21.1				
Bowdoin National Wildlife Refuge	●	●				●		●	11.7	0.0				
White Tailed Deer - IA	●						●	●	30.3	7.9				
Mule Deer - IA	●						●	●	6.3	22.2				
Pronghorn Antelope - IA	●						●	●	9.0	17.3				
IMPACT RESULTS (miles)														
High									11.7	0.0				
Moderate									0.0	14.0				
Low									181.4	165.6				
None														

VEGETATION, WILDLIFE AND WETLAND RESOURCES

The key vegetation, wildlife and wetland resource features in corridor selection included:

Vegetation

Riparian Vegetation
Upland Shrub Prairie (grouse habitat)
Rough Breaks

Wetlands

Riparian Vegetation
Marshes
Open Water

Wildlife Habitat

Bowdoin National Wildlife Refuge
Marshes
Grouse Breeding Areas and Leks
Prairie Dog Towns
Rookeries

The priority concerns for vegetation and wildlife in corridor selection were to exclude the Bowdoin National Wildlife Refuge and the associated potential waterfowl collision zone from alternative corridor locations and avoid contact with open water, riparian vegetation and marshes. In addition, resources of major sensi-

VEGETATION, WILDLIFE AND WETLAND RESOURCES

Impact Types

The types of potential impacts that were evaluated for vegetation, wildlife and wetland resources included:

- o Potential reductions in carrying capacity of terrestrial and aquatic habitats for Federally classified threatened or endangered species and state-listed protected, threatened, unique or otherwise sensitive species.
- o Physical affects to relatively undisturbed rare or unique vegetation types, species, communities or areas.
- o Alterations to the diversity of any biotic community or population numbers of any plant or animal species.
- o Potential reductions in carrying capacity of any important or highly productive habitat of wildlife species of sport, spectator, commercial or educational value.
- o Physical disturbances to areas of low vegetation potential.

VEGETATION, WETLAND AND WILDLIFE RESOURCES

The cumulative impacts of the proposed action are considered to be primarily beneficial, since removal of the 161kV transmission line will: eliminate existing long-term impacts to the Bowdoin National Wildlife Refuge, will reduce physical impacts on riparian vegetation and marshes, and will reduce transmission collision hazards for waterfowl. The proposed 230kV transmission line corridor will disturb more shrub prairie upland vegetation and may have short-term adverse impacts on grouse breeding areas, however. Detailed surveys will be conducted prior to construction of the 230kV transmission line in order to minimize potential impacts on grouse breeding areas to the degree possible. Short-term adverse impacts will also result from the removal of the 161kV transmission line due to the physical disturbances that will occur to adjacent marshes and riparian vegetation.

Cumulative Impact Legend: ☐ Beneficial ◪ No Significant Change ■ Adverse

Table 3-1F (continued)
Environmental Assessment Summary

RESOURCES	CORRIDOR SELECTION: Baseline Data Collection	Sensitivity Level: Maximum	Sensitivity Level: Major	Sensitivity Level: Moderate	Sensitivity Level: Minimal	Corridor Siting: Primary Siting Factor	Corridor Siting: Siting Refinement Factor	Corridor Siting: Corridor Data Refinement	CORRIDOR IMPACT SUMMARY: Existing 161kV Line Route	CORRIDOR IMPACT SUMMARY: Preferred Route	CORRIDOR IMPACT SUMMARY: Cumulative Resource Impacts	Corridor Selection Issues	Impact Assessment Issues	Cumulative Impact Issues
(continued)												(continued)	(continued)	
WETLANDS (miles)												tivity for wildlife habitat, including shrub prairie (grouse habitat), grouse breeding areas and leks, prairie dog towns, rough breaks and rookeries, were avoided to the degree possible in corridor selection.	o Increased potential for wildfires.	
INVENTORY														
Riparian	●	●				●		●	17.5	14.0		The preferred route completely avoids the Bowdoin National Wildlife Refuge and reduces contact with riparian vegetation, marshes and open-water areas in comparison to the existing 161kV corridor. Due to the predominance of the upland shrub prairie vegetation and associated grouse habitat and breeding areas in the Larb Hills, contact with these resources was not avoidable. A biological survey will be conducted along the preferred corridor as mitigation to avoid impacts to grouse leks by transmission towers and access trails. The corridor selection process minimized contact with these sensitive biological resources.	**Impact Levels**	
Marsh	●	●				●		●	1.2	0.8			High impact were defined as those which could potentially cause significant unavoidable stress to wildlife and/or vegetation. High impacts were identified where the project would have significant adverse impacts on wetlands, the Bowdoin National Wildlife Refuge, grouse breeding areas, critical game ranges and important wildlife habitats.	
Open Water	●	●				●		●	1.6	1.4				
Ephemeral Streams	●	●				●		●	4.7	16.6				
Perennial Streams	●	●				●		●	6.6	2.4				
Stock Ponds	●		●			●		●	1.0	1.6				
Reservoirs	●		●			●		●	1.0	0.9				
Marshes/Playas	●	●				●		●	1.7	2.0				
Irrigation Canals	●		●			●		●	26.6	3.8				
Oxbow Lakes	●	●				●		●	0.4	0.3				
Floodplains	●		●			●		●	69.7	18.0				
IMPACT LEVELS (miles)														
High									3.6	0.0				
Moderate									44.2	4.1				
Low									24.2	13.7				
None									121.1	161.8				

Cumulative Impact Legend: ☐ Beneficial ◪ No Significant Change ■ Adverse

Table 3-1F (continued)
Environmental Assessment Summary

RESOURCES	CORRIDOR SELECTION: Baseline Data Collection	Sensitivity Level: Maximum	Sensitivity Level: Major	Sensitivity Level: Moderate	Sensitivity Level: Minimal	Corridor Siting: Primary Siting Factor	Corridor Siting: Siting Refinement Factor	Corridor Siting: Corridor Refinement	CORRIDOR IMPACT SUMMARY: Existing 161kV Line Route	CORRIDOR IMPACT SUMMARY: Preferred Route	CORRIDOR IMPACT SUMMARY: Cumulative Resource Impacts	Corridor Selection Issues	Impact Assessment Issues	Cumulative Impact Issues
													(continued) The following is a selected list of criteria considered effective for the mitigation of hazards to wildlife and/or vegetation: 1. Adherence to suggested guidelines for powerline construction to minimize the possibility of electrocution (see Hannum and others 1974). 2. Avoidance of major waterfowl movement routes, as occurs between Lake Bowdoin and Nelson Reservoir, and adjacent feeding areas to minimize aerial collisions. 3. Avoidance of new access road construction as is feasible in sensitive habitats. 4. Pre-construction surveys in grouse habitat. 5. Avoidance of clearing riparian vegetation. After the application of selected mitigation procedures, initial impact levels dropped to low residual impact levels in almost all cases. In the situation where there was no selective mitigation applied, the residual impact was considered to remain the same as the initial impact. Significant unavoidable impacts were those residual impacts which remained high even after selective mitigation procedures were applied. In this study, stress to Federally listed endangered species, state-listed sensitive species or a Federally protected wildlife area was considered to be significant unavoidable impact.	
LAND USE INVENTORY **Land Jurisdictions** BLM Public Land	●							●	5.2	24.0		LAND USE **Land Jurisdictions** Land jurisdictions were considered during corridor selection on the basis of resource sensitivity, agency plans, policy or comment regarding transmission lines in general or specifically for the Fort Peck to Havre transmission line. Initially, the following jurisdictions were avoided by alternative corridors to the existing Fort Peck to Havre line based on resource sensitivity: U.S. Fish & Wildlife Service Bowdoin National Wildlife Refuge Indian Reservation Fort Belknap Reservation	LAND USE **Impact Types** The land use study evaluated potential direct and indirect physical impacts to existing or planned land uses. Adverse impacts on land uses were identified where the project could cause: o A permanent or temporary cessation, disruption or modification of current land use activities. o Any modification or elimination of future planning and development opportunities. o Any local or regional change in recreational activities.	LAND USE EXISTING AND PLANNED LAND USE The impacts of removing the existing 161kV transmission line and constructing the proposed 230kV transmission line are considered to be beneficial overall to existing and planned land uses. Beneficial cumulative impacts include: Reduced Agricultural Impacts Utilization of the proposed 230kV transmission line corridor will significantly reduce the amount of agricultural land affected by the project. Removal of the existing 161kV transmission line will result in the potential upgrading of 96 miles of existing agricultural land, and in particular, irrigated croplands, presently crossed for 59.2 miles. In addition, removal of the existing 161kV
BLM Bankhead-Jones LU	●							●	6.3	22.5				
U.S. Fish & Wildlife Service	●					●		●	0.0	0.0				
U.S. Army Corps of Engineers	●							●	4.2	9.4				
Montana Dept. of Lands	●							●	7.3	13.9				
Indian Reservation	●					●		●	23.1	3.4				
Incorporated Areas	●					●		●	0.4	0.0				
Unincorporated Areas	●					●		●	0.6	0.0				
County or Other	●							●	149.1	120.8				
Existing and Planned Land Use Agriculture Sprinkler-Irrigated Cropland	●	●				●			1.4	0.6				
Irrigated Cropland	●		●			●			57.8	8.9				
Nonirrigated Cropland	●		●			●			36.8	26.4				
Potentially Irrigable Cropland	●			●			●		9.1	3.5				
Rangeland (Vacant)	●				●				98.7	150.8				

Table 3-1F (continued)
Environmental Assessment Summary

RESOURCES	CORRIDOR SELECTION: Baseline Data Collection	Sensitivity Level: Maximum	Sensitivity Level: Major	Sensitivity Level: Moderate	Sensitivity Level: Minimal	Corridor Siting: Primary Siting Factor	Corridor Siting: Siting Refinement Factor	Corridor Siting: Corridor Data Refinement	CORRIDOR IMPACT SUMMARY: Existing 161kV Line Route	CORRIDOR IMPACT SUMMARY: Preferred Route	CORRIDOR IMPACT SUMMARY: Cumulative Resource Impacts
Residential											
Urban	●	●				●					
Residences (numbers)	●		●			●			52	12	
Subdivisions (Ex & Planned)	●		●			●			0.3	0.3	
Future Growth Areas	●			●		●			1.1	0.0	
Cemeteries	●	●				●					
Commercial (numbers)									52	12	
Industrial (numbers)									1	1	
Airstrip/Airport Interference	●					●			0.0	0.0	
Communication Facilities	●					●					
Resource Extraction Site (numbers)									6	4	
Oil Wells/Gas Wells	●						●				
Surface Mines	●						●				
Recreation & Preservation Land Uses											
Parks (State & County)	●		●			●					
Recreation Areas (Federal, State and Local)	●		●			●					
National Wildlife Refuge	●	●				●		●	4.5	9.3	
State Wildlife Management Area	●		●			●					
Fishing Areas											
National	●			●			●	●	0.0	0.2	
Other	●				●		●				
Hunting Areas	●										
Public	●				●		●	●	9.1	28.6	
Private	●				●		●	●	94.5	40.4	
Rifle Range	●			●			●				
Campgrounds	●		●				●	●	0.1	0.0	
Golf Courses	●		●				●				
Roadside Interpretive Sites	●		●				●	●	0.4	0.1	
Roadside Rest Areas	●			●			●	●	0.2	0.0	
Spectator Sport Facilities	●			●			●				
Transportation & Utilities											
Highways & Roads	●							●			
Crossed (numbers)						●		●	53	51	
Paralleled (Miles)						●		●	172.3	8.0	
Utility ROWs	●										
161kV (Miles Paralleled)						●		●	169.7	5.4	
69kV (Miles Paralleled)							●	●	93.4	0.0	
Pipelines (Miles Paralleled)							●	●	8.2	2.6	
Railroad (Miles Paralleled)							●	●	32.1	0.1	
IMPACT RESULTS											
Existing & Planned LU											
High									1.4	0.6	
Moderate									105.6	37.2	
Low									10.2	4.2	
None									75.9	137.6	
Recreation & Preservation Land Uses											
High									0.0	0.0	
Moderate									0.0	0.0	
Low									106.1	75.4	
None									87.0	104.2	

Corridor Selection Issues

(continued)

Incorporated Areas

Unincorporated Areas

Through public involvement and detailed routing refinement, a portion (3.4 miles) of the Fort Belknap Reservation is crossed by the preferred route. The resource sensitivity of each jurisdiction was evaluated independently under the natural, human and cultural resource investigations.

Existing and Planned Land Use

The key land use features that were included, or avoided to the extent possible by alternative corridors, included:

Agricultural
- Sprinkler-irrigated Cropland
- Irrigated Cropland
- Nonirrigated Cropland

Residential (all categories)
- Cemeteries
- Airstrips/Airports
- Communication Facilities

As a result of the interconnection requirements at Malta, Harlem and Havre, there were unavoidable conflicts with residential and agricultural land use categories. The preferred route minimizes impacts on land use and agricultural land uses in comparison to the existing route. All cemeteries, communication facilities, airstrips and airports were avoided by the preferred corridor.

Recreation and Preservation Land Uses

The key features for recreation and preservation land uses for the initial corridor selection included:

- State and County Parks
- Recreation Areas
- National Wildlife Refuge
- State Wildlife Management Areas

These types of recreation uses were avoided by the preferred corridor with the exception of the Charles M. Russell National Wildlife Refuge, which was unavoidable due to the location of the Fort Peck Substation. All other types of recreation uses were avoided to the extent possible through the refinement of alternative corridors. The public and private hunting areas along the preferred corridor were unavoidable due to their regional patterning.

Impact Assessment Issues

(continued)

Types of potential physical impacts that were evaluated within the study area included:

- o Impacts on agriculture; short-term and long-term impacts including reduced crop yields, and conflicts with irrigation operations, soil compaction, farm equipment operations, weed and pest control and agricultural aircraft operations.
- o Impacts on urban areas or isolated residential structures within the corridors--including long-term impacts of structure removals, splitting of neighborhoods and creating of health/safety hazards.
- o Impacts or a conflict with airport interference zones within the corridor including potential physical conflicts with FAA-regulated airports and private airstrips.
- o Impacts on resource extraction sites, industrial or commercial establishments.
- o Physical impacts on any designated park, recreation or natural area.

Recommended mitigation to reduce initial impacts to flood-irrigated and nonirrigated cropland, included aligning the right-of-way and towers with field boundaries to the extent possible, to reduce impacts on farm operations and agricultural production. Where this was not possible due to irregular field boundaries, towers were aligned perpendicular to row crops where possible, and diagonal crossings of fields were to be avoided where possible. These mitigation measures reduced physical impacts to flood-irrigated and nonirrigated agriculture to a moderate residual level.

The only effective mitigation for sprinkler irrigation involved corridor realignment.

For urban areas and isolated residential structures and commercial structures, the mitigation measures included avoidance through rerouting (for urban areas) and sensitive tower placement in proximity to residential and commercial structures. These mitigation measures reduced potential high physical impacts to urban areas and residences to a moderate residual level, and moderate impacts to commercial structures to a low residual level.

For potential interferences with airports and airstrips, the only effective mitigation measures were rerouting the line to avoid potential physical/operational conflicts.

Cumulative Impact Issues

(continued)

transmission line will facilitate any future sprinkler system irrigation planning for currently affected nonirrigated and flood-irrigated lands of the Milk River Valley.

With respect to cumulative impacts on agricultural production and economic values, the total acres of irrigated hay and nonirrigated wheat taken out of production along both the existing and preferred routes were compared. The basis of comparison was crop yield measured in bushels per acre of wheat, baled tons per acre of hay, and average crop value measured in 1981 dollars.

There could be a net increased production of irrigated and nonirrigated cropland by as much as 23 baled tons and 60 bushels respectively, based on averaged yields per acre for Hill, McCone, Blaine, Phillips and Valley counties over a 10-year period between 1970-1981. The increase would result from the removal of the existing 161kV line from 59.2 miles of irrigated cropland crossed and 36.8 miles of nonirrigated cropland crossed by comparison to the new impact of 9.5 miles of irrigated cropland and 26.4 miles of nonirrigated cropland crossed by the proposed route. Based on estimated 1981 values provided by the Montana Crop and Livestock Reporting Service, there would be a slight economic gain resulting from this cumulative change to croplands.

Reduced Visual Impacts to Residents and Highway Travelers

Visual impacts from transmission lines have been an expressed public concern of the study area residents. The proposed action will have long-term beneficial effects to residents since the existing 161kV transmission line will be removed from the populated Milk River Valley and the proposed 230kV transmission line will be constructed primarily in the sparsely inhabited upland areas. Visual impacts to travelers along Highways 2, 24, 87 and other local roads will also be significantly reduced by the proposed action. The removal of the 161kV line along 172.3 miles currently paralleling highways will result in long-term beneficial impacts to travelers due to improved views from these transportation corridors.

Unavoidable adverse visual impacts will occur from along the 230kV transmission line corridor to some previously unaffected area residents. These impacts will result primarily in the vicinity of the Havre, Malta and Harlem substations. Impacts to the Herron Park Subdivision, located near the Havre Substation, will be somewhat reduced, however, over those reported

Cumulative Impact Legend: ☐ Beneficial ◪ No Significant Change ■ Adverse

Table 3-1F (continued)
Environmental Assessment Summary

RESOURCES	CORRIDOR SELECTION: Baseline Data Collection	Sensitivity Level: Maximum	Sensitivity Level: Major	Sensitivity Level: Moderate	Sensitivity Level: Minimal	Corridor Siting: Primary Siting Factor	Corridor Siting: Siting Refinement Factor	CORRIDOR IMPACT SUMMARY: Corridor Data Refinement	Existing 161kV Line Route	Preferred Route	Cumulative Resource Impacts	Corridor Selection Issues	Impact Assessment Issues	Cumulative Impact Issues
												(continued) **Transportation and Utilities** Highways and secondary roads and utility rights-of-way were considered an initial corridor selection opportunity to the extent that they avoided sensitive areas and features. The preferred corridor minimizes the use of transportation and utility rights-of-way in conjunction with the avoidance of agricultural and residential areas, and the foreground views from highways.	(continued) **Impact levels** Land use impact levels were assigned based upon an impact model that considered the sensitivity level of the land use (maximum, major, moderate, minimal), the quantity of the resource that would be affected, and whether impacts would be long-term or short-term in duration. o High impacts were assigned to all land uses of maximum or major sensitivity, that would be physically affected by the project. High impacts were also identified where high quantities of moderate sensitivity land uses would incur long-term physical impacts from the project. o Moderate impacts were assigned to all other moderate sensitivity land uses that would be affected by the project. Moderate impact levels were also identified for high quantities of minimum sensitivity land uses, that would incur long-term physical impacts. Initial high impacts were identified for all potential physical conflicts with agriculture lands, residential and urban areas, airports and airstrips, and park and recreation areas. Initial moderate impacts related to potential physical conflicts with resource extraction sites and commercial establishments. Mitigation measures were recommended in most cases as effective means of reducing the severity of the anticipted initial impacts.	(continued) in the DEIS, due to the Fort Assinniboine Reroute Study. Reference should be made to Chapter I of the FEIS for further information. **Reduced Noise and Radio Interference** Removal of the 161kV transmission line will eliminate noise and radio interference problems that have been experienced by area residents and highway travelers. Cumulatively, the proposed action will reduce the number of miles of highway paralleled from 172.3 miles to 8.0 miles. **Improved Electrical Service to Area Residents** The proposed action will significantly reduce the number of power outages currently experienced by area residents. The existing 161kV transmission line has been susceptible to a high number of power outages from lightning strikes due to the absence of overhead ground wires. The proposed 230kV transmission line will alleviate these problems and will contribute to energy conservation and increased future load growth potential. **Removal of Existing Impacts to the City of Havre's Future Growth Area** The existing 161kV transmission line is located through an area designated by the city of Havre for future growth. The removal of the existing line will eliminate any conflicts with the city's future growth plans. The proposed 230kV transmission line will be located further to the south of the city, outside of the projected growth zone. RECREATION AND PRESERVATION LAND USE The cumulative impacts of the proposed action will be beneficial to recreation and preservation land uses. The primary long-term beneficial effect will be to the Bowdoin National Wildlife Refuge. The physical removal of the 161kV line through seven miles of the refuge will reduce collision hazards to waterfowl and will eliminate existing visual impacts to visitors engaged in bird-watching activities in the northern part of the preserve. The addition, the removal of the existing 161kV line will eliminate visual impacts that now occur at several roadside interpretive sites and rest areas along Highways 2, 24 and 87. The proposed action will have unavoidable adverse impacts an the Charles M. Russell National Wildlife Refuge. These impacts will be low, however, since the 230kV line will be

Table 3-1F (continued)
Environmental Assessment Summary

RESOURCES	CORRIDOR SELECTION: Baseline Data Collection	Sensitivity Level: Maximum	Sensitivity Level: Major	Sensitivity Level: Moderate	Sensitivity Level: Minimal	Corridor Siting: Primary Siting Factor	Corridor Siting: Siting Refinement Factor	Corridor Data Refinement	CORRIDOR IMPACT SUMMARY: Existing 161kV Line Route	CORRIDOR IMPACT SUMMARY: Preferred Route	CORRIDOR IMPACT SUMMARY: Cumulative Resource Impacts	Corridor Selection Issues	Impact Assessment Issues	Cumulative Impact Issues
														(continued) located along the northern border of the refuge and will parallel an existing 69kV transmission line through this area.
ARCHAEOLOGY												**ARCHAEOLOGICAL RESOURCES**	**ARCHAEOLOGICAL RESOURCES**	**ARCHAEOLOGICAL RESOURCES**
INVENTORY												The primary archaeological resource considerations in corridor selection were:	**Impact Types**	Cumulative impacts to archaeological resources will be adverse. Results of the intensive survey for the Fort Peck to Havre preferred 230kV transmission line route are contained in the Fort Peck to Havre Multiple Resource Area Report, and confirm the probability levels for encountering sites that were reported in the DEIS. The preferred 230kV transmission line corridor crosses upland areas of predominantly high site probability, whereas site probabilities along the existing 161kV line route were substantially lower due to previous disturbances. The cumulative adverse impacts to archaeological resources will result from the construction of the 230kV transmission line and access trails will be predominantly high in magnitude, and will represent an irreversible and irretrievable commitment of resources. The dismantlement of the 161kV transmission line will have no significant adverse or beneficial effects on archaeological resources.
National Register of Historic Places Sites	●	●				●						o Sites included on, or determined eligible for inclusion on, the National Register of Historic Places.	The types of impacts that were evaluated for archaeological resources along the alternative corridors were:	
Environmental Zones Where Most Sites Have Been Rated Significant/Potentially Significant	●		●			●						o Environmental zones of major sensitivity where there are known or predicted "significant" archaeological resources that are highly important due to their informational content or interpretive potential.	o Potential physical or visual effects to sites or districts included on or known to be eligible for inclusion on the National Register of Historic Places.	
High Probability Areas								●	16.5	80.5	■		o Potential physical or visual effects to known sites or areas that have been identified as having special archaeological values.	
Environmental Zones With High Site Density Of Only Potentially Or Minimally Significant Sites	●		●			●						The corridor selection process avoided conflicts with National Register of Historic Places sites. Areas of major sensitivity were not avoidable, however, due to their regional distribution and the environmental tradeoff considerations that were made for human and biological resources. Large blocks of major sensitivity areas for archaeology are located in the Larb Hills, the Bearpaw Mountains and transitional zone areas near the bend of the Milk River, and higher elevations south of Glasgow. In order to minimize potential conflicts with significant human resources and biological resources concentrated in the Milk River Valley, alternative corridors were identified in selected major sensitivity archaeological areas in the upland and transitional zones of the study area.	o Potential physical or visual effects to any archaeological resources, based upon expected site density and distribution.	
Moderate Probability Areas								●	81.9	72.8			**Impact Levels**	
Environmental Zones With Low Site Density	●			●		●							Assessment of impacts to archaeological resources along the alternative corridors was computed by combining the site probability levels with construction access conditions.	
Low Probability Areas								●	94.7	26.3			High impacts were assigned to high probability archaeological areas where new access (in previously inaccessible areas) would be required.	
IMPACT RESULTS													High to moderate impacts were assigned to high probability areas where construction vehicles could travel overland. Overland access pertained to areas with dirt roads or accessible by 4-wheel drives.	
High									16.5	80.7			Moderate impacts were assigned to moderate probability areas where new access would be required.	
Moderate									81.9	72.6			An intensive cultural resource survey of the proposed route has been conducted and is documented in the Determination of Eligibility Document, Fort Peck-Havre Multiple Resource Area, 1983. Western has compiled documentation requirements for a preliminary case report (36 CFR 800.13(b)) so that the consultation process in accordance with the Advisory Council on Historic Preservation's regulations for compliance with Section 106 of the National Historic Preservation Act (16 U.S.C. 470f) can be initiated. The Council has indicated that "Western Area Power Administration has a very	
Low									94.7	26.3				
None									0.0	0.0				

Cumulative Impact Legend: ☐ Beneficial ◪ No Significant Change ■ Adverse

Table 3-1F (continued)
Environmental Assessment Summary

RESOURCES	CORRIDOR SELECTION: Baseline Data Collection	Sensitivity Level: Maximum	Sensitivity Level: Major	Sensitivity Level: Moderate	Sensitivity Level: Minimal	Corridor Siting: Primary Siting Factor	Corridor Siting: Siting Refinement Factor	Corridor Data Refinement	CORRIDOR IMPACT SUMMARY: Existing 161kV Line Route	CORRIDOR IMPACT SUMMARY: Preferred Route	CORRIDOR IMPACT SUMMARY: Cumulative Resource Impacts	Corridor Selection Issues	Impact Assessment Issues	Cumulative Impact Issues
													(continued) solid basis for determining the effects of this project on historic properties" (4/13/83). Western is currently compiling data in compliance with the Advisory Council's consultation process.	
HISTORY **INVENTORY** Number of Sites	•	(4)	(6)	(12)	(40)	•		•				**HISTORIC RESOURCES** Key historic resources that were considered in the corridor selection process included: o Sites listed on, or determined eligible for inclusion on, the National Register of Historic Places. o Historic sites considered to be of major sensitivity due to their high-moderate historical significance, site integrity, interpretive value and/or investigative potential. Through the corridor selection process it was possible to avoid conflicts with sites listed on the National Register of Historic Places. These sites are located within the downtown areas of Malta, Chinook and Havre and include the Phillips County Carnegie Library, the Lohman Block and the Young-Almas House. Fort Assinniboine, an eligible site for the National Register of Historic Places, was also treated as an exclusion area and was avoided by alternative carridors. Subsequent comments on the Fort Peck-Havre DEIS concerning impacts to adjacent residential areas that resulted from avoiding Fort Assinniboine initiated additional corridor studies which are documented in Chapter I of this document. Other historic sites associated with the preferred route that were identified during the DEIS preparation are limited to canals and trails. An intensive cultural resources survey of the proposed route has revealed additional historic sites. These are addressed in the Determination of Eligibility Document, Fort Peck-Havre Multiple Resources Area, 1983. The types of additional sites found within the right-of-way of the proposed route were primarily related to homesteads.	**HISTORIC RESOURCES** **Impact Types** The types of impacts to historic resources that were evaluated along the alternative corridors included: o Physical or visual effects to properties included on or known to be eligible for inclusion on the National Register of Historic Places. o Physical or visual effects to properties of other official status (state or county). o Physical effects to historic properties possessing historical, historical architecture, legal, public or scientific value. o Visual effects to historic properties possessing visual sensitivity and high site integrity. **Impact Levels** Impact levels for historic sites were assigned on the basis of site sensitivity and the type of impact that might be expected (direct, indirect, visual) from transmission line construction. Site sensitivity levels (maximum, major, moderate, minimal) were determined based upon evaluation of five criteria: official status, historical significance, integrity, interpretive value and investigative potential. Direct physical impacts were assigned if sites could potentially be physically affected by construction activities, tower sites and right-of-way restrictions. Indirect physical impacts were assigned to sites potentially affected by increasing access to an area. Visual impacts were considered a potential effect to sites and settings that had not changed significantly since the major period of the site's historic occupation and to sites of high public significance. The termination of significance and National Register eligibility status of sites within the right-of-way of the proposed route are contained in the Multiple Resource Area document.	**HISTORIC RESOURCES** The cumulative adverse and beneficial effects resulting from the removal of the existing 161kV transmission and the construction of the 230kV transmission line will be comparable overall with respect to historical resources and historical architecture, resulting in no significant change to the resource as a whole. Visual impacts to historic sites along the existing line will be eliminated, while there is the potential for impacts to the homesteads in the uplands along the proposed route which are of importance principally for the information value. Removal of the existing 161kV transmission line will have beneficial effects on improving the visual site integrity of the Fort Belknap Church and cemetery. In addition, beneficial effects will result from eliminating visual impacts to historic interpretive sites and towns located along Highway 2 and 87. With respect to highway views of Fort Assinniboine, located south of Highway 87, the proposed action will improve viewing conditions. The removal of the 161kV transmission line from the south side of the highway and the construction of the 230kV transmission line on the north side of the highway will enhance the visual integrity of the highway views to the fort. The impacts of the proposed 230kV transmission line on views from within Fort Assinniboine will be slightly more adverse than existing conditions, however. Due to the building of residential development immediately adjacent to the existing 161kV transmission line in the vicinity of Fort Assinniboine, it is not possible to utilize the existing corridor for the 230kV line. Reference should be made to Chapter I for complete information on the Fort Assinniboine reroute effects.
High									0.1	0.0	◪			
Moderate									0.1	3.2				
Low									9.8	1.7				
None									183.1	174.7				
HISTORICAL ARCHITECTURE **INVENTORY** Existing Sites							•	•						
IMPACT RESULTS											◪			
High									0.1	0.0				
Moderate									1.3	3.2				
Low									6.7	2.8				
None									185.0	173.6				

Cumulative Impact Legend: ☐ Beneficial ◪ No Significant Change ■ Adverse

Table 3-1F (continued)
Environmental Assessment Summary

RESOURCES	CORRIDOR SELECTION: Baseline Data Collection	Sensitivity Level: Maximum	Sensitivity Level: Major	Sensitivity Level: Moderate	Sensitivity Level: Minimal	Corridor Siting: Primary Siting Factor	Corridor Siting: Siting Refinement Factor	CORRIDOR IMPACT SUMMARY: Corridor Data Refinement	CORRIDOR IMPACT SUMMARY: Existing 161kV Line Route	CORRIDOR IMPACT SUMMARY: Preferred Route	CORRIDOR IMPACT SUMMARY: Cumulative Resource Impacts
NATIVE AMERICAN CULTURAL RESOURCES											
INVENTORY											
Religious/Ritual	●	●	●			●		●			
Rock Art	●	●				●		●			
Habitation											
Reservation	●	●				●		●			
Other (Forts, Campsites, etc.)	●			●		●		●			
Hunting & Gathering	●			●		●		●			
Trades	●			●		●		●			
Historical Events (Battle Sites)	●		●					●			
Trails & River Crossings	●	●			●			●			
Multiple Resource Areas	●	●						●			
IMPACT RESULTS											
High								25.8	3.2		
Moderate								6.8	1.9		
Low								15.9	16.4		
None								144.6	158.1		

Corridor Selection Issues	Impact Assessment Issues	Cumulative Impact Issues
NATIVE AMERICAN CULTURAL RESOURCES Native American cultural resources considered as primary factors in corridor selection included: o Religious and ritual sites, including burial grounds, cemeteries and ceremonial sites. o Rock art sites. o Multiple resource areas. o Historically significant sites such as battle sites and important river crossings. The corridor selection process minimized impacts to Native American cultural resources in comparison to the existing 161kV corridor. Unavoidable significant conflicts with Native American resources associated with the existing corridor included crossing of the Fort Belknap Indian Reservation and proximity to a burial ground on the reservation. These conflicts with Native American resources are primarily due to the project's requirements for interconnection at the Harlem Substation.	**NATIVE AMERICAN CULTURAL RESOURCES** **Impact Types** The types of potential effects to Native American cultural resources that were considered in the impact assessment included: o Physical effects of site elimination or alteration and physical modifications to the integrity of a site or area possessing contemporary ar heritage significance to Native Americans. o Effects on view from or modify the visual integrity of a site ar area possessing contemporary or heritage significance to Native Americans. o Effects on the aural integrity of a site or area possessing contemporary or heritage significance to Native Americans. **Impact Levels** In assessing impact levels to Native American cultural resources, consideration was given to: site sensitivity (maximum, major, moderate, minimal), and the quality of the site and surrounding vicinity. The quantity of potential site disturbance considering access and distance, and the duration af potential impacts. High impacts were assigned to Native American cultural resources of maximum or major sensitivity that could be physically affected, either directly or indirectly, by the proposed project. High impacts were identified primarily far burial grounds, cemeteries and ceremonial sites located within the alternative corridors. Potential direct impacts to the Fort Belknap Indian Reservation, a trading post, and a campsite were also assigned a high impact. Moderate impacts were identified for Native American cultural resources of maximum or major sensitivity that could be visually affected by the project. Moderate impacts were assigned to ceremonial sites, cemeteries and burial grounds that were located within one mile of the alternative corridors. Portions of the Fort Belknap Indian Reservation located within one mile of the alternative corridors were also assigned moderate impacts.	**NATIVE AMERICAN CULTURAL RESOURCES** Cumulative impacts to Native American cultural resources will be primarily beneficial and long-term in nature, since the proposed action will reduce overall impacts to the Fort Belknap Indian Reservation and will reduce visual and overall impacts to Native American cultural sites of maximum or major sensitivity. The 161kV transmission line will be removed from 23.1 miles of the Fort Belknap Indian Reservation in an area of agricultural productivity. Beneficial effects of the proposed action include the potential upgrading of these agricultural lands. In addition, the 161kV transmission line is currently situated within close proximity to a number of Native American ceremonial sites and burial areas, bath within the reservation and within the vicinity of Fort Assinnibaine. While removal of the 161kV transmission line may result in some short-term physical disturbances to the reservation and to Native American cultural resources, the long-term benefits of constructing the 230kV line within the preferred corridor will be greater. In general, the preferred 230kV transmission line corridor is located through less sensitive areas with respect to Native American cultural values. Unavoidable adverse impacts of the 230kV transmission line corridor include crossing 3.2 miles of the Fort Belknap Indian Reservation along the northwestern edge of the reservatian, and potentially affected Native American cultural resources, primarily in the vicinity of Fort Assinniboine. Reference should be made to Chapter I of the FEIS for descriptions of the resources potentially affected with the Fort Assinniboine reroute. In the immediate vicinity of Fort Assinniboine, the preferred 230kV transmission line would have slightly greater, although mitigatable, impacts on Native American cultural resources in comparison to the existing 161kV transmission line route.

Cumulative Impact Legend: ☐ Beneficial ◪ No Significant Change ■ Adverse

Table 3-IF (continued)
Environmental Assessment Summary

RESOURCES	CORRIDOR SELECTION: Baseline Data Collection	Sensitivity Level: Maximum	Sensitivity Level: Major	Sensitivity Level: Moderate	Sensitivity Level: Minimal	Corridor Siting: Primary Siting Factor	Corridor Siting: Siting Refinement Factor	Corridor Siting: Corridor Data Refinement	CORRIDOR IMPACT SUMMARY: Existing 161kV Line Route	CORRIDOR IMPACT SUMMARY: Preferred Route	CORRIDOR IMPACT SUMMARY: Cumulative Resource Impacts	Corridor Selection Issues	Impact Assessment Issues	Cumulative Impact Issues
VISUAL RESOURCES														
INVENTORY														
Visual Resource Management (VRM) Classes														
I	●	●				●								
II	●	●	●				●	●	129.8	28.5				
III	●			●				●	28.3	34.9				
IV	●				●			●	35.0	116.2				
Visual Contrast														
Strong								●	46.3	10.5				
Moderate								●	111.6	64.3				
Weak								●	35.2	104.8				
IMPACT RESULTS														
High									31.8	8.9				
Moderate									84.4	25.9				
Low									75.1	144.8				
None									1.8	0.0				

VISUAL RESOURCES

The primary siting features associated with visual resources in corridor selection process were:

- o VRM Class II - Maximum Sensitivity Area (Bowdoin National Wildlife Refuge)
- o VRM Class II - Major Sensitivity Areas
- o Foreground Distance Zone (0-½ mile) from travel routes, residential and urban areas, and recreation use areas

The preferred route minimizes conflicts with Class II areas. Unavoidable Class II areas occur at substation interconnections within the Milk River Valley at Malta, Harlem and Havre, and along the northern edge of the Milk River Valley between Malta and Harlem.

VISUAL RESOURCES

Impact Types

The primary impact concerns assessed in the visual resources study are potential decreases in quality of life resulting from a decline in aesthetic quality. The type of visual impacts evaluated included:

- o Effects on scenic resources.
- o Effects on the view from residential, commercial, institutional and other visually sensitive existing and planned land uses.
- o Effects on the view from travel routes.
- o Effects on the view from established, designated or planned park or recreation areas.
- o Visual contrasts resulting from conflicting tower types and/or materials and construction of new access roads.

Determining these potential impacts was based upon assessing: (1) the physical contrasts, or landscape changes, that would result from the project; and (2) the degree of visibility, or visibility level, that the proposed project would have from each visually sensitive land use (key observation point) or scenic area. Physical contrasts were determined by evaluating the degree to which the project would physically contrast with the line, form, color and texture of the landscape land forms, vegetation and structural patterns. Visibility levels for key observation points were determined by assessing the viewer sensitivity, distance from the project, duration of view and viewer orientation. The combination of physical contrast and visibility levels determined the final visual contrast levels.

Impact Levels

The final visual contrast levels were compared to the Bureau of Land Management's VRM class (I-IV) to determine the significance, or degree, of visual impacts.

- o High visual impacts were assigned where the proposed project would result in a strong or moderate visual contrast within a Class I area, or a strong contrast within a Class II or III area. Within the study area, these types of conditions applied to areas of inherently good or distinctive visual quality, and/or where visually sensitive land uses (e.g. residences) would

VISUAL RESOURCES

The cumulative visual effects of removing the existing 161kV transmission line and constructing the proposed 230kV transmission line within the preferred corridor will be beneficial to maintaining and enhancing the aesthetic quality of the study area environment. The primary beneficial impacts include:

- o Reducing long-term visual impacts to area residents of the Milk River Valley.
- o Reducing long-term visual impacts to highway travelers along Highways 2, 24 and 87.
- o Reducing long-term visual impacts to the Bowdoin National Wildlife Refuge.
- o Reducing long-term visual impacts to highway interpretive sites and rest areas.
- o Reducing long-term visual impacts to landscape scenic quality.

The cumulative visual consequences to residents, highway travelers and recreationists of the Bowdoin National Wildlife Refuge are described under Land Use. With respect to landscape scenic quality, the proposed action will result in the removal of the 161kV transmission line from the "Class B" (above average) scenic landscape of the Milk River Volley, and the construction of the 230kV transmission line through predominantly "Class C" (average) landscapes of upland rolling hills.

Short-term visual impacts will be associated with construction activities, where there will be a temporary reduction of aesthetic quality in visually sensitive settings for residential recreation, highway and historic related sites and vistas. Dust, noise and work activities will be apparent during the construction of the 230kV line and dismantling of the existing 161kV line.

The most apparent disruption will be the dismantling of the 161kV line due to its proximity to viewers for the entire distance of the right-of-way. The proposed line is remote from viewers for much of the right-of-way.

The long-term impacts will be limited to the presence of the proposed 230kV line, resulting in beneficial cumulative impacts.

Cumulative Impact Legend: ☐ Beneficial ◪ No Significant Change ■ Adverse

Table 3-1F (continued)
Environmental Assessment Summary

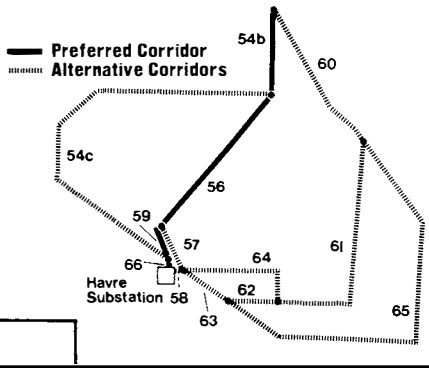
RESOURCES	CORRIDOR SELECTION: Baseline Data Collection	Sensitivity Level: Maximum	Major	Moderate	Minimal	Corridor Siting: Primary Siting Factor	Siting Refinement Factor	Corridor Data Refinement	Existing 161kV Line Route	Preferred Route	Cumulative Resource Impacts	Corridor Selection Issues	Impact Assessment Issues	Cumulative Impact Issues
													(continued) be within one-quarter and one-half mile of the project. High levels of impact applied to long-term effects and pertain only to areas where similar structures do not currently exist. o Moderate impacts applied to a wide range of conditions within the study area where the proposed project would create a noticeable although not dominant visual affect in the landscape. Moderate impacts also applied to long-term affects.	
PALEONTOLOGICAL RESOURCES (miles) **INVENTORY** Quaternary Alluvium & Till	●			●				0.0	1.1			**PALEONTOLOGICAL RESOURCES** Paleontological resources were considered of minimal sensitivity to the proposed project facilities and were not considered as primary siting features for corridor selection. Known fossil inventory sites were considered as corridor refinement features ond were avoided by the preferred route.	**PALEONTOLOGICAL RESOURCES** **Impact Types** The criteria for assessing potential impacts to paleontological resources included: o The paleontological sensitivity of formations within the alternative corridors. o The degree of rock exposure for these formations. o The potential effects of project construction on ground surface disturbance including cleaning, road building and foundation installation. Impacts to paleontological resources would be adverse, direct and long-term (permanent) in nature. **Impact Levels** Since all formations within the study area were of minimal sensitivity for paleontological resources, no high or moderate impact levels were identified. Low impact levels were identified for formations where there is the potential for finding scientifically significant fossils.	**PALEONTOLOGICAL RESOURCES** The long-term impacts to paleontological resources that will result from constructing the 230kV transmission line will be minor and comparable in magnitude to potential impacts along the 161kV transmission line route. Impacts to paleontological resources are considered low, overall, due to the minimal sensitivity of formations potentially disturbed either from project construction of the 230kV transmission line or for abandonment of the 161kV transmission line.
Quaternary Fossil Site #1	●					●	●	0.0	0.0					
Quaternary Fossil Site #3	●					●	●	0.0	3.6					
Bearpaw Shale	●			●			●	0.0	7.5					
Judith River Formation	●			●			●	3.9	0.0					
Judith River For. Fossil Site #13						●	●	0.0	0.0					
Claggett Shale	●			●			●	0.0	0.0					
IMPACTS RESULTS														
High								0.0	0.0					
Moderate								0.0	0.0					
Low								3.9	14.9					
None								189.2	164.7					

Cumulative Impact Legend: ☐ Beneficial ◪ No Significant Change ■ Adverse

Table 3-7(R)F

FORT ASSINNIBOINE ADDENDUM STUDY ALTERNATIVES
Fort Peck-Havre Transmission Line Project

ENVIRONMENTAL CONSEQUENCES OF SIGNIFICANT ENVIRONMENTAL RESOURCE CATEGORIES



	HUMAN ENVIRONMENT		CULTURAL ENVIRONMENT			
PATH/MILE (LINKS)	EXISTING & PLANNED LAND USE	VISUAL RESOURCES HISTORIC/RESIDENTIAL HIGHWAY	HISTORIC RESOURCES*	ARCHAEOLOGICAL RESOURCES	NATIVE AMERICAN CULTURAL RESOURCES	CORRIDOR SUMMARY
1/3.60 Links 54b 54c 66	M 3 Crosses 0.62 mile of irrigated and 0.74 mile of nonirrigated agricultural land. Crosses 0.47 mile of future range research sites.	H 5 2.39 total miles of high impact associated primarily with dominant visual influence of line on Herron Park area and co-dominant influence of line on Ft. Assiniboine within the zone of historic visual integrity.	M-L 1	L 1	N 1	Path 1 (Least Preferable) Path 1, currently a portion of the proposed corridor in the Fort Peck-Havre DEIS, is considered the least preferable alternative (along with Path 5) to connect with the Havre substation. Agricultural conflicts associated with this alternative include future range experimental sites and cropland. Visual impacts are associated with the Herron Park residential area and Highway 87.
2/2.20 Links 54b 56 57 58	L-M 1 Crosses 0.59 mile of irrigated agricultural land.	H-M 2 1.37 total miles of high impact associated primarily with dominant and co-dominant visual influence of line on Ft. Assiniboine, of which 0.92 mile is within the zone of historic visual integrity and the remainder related to roadside interpretive sign.	H-M 3	L 2	H 3 Potential disturbance to burial ground.	Path 2 (2nd Preference) Path 2 differs from Path 3 by paralleling the south side of Highway 87 along Link 57 rather than along Link 59. This segment of the path is common with the location of the existing 161kV line which crosses Highway 87 along Link 58 at the entrance to the Northern Agricultural Research Center, and connects with the Havre substation. Path 2 is less preferable than Path 3 due to the increased impacts to the Ft. Assiniboine roadside interpretive site. Path 2 is considered more preferable than Path 6 (3rd preference) due to the avoidance of the zone of historic access.
3/2.10 Links 54b 56 59 66	L-M 1 Crosses 0.59 mile of irrigated agricultural land.	M-H 1 0.99 total miles of high impact of which 0.92 mile is associated with the co-dominant visual influence of the line on zone of historic visual integrity. The remaining high visual impact is associated with Highway 86 road crossing and roadside interpretive sign.	M-H 2	L 2	H 3 Potential disturbance to burial ground.	Path 3 (Preferred) Path 3 is considered environmentally preferable to the other corridor alternatives in the vicinity of the Havre substation and Ft. Assiniboine because significant unavoidable adverse impacts are minimized. This alternative is most preferable for land use and visual resources. This path does cross a portion of the area eligible for the National Register of Historic Places; however, mitigation potential for visual impacts are most evident along Path 3 due to topographic variations and minimizing significant skylining within the zone of historic visual integrity for Ft. Assiniboine. Acceptable mitigation for Native American resources is also attainable along Link 56. Visual impacts along Highway 87 would be reduced by relocating the existing 161kV transmission line to the north side of the highway and away from the Ft. Assiniboine roadside interpretive site. The complex of turning structures at the entrance to the Northern Agricultural Research Center is also simplified by relocating the existing 161kV line. This alternative will require modifications within the Havre substation due to the line relocation.
4/3.65 Links 60 61 62 63 58	L-M 2 Crosses 0.68 mile of irrigated and 0.29 mile of nonirrigated agricultural land. Crosses 0.37 mile of potential agronomy research plots.	H-M 4 1.21 total miles of high impact associated with the dominant visual influence of the line on the zone of historic visual integrity.	H-M 5	L 3	N 1	Path 4 (4th Preference) Path 4 is common with Path 6 along Link 60 where it is skylined to Ft. Assiniboine. Skylining continues along Link 61 west of Beaver Creek. As a result, this path would result in a significant visual impact on the principal views within the zone of historic visual integrity. Land use impacts would also increase where cropland is crossed to the south and west of the Northern Agricultural Research Center agronomy research plots, where there is no available adjacent road access.
5/3.77 Links 60 61 64 58	M 4 Crosses 1.26 mile of irrigated and 0.29 mile of nonirrigated agricultural land. Crosses 0.37 mile of potential agronomy research plots.	H 5 2.11 miles of high impact of which 1.21 miles are associated with the dominant visual influence of the zone of historic visual integrity. Remaining impact is associated with the entry road to Ft. Assiniboine.	H 6	L 3	N 1	Path 5 (Least Preferable) Impact along Path 5 is common to Path 4 except along Link 64 where both agricultural and visual impacts to the Northern Agricultural Research Center and Ft. Assiniboine would increase. As a result, Path 5 is considered one of the least preferable alternatives.
6/4.59 Links 60 65 63 58	L-M 1 Crosses 0.21 mile of irrigated and 0.31 mile of nonirrigated agricultural land.	H-M 3 1.57 miles of high impact associated with the dominant visual influence of the line of the zone of historic visual integrity.	H-M 4	L 4	H 2 Potential disturbance to burial ground.	Path 6 (3rd Preference) Path 6 was located to minimize agricultural impacts by field edges along roadways around the southern and western boundaries of the Northern Agricultural Research Center. While preferable for land use, Path 6 is skylined through a significant portion of the zone of historic visual integrity associated with views from Ft. Assiniboine.

*For path impact characterization only - not corridor selection (history is included in visual).