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Environmental Assessment

Teckla to Carr Draw 230 kV Transmission Line Project

Douglas Ranger District, Medicine Bow-Routt National Forest Thunder Basin National Grassland
Campbell County, Wyoming

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Reviewers should provide the Forest Service with their comments during the review period of the environmental assessment. This will enable the Forest Service to consider and respond to those comments, and to provide for such consideration in the final environmental assessment and decision. Comments on the environmental assessment must be postmarked within 30 days of publication of notice in the Laramie Boomerang.

Reviewers have an obligation to structure their participation in the National Environmental Policy Act process so that it is meaningful and alerts the agency to the reviewers' position and contentions, Vermont Yankee Nuclear Power Corp. v. NRDC, 4235 U. S. 519, 553 (1978). Environmental objections that could have been raised at this stage may be waived if not raised until after completion of the final environmental assessment [and the signing of the decision], City of Angoon v. Hodel (9th circuit, 1986) and Wisconsin Heritages, Inc, v. Harris, 490 F. Supp. 1334, 1338, (E.D. Wis, 1980). Comments on this environmental assessment should be specific and should address the adequacy of the assessment/ analysis, and the merits of the alternatives discussed (40 CFR 1503).

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ACRONYMS AND ABBREVIATIONS

ACR	ACR Consultants Inc.
BA/BE	Biological Assessment and Biological Evaluation
Basin Electric	Basin Electric Power Cooperative
BEA	Bureau of Economic Analysis
BLM	U. S. Bureau of Land Management
BMP	Best Management Practice
BNSF	Burlington Northern and Santa Fe
CBM	Coal Bed Methane
CCEDC	Campbell County Economic Development Council
CEQ	Council for Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon monoxide
CRP	Conservation Reserve Program
CT	Combustion Turbine
CWA	Clean Water Act
EA	Environmental Assessment
EDR	Environmental Data Resources, Inc.
EIS	Environmental Impact Statement
EMF	Electric and magnetic fields
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESRI	Environmental Systems Research Institute
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FS	Forest Service
G&T	Generation and transmission
Grassland Plan	Thunder Basin National Grassland Land and Resource Management Plan, 2002
GPS	Global Positioning System
I	Interstate highway
IF	Isolated Find
kV	Kilovolt
MIS	Management indicator species
msl	Mean sea level
MWH	Megawatt hours
$\mu g/m^3$	Micrograms per cubic meter
N	North
NA	Not applicable
NE	Northeast
NAAQS	National Ambient Air Quality Standards
NE	Northeast

ACRONYMS AND ABBREVIATIONS (Continued)

NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NFS	National Forest System
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides
NRC	National Resource Council
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PCP	Pentachlorophenol
PCPI	Per capita personal income
PRB	Powder River Basin
PRECorp	Powder River Energy Corporation
PM	Principal Meridian
PM_{10}	Particulate matter with an aerodynamic diameter of 10 microns or less
REC	Recognized Environmental Conditions
ROS	Recreation Opportunity Spectrum
ROW	Right of Way
SE	Southeast
SH	State Highway
SHPO	State Historic Preservation Officer
SO_2	Sulfur dioxide
T&E	Threatened and endangered
TBGA	Thunder Basin Grazing Association
Tetra Tech	Tetra Tech EM Inc.
U.S.	United States
USACE	U.S. Army Corps of Engineers
USCB	U.S. Bureau of the Census
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VQO	Visual Quality Objective
VOC	Volatile organic compound
W	West
WYNDD	Wyoming National Diversity Database

SUMMARY

The Medicine Bow-Routt National Forest proposes to, through the environmental analysis process, determine whether or not, and if so how, a power transmission line Right of Way (ROW) permit would be issued to Basin Electric Power Cooperative (Basin Electric) in ways that would protect natural resources and the environment while also accommodating the proposed uses and providing for public safety. The National Forest System (NFS) lands impacted by the Proposed Action are located in the Thunder Basin National Grassland and are within the Douglas Ranger District, Thunder Basin National Grassland, Wyoming. This action is needed, to maintain adequate voltage levels, to improve system reliability and continuity of service, and to reinforce the existing electrical grid system while enabling Basin Electric to serve the additional power requirements of the development of coal bed methane (CBM) resources in Campbell County.

The U.S. Department of Agriculture (USDA) Forest Service (FS) has prepared this Environmental Assessment (EA) of the proposed Teckla to Carr Draw 230 kilovolt (kV) Transmission Line Project. The proposed 230 kV transmission line crosses approximately 4,500 feet of NFS lands in Section 3, Township 41 North (N), Range 71 West (W), 6th Principle Meridian (PM), and Section 1, Township 41N, Range 73W, 6th PM in Campbell County, Wyoming. Figure 1-1 presents the location of the proposed transmission line and its relation to Campbell County. The proposed 230 kV transmission line is approximately 71.23 miles in total length and the ROW is presented on Figure 1-2. Figure 1-3 presents the proposed transmission line and its relation to NFS lands.

A complete description of the proposed transmission line ROW, and a description of the Proposed Action are presented in the Alternatives section of this EA.

Basin Electric, the proponent, is a consumer-owned, regional cooperative headquartered in Bismarck, North Dakota. Basin Electric has applied for a special use permit to construct a 71.23-mile long, 230 kV transmission line in Campbell County, Wyoming. The project, known as the Teckla to Carr Draw 230 kV Transmission Line Project, was proposed to provide a reliable power supply to meet the growth in load and requirements for a transmission system in the Campbell County area (Pace Global 2002 pg. 8-14).

The evaluation of alternatives reveals that the Proposed Action best addresses the needs of Basin Electric and its customers while being protective of natural resources, and minimizing impacts to the environment, existing land uses, concerns of land owners, and regulatory requirements. The Proposed Action does not represent a transmission line that is the shortest of all alternatives considered. In addition to length, other criteria were evaluated in selecting the Proposed Action including: accessibility, location, engineering stability, addressing local landowner concerns, and minimizing the impacts to Federal land.

Furthermore, the Proposed Action is compatible with land uses in the region, is protective of threatened, endangered, and sensitive species, and avoids potentially unfavorable features (such as existing or future residential communities, commercial developments, transportation corridors, and schools), and minimizes crossing environmentally sensitive or significant features such as wetlands, floodplains, potentially sensitive habitats, waterways, and vegetation communities. The Proposed Action is consistent with the Thunder Basin National Grassland Land and Resource Management Plan, 2002 (Grassland Plan).

No significant environmental impacts are anticipated as a result of the Teckla to Carr Draw 230 kV Transmission Line project. In addition, any effects that are anticipated can easily be mitigated and the proponent has identified several situations where measures that are protective to the environment will be applied by company policy or design techniques.

Specific findings are presented in the following paragraphs.

Grassland Plan Consistency and Compliance: The Grassland Plan was reviewed, and the ID team has determined that the Proposed Action is consistent with that plan based on agreement with the USFWS.

Floodplain, wetlands, minerals, global warming, and cultural resource implications have been considered and will not be adversely affected.

Threatened and endangered species implications have been considered and there would be “no effect “ on threatened and endangered species as a result of the Proposed Action. However, a nest used by both Swainson’s and ferruginous hawks did at one time exist within 0.25 mile of the ROW in Section 4, Township 41N. Range 71W, 6th PM. While nest relocation permit approval from the USFWS was pending, persons monitoring the nest on

February 21, 2003 observed that the nest and the tree that supported the nest were removed from their original location. The exact day that the tree and nest were taken is not known. However, it is known that the nest was in place on February 18, 2003.

The FS does not condone or support illegal activity, nor does the FS allow illegal activity to benefit or hasten their review or approval of any project. Representatives of the proponent reported the taking of the nest and tree to USFWS law enforcement officials on the day the nest and tree were discovered missing. Subsequent to the notification, the proponent's representatives met with USFWS law enforcement on March 3, 2003 to provide observation data and to assist with the ongoing investigation. The ongoing USFWS law enforcement investigation has determined that the taking of the nest was not related to this project.

The proponent commits to not taking active nests and complying with the Grassland Plan, and consulted with USFWS to locate to a replacement nest structure on an alternate location to comply with surface occupancy requirements of the Grassland Plan.

Land Use Management: The Proposed Action would have no significant impacts on land use on NFS lands. The majority of the proposed transmission line traverses private land. The remaining land consists of state and Federal public lands. The NFS lands impacted by the ROW are limited to 13.17 acres or 1.22% of the entire project ROW. The anticipated land use disturbance related to pole installation on NFS lands is estimated to be 0.0019 acres. It is unlikely that a pole will be installed on the 40 acre parcel of NFS land in Section 1, Township 41N, Range 73W, 6th PM because an angle is planned in Section 6, Township 41N, Range, 72W, 6th PM. This angle is very near NFS lands and the planned span length of 800 feet would make it unnecessary to place poles on this 130–foot section of NFS land. The Proposed Action is compatible with the Grassland Plan and traditional land use activites in the general area.

Floodplains and Wetlands Management: The Proposed Action would have no impacts to floodplains and wetlands on NFS Lands because no wetlands or floodplains exist on NFS lands within the project ROW. Outside of NFS lands, the proposed project ROW does, or is located near, a few wetland areas. On private land, field reconnaissance identified 4 jurisdictional wetlands in Section 29, Township 45N, Range 74W, 6th PM, Section 32, Township 47N, Range 74W, 6th PM, Section 24, Township 48N, Range 75W, 6th PM, Section 33, Township 49N, Range 75W, 6th PM and 8 man–induced wetlands, such as

wetlands induced by stock ponds, or windmill wells used to support livestock watering. The man-induced wetlands are located in Section 6, Township 41N, Range 71W, 6th PM, Section 33, Township 42N, Range 72W, 6th PM, Section 32, Township 44N, Range 74W, 6th PM, Section 24, Township 47N, Range 75W, 6th PM, Section 32, Township 48N, Range 74W, 6th PM, Section 31, Township 48N, Range 74W, 6th PM, Section 13, Township 48N, Range 75W, 6th PM, Section 29, Township 50N, Range 75W, 6th PM. No transmission line poles will be installed in wetland areas outside of NFS lands resulting in no impacts to wetlands.

Cultural Resource Management: No cultural sites were located on NFS lands within the project ROW. The Proposed Action would have no significant impacts on cultural resources on NFS lands. The majority of the project area lies outside of NFS lands. Eleven cultural sites are located on private land and are recommended not eligible for the National Register of Historic Places (NRHP) by the heritage resources survey and reporting contractor. The Wyoming State Historic Preservation Officer (SHPO) will be consulted with as to site eligibility, possible project effects, and needed impact mitigation.

Paleontological Management: No paleontological remains of any kind were located on NFS lands. Therefore, the Proposed Action would have no significant impacts on paleontological resources on NFS lands and is compatible with management direction for paleontological resources management the Grassland Plan.

Threatened Endangered and Sensitive Wildlife Species and Habitats(s) Management: The Proposed Action would have no significant impacts on any threatened, endangered or sensitive wildlife species or their habitats. There will be no effect on any threatened or endangered species. The Proposed Action is not likely to jeopardize the continued existence or adversely modify proposed critical habitat of any species formally proposed for listing. It is also not likely to adversely effect any proposed species. The Proposed Action may adversely impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability range-wide fro sensitive species in the region.

Mitigation measures, such as adjusting the construction schedule and installing anti-perch devices on poles in prime mountain plover habitat, will be applied in order to prevent significant impacts to mountain plover. The design of the H-Frame structures provides adequate line spacing to prevent raptor electrocutions, and no poles will be placed in active

prairie dog towns. The landowners have poisoned the prairie dogs in the prairie dog towns crossed by the ROW. Landowners, on occasion, poison prairie dogs to prevent damage to livestock grazing areas.

Threatened Endangered and Sensitive Plant Species Management: The Proposed Action would not significantly impact in an adverse way any threatened, endangered or sensitive plant species or their habitats on NFS lands.
Wetland areas capable of providing suitable Ute ladies'-tresses orchid habitat exist with the project ROW outside of NFS lands. Because the proponent will not place poles in wetland areas, the Proposed Action will have no significant impact on the Ute ladies'-tresses orchid.

Fisheries Management: No fisheries exist within the project ROW. The Proposed Action would have no significant impact on fisheries on NFS lands or on areas outside of NFS lands.

Recreation Management: The Proposed Action will have no significant impact on recreational activities within the project ROW on NFS lands. No significant changes would be made to recreational uses in the area, and no direct or indirect effects to resources or their uses would be expected. The public's use of the areas outside NFS lands within the ROW for recreation would continue to be very limited, and would only be available to those persons who have obtained permission to access private land. Therefore, the Proposed Action will have no significant impact on recreation management on areas outside of NFS lands.

Livestock Grazing and Rangeland Management: The small loss of grazing land for the installation of transmission line poles for the Proposed Action would have no significant impact on overall grazing activities on NFS lands. Short-term impacts to grazing would be limited to short–term disruptions caused by construction, drilling hole foundations for installation of transmission poles, and stringing lines on the poles. The anticipated reduction in ranching land related to pole installation for the entire Proposed Action is estimated to be a maximum of 0.15 acres. The small conversion of grazing and ranch land to the transmission line poles in the ROW have no significant impact on grazing, crop production, or other ranching activities in the areas outside of NFS lands.

Transportation Management: Because no roads would be built and no transportation systems will be impacted, no significant impacts are expected to the transportation systems on NFS lands. Short-term impacts may include minor traffic delays caused when wires are strung across roadways or rail lines. Any such short-term roadway or railway closings would be scheduled with appropriate authorities, marked clearly, and detour routes would be provided as necessary. No new roads will be installed to build or construct the proposed 230 kV transmission line outside of NFS lands. The alignment of the Proposed Action minimizes the number of highway crossings and will not effect operations at the Gillette Campbell County Airport. Therefore, no significant impacts to transportation systems are anticipated as a result of the proposed action outside of NFS lands.

Air Quality Management: Construction of the Proposed Action would have no significant impacts on air quality on NFS lands. Monitored background values for particulate matter concentrations near the ROW do not currently exceed National Ambient Air Quality Standards (NAAQS), and short-term construction activities would not cause these background values to exceed NAAQS in the future. Because construction would not measurably increase background values, the cumulative effect on air quality from construction would be negligible. Outside of NFS lands, the electricity carried by transmission line would be available to Coal Bed Methane (CBM) producers, reducing their dependency on diesel-fueled generators. Fewer generators at CBM wells would have a positive impact on air quality in the Powder River Basin (PRB) since emissions from these generators would be eliminated or reduced.

Surface Water Quality Management: The Proposed Action would result in no significant impacts to surface water on NFS lands. Surface water resources do not exist within the proposed ROW on NFS lands. On areas outside of NFS lands, transmission line poles would not be located adjacent to water bodies. The proponent will further protect surface water quality by implementing appropriate best management practices (BMP) during construction. No permanent roads will be constructed minimizing the potential for erosion and sedimentation of existing streams. BMPs and industrial activities such as equipment fueling and maintenance that are protective of the environment will be applied during construction, and operation of the transmission line. Therefore, the Proposed Action is expected to have no significant impacts to surface water quality on areas outside of NFS lands.

Soils Management: No significant impacts to soils from the Proposed Action on NFS lands are expected. Surface disturbance caused by installation of poles would be minimal on NFS lands. The anticipated soil disturbance related to pole installation on NFS lands is estimated to be 0.0019 acres. It is unlikely that poles will be installed on the 40 acre parcel of NFS land in Section 1, Township 41N, Range 73W, 6th PM because there an angle is planned in Section 6, Township 41N, Range 72W, 6th PM adjacent to the isolated 40 acre parcel of NFS land. On areas outside of NFS lands, none of the proposed pole sites will be located in areas with steep slopes or drainages. Surface disturbance caused by installation of poles would be minimal on areas outside NFS lands. Impacts to soil will be limited to locations where poles will be installed. The anticipated soil disturbance related to pole installation for the entire project is estimated to be a maximum of 0.15 acres. Soil compaction and erosion from construction equipment can eventually lead to the decreased establishment of certain plants and vegetation. Compaction resulting from construction equipment increases the potential for erosion and leads to decreased absorption. Areas that are disturbed by construction equipment are expected to recover with native vegetation after the construction equipment is permanently removed and by implementing the sediment control plan and BMPs. Therefore, the Proposed Action is expected to have no significant impacts to soils on areas outside of NFS lands.

Socioeconomic and Community Resources: No significant impacts on socioeconomic and community resources from the Proposed Action are expected on NFS lands. The NFS lands impacted by the Proposed Action are either inaccessible to the public or rarely used by the public due to existing substations or mining activities. No significant direct or indirect effects to socioeconomic and community resources from the Proposed Action on areas outside of NFS lands are anticipated. In addition to local expenditures by construction workers, other income generated by construction of the transmission line would include local purchases of materials. It is likely that the proponent would acquire a variety of construction materials and supplies within the greater Gillette area. Local suppliers of these materials could expect increases in sales during the construction period. Because a primarily local work force would be used for construction of the proposed transmission line, the impact on housing would be negligible.

Scenery Management: The Proposed Action would have no significant impact on scenery integrity objectives as outlined in the Grassland Plan. The addition of power lines to the NFS lands and the remainder of the ROW area would have no significant direct or indirect

impacts on the already linear features of the landscape, as existing roads, fencing, and power lines transect the area. The proposed transmission line would not deviate from the scenic integrity objectives of the area.

Noise, Television, and Radio Interference: Noise associated with construction of the proposed transmission line would be intermittent and of relatively short duration. Impacts from noise would be small compared with vehicles on nearby highways and other roads. The majority of the proposed project is located in rural, unpopulated areas. No significant direct or indirect impacts from noise associated with construction and operation of the Proposed Action are anticipated on NFS lands or the remainder of the ROW.

Interference with radio and television signals could occur in vehicles driving near, or homes located near, the transmission lines. However, interference is expected to be limited since radio and television interference generally occurs in older transmission lines with loose or dirty insulators and spark gaps. The proponent's policy is to investigate and correct problems with television and radio interference associated with its lines. Therefore, no significant impacts are expected as a result of noise, or radio and television signal interference on NFS lands or the remainder of the ROW.

Human Health and Safety: The proposed transmission line would be constructed to National Electrical Safety Code (NESC) standards and, as a result, no significant impacts on NFS lands or the remainder of the ROW posed by safety or electrical hazard to the general public are expected. Potential shock hazards may result from objects such as antennas and irrigation equipment that impede the transmission line vicinity. General operation of the transmission line on NFS lands would not present a safety or electric hazard to the general public since the proponent's standard grounding policies effectively mitigate the possibility of nuisance shocks caused by induced currents from stationary objects.

Operation of the transmission line would result in increased electric and magnetic fields (EMF) levels in the area adjacent to the transmission line. However, numerous sources of EMF exist in nature and in occupational and residential environments. There are no locations along the ROW where is expected that there will be a clear and scientifically supportable threat to human health.

No hazardous waste sites exist in the ROW. No short or long term storage of hazardous waste associated with the transmission line will be stored or located on or near the ROA at any time before, during, or after construction or during the operational life of the transmission line. Therefore, no significant impacts from disturbing hazardous waste sites are expected as a result of implementing the proposed action.

Several alternatives to the proposed action were reviewed by the proponent but eliminated from further consideration based on reasonable and valid criteria established by the proponent.
In addition to the Proposed Action – Alternative 2, the Forest Service also evaluated the following two alternatives:

Alternative 1 - *No Action* – by this alternative, no 230kV transmission line would be constructed.

Alternative 3 – *Avoiding Former Nest Location* - by this alternative, the 230kV transmission line would not pass within 0.25 mile of the former nest site location.

Based upon the effects of the Proposed Action, the responsible official will decide whether or not, and if so how, a power transmission line ROW permit would be issued to Basin Electric in ways that would protect natural resources and the environment while also accommodating the proposed uses and providing for public safety.

This EA complies with the requirements of the National Environmental Policy Act of 1969, as amended (NEPA), and the Office of the Presidents Council on Environmental Quality regulations for implementing the Act (CEQ 2002 pg. 1-20). It documents the environmental effects analysis of the Teckla to Carr Draw 230 kV Transmission Line Project proposal on the 0.88 miles of NFS lands, within the Thunder Basin National Grassland, Campbell County, Wyoming, and along the remainder of the 71.23 mile long ROW outside of Federal land for the cumulative impacts analysis.

This EA includes a description of the Proposed Action, the purpose and need for the action, the public issues about the actions that are identified, the alternatives to the Proposed

Action that were considered, the affected environment and the environmental consequences of implementing the proposal or any alternatives to it that were developed in detail.

This EA is not a decision document. It is a document disclosing environmental consequences of implementing the Proposed Action and the alternatives to that action. The decision as how to proceed will be documented in a Decision Notice signed by the responsible official.

1.0 INTRODUCTION

1.1 DOCUMENT STRUCTURE

The U.S. Department of Agriculture (USDA) Forest Service (FS) has prepared this Environmental Assessment (EA) for the Teckla to Carr Draw 230 kilovolt (kV) Transmission Line Project in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and state laws and regulations. This EA discloses the direct, indirect, and cumulative environmental impacts that would result from the Proposed Action and alternatives. The document is organized into six parts:

Introduction: The section includes information on the background of the Teckla to Carr Draw 230 kV Transmission Line proposal, the purpose and need for the project, and the agency's proposal for achieving that purpose and need. The decision framework is also discussed in this section as well as how the FS informed the public of the proposal and how the public responded.

Comparison of Alternatives, including the Proposed Action: This section provides a more detailed description of the agency's Proposed Action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes possible mitigation measures.

Environmental Consequences: This section describes the environmental effects of implementing the Proposed Action and other alternatives. This analysis is organized by environmental management area including land use, floodplains and wetlands, cultural and paleontological resources, threatened and endangered species, fisheries, recreation, grazing and rangelands, transportation, air quality, surface water quality, soils, socioeconomic and community, scenery, noise, radio and television interference, and human health and safety. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison of the Proposed Action. The impacts of the Proposed Action are also presented.

Agencies and Persons Consulted: This section provides a list of preparers and agencies consulted during the development of the environmental assessment.

Literature Cited: This section documents references cited. It contains references used for background information and data compilation. Although not all references are cited in the text, all were used in preparation of this EA.

Appendices: The appendices provide more detailed information to support the analyses presented in the EA. Appendices include project maps and figures, project photographs, the Biological Assessment and Biological Evaluation (BA/BE) study, results of the cultural resources and paleontological studies, list of scoping contacts, and the results of an environmental records search provided through Environmental Data Resources, Inc. (EDR).

Additional documentation, including detailed analyses reports of project-area resources, can be found in the project analysis record located at the Douglas Ranger District Office at 2250 East Richards Street in Douglas, Wyoming.

1.2 BACKGROUND

The applicant for this proposal, Basin Electric Power Cooperative (Basin Electric), is a consumer-owned, regional cooperative headquartered in Bismarck, North Dakota. It generates and transmits wholesale electricity to 120 member rural electric systems in nine states: Colorado, Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota, and Wyoming. These member systems, in turn, distribute electricity to about 1.7 million consumers.

Basin Electric was formed in 1961 by 67 member cooperatives after the U.S. Department of the Interior announced that the Federal hydropower system would not be able to meet the additional energy requirements of the region's rural electric cooperatives and other preference customers of the U.S. Bureau of Reclamation beyond the winter of 1965. Basin Electric was formed as a wholesale power supplier to plan, design, construct, and operate generating facilities to meet the growing electrical demands of its member systems for electricity in the upper Midwest.

Currently, the majority of Basin Electric's 120 members fall into one of two classes of membership: Class A and Class C. Basin Electric's 16 Class A members purchase wholesale power directly from the cooperative under contract. Class A members can be generation and transmission (G&T) or retail distribution systems. The G&T systems, in turn, provide wholesale power to electric retail distribution systems. Of these Class A members, eight are distribution cooperatives and eight are G&T cooperatives. A G&T cooperative is engaged primarily in providing wholesale electric service to its members, which generally consist of several distribution cooperatives. Service by a G&T member is provided from its own generating facilities or through agreements with other wholesale power suppliers to purchase power.

Basin Electric has 102 Class C members. These member cooperatives construct, operate, and maintain electric retail distribution systems. Class C members are the retail distributors of electricity that is sold by Class A G&T members under contracts for power supply. Powder River Energy Corporation (PRECorp) is a retail distributor of electricity in Campbell County.

1.3 PURPOSE AND NEED FOR ACTION

The *Purpose* of this project is to meet increased demand for electric power in the western Powder River Basin area, to improve power grid stability and to keep local power transmission system(s) technically "up to date" and in compliance with current industry standards. Electrical energy has made a vast improvement in the quality of life in rural areas. To not supply additional electrical energy to rural consumers would mean the consumer would have to most likely increase their use of oil and gas, and individual electric power generators, to meet their additional energy requirements. The power supply to this region is based on a 230 kV transmission system. This system was built to support the coal mines that were developed in the 1970s and are still operating.

The Proposed Action best addresses and meets the needs of Basin Electric and its customers while minimizing adverse impacts to the environment, on existing land uses, factoring in the concerns of land owners, while complying with all regulatory requirements. The proposed project is needed to maintain adequate voltage levels, to improve system reliability and continuity of service, and to reinforce the existing system to enable Basin Electric to serve the additional power requirements of the development of coal bed methane

(CBM) resources in Campbell County. System load requirements are based on Basin Electric's projected member load growth and the transmission system required. The growth is based on Basin Electric's Power Supply Working Load Forecast (Pace Global 2002 pg. 18).

The *Need* for this project is to meet increasing power grid load requirements and to maintain the reliability of the electrical delivery system in northeastern Wyoming. The transmission system requirements are based on existing and projected system performance needs. A portion of the load growth in northeastern Wyoming is associated with energy sales to commercial customers. The power required by these customers is growing, particularly for coal production facilities and developers of CBM production wells. The latest load forecast projects an increase of 1,817,133-megawatt hours in annual requirements from 2000 through 2016, an average annual increase of 4.98 percent. In the short term, an average annual increase of 18.9 percent is projected for the years 2000 to 2005. Significant load growth is also being realized in Black Hills Service territory in northeastern Wyoming. To maintain the reliability of the electrical delivery system throughout northeastern Wyoming, and to accommodate projected load growth, additional transmission support in the region is essential.

Coal production in the Powder River Basin of northeastern Wyoming is also projected to increase with as much as 10,000 additional acres mined through 2009 (Pace Global 2002 pg. 14-18) requiring additional electric power. The Bureau of Land Management (BLM) has analyzed the effects of drilling 50,000 CBM wells in the Powder River Basin in the next 10 years (Pace Global 2002 pg. 1-5). CBM well projections range from 70,000 to 120,000 over the next 20 years (Pace Global 2002 pg. 1-5). CBM development started in eastern and central Campbell County and is progressing westward. The increase in well development will also spur an increase in population growth, creating additional demands for power.

Performance needs include not only accommodation of future growth, but also enhancement of overall system reliability in northeastern Wyoming. The local utility provider has built a 69 kV system to deliver power to its distribution substations. This 69 kV system is not, however, adequate to serve the projected load to the area west of Gillette. The local utility provider is already hard-pressed to maintain voltage in the western edge of the existing 69 kV systems. As a result, a 230 kV source is needed in this western region of the system.

In addition, with regards to PRECorp's expansion of the existing Teckla substation, the demand by customers for electricity through the Teckla substation is increasing. In order for that applicant/proponent to meet this increasing customer demand, an expansion of the Teckla facility was necessary. The FS and PRECorp completed a separate analysis and a decision to proceed with the expansion of the Teckla substation was documented in a Decision Memo signed by the Forest Supervisor on September 25, 2002.

This action responds to the goals and objectives outlined in Land and Resource Management Plan for the Thunder Basin National Grassland Medicine Bow-Routt National Forest (FS 2001a chapter 1, pg. 1-8), and helps move the project area towards desired conditions described in that plan.

1.4 PROPOSED ACTION

1.4.1 Proposed Action on NFS Lands

The Douglas Ranger District of the Medicine Bow/Routt National Forests and Thunder Basin National Grassland is considering a proposal by Basin Electric to construct a 230 kV transmission line across approximately 0.88 miles of National Forest System (NFS) lands in Campbell County, Wyoming. The project that would occur on NFS lands is part of a larger undertaking known as the Teckla to Carr Draw 230 kV Transmission Line Project that will take electric power by 230 kV power transmission line to the area of the Powder River Basin west of Gillette, Wyoming from the existing Teckla substation west and north for approximately 71.23 miles to the Carr Draw substation area north of Interstate 90 (I-90). The proposed transmission line would connect with existing substations and combustion turbines (CT) at Hartzog and Barber Creek. The transmission line is proposed to provide infrastructure and related facilities for a reliable power supply to meet the growth in load requirements for electric power, to improve power grid stability, and to keep local power transmission systems "up to date" in the Campbell County area of the Powder River Basin.

Basin Electric's proposed Teckla to Carr Draw transmission line would originate at the existing Teckla substation in Section 3, Township 41N, Range 71W, 6th Principle Meridian (PM), southeast of Wright, Wyoming. The proposed transmission line would proceed in a west and north direction to the existing Hartzog substation and CT site in Sections 19 and 20, Township 44N, Range 74W, 6th PM. The proposed transmission line would continue

north to connect with the existing Barber Creek substation and CT site in Section 33, Township 49N, Range 75W, 6th PM. The transmission line would terminate at the Carr Draw substation in Section 8, Township 50N, Range 75W, 6th PM north and west of Gillette, Wyoming. At the Carr Draw substation, the proposed 230 KV transmission line would connect with an existing 230 kV transmission line. The proposed transmission line ROW and existing substations are presented on Figure 1-2. The transmission line would cross approximately 4,450 feet of NFS land in Campbell County in Section 3, Township 41N, Range 71W, 6th PM and approximately 130 feet of an isolated 40 acre parcel of NFS land in Section 1, Township 41N, Range 73W, 6th PM. The Proposed Action alignment must terminate at the Teckla substation that is located on NFS lands. The alignment must cross the 40 acre parcel of NFS land in Section 1, Township 41N, Range 73W, 6th PM, since the proposed transmission line would impact more Federal land if an alternative route in this area was selected. In addition, routing the transmission line around the 40 acre parcel of NFS land in Section 1, Township 41N, Range 73W, 6th PM, generated additional land owner concerns. The Proposed Action and its location relative to the impacted areas of the Thunder Basin National Grassland and state owned lands are shown on Figure 1-3.

Access to the NFS land and existing Teckla substation in Section 3, Township 41N, Range 71W, 6th PM is by existing county roads. There is no public right-of-way access across private and state lands to the proposed project location in Section 1, Township 41N, Range 73W, 6th PM. This NFS land is not accessible to the public. Aside from NFS lands, land along the proposed alignment is owned by private landowners, and to a lesser extent, the State of Wyoming and the BLM. Figure 1-4 presents land ownership in southern Campbell County. Table 1-1 displays the length of the transmission line categorized by the type of land owner.

TABLE 1-1
TECKLA TO CARR DRAW 230 kV TRANSMISSION LINE
TRANSMISSION LINE LENGTH BY OWNER TYPE

	Total	Forest Service	State of Wyoming	BLM	Private Landowner Property
Miles	71.23	0.88	3.08	0.24	67.03
Percentage	100	1.22	4.32	0.34	94.12

For the Proposed Action, the length of the transmission line within NFS land is only 0.88 miles or 1.22% of the total linear distance of the line. The transmission line would be constructed primarily of conventional, two-pole H-frame structures fabricated from wood or

steel. Figure 1-5 displays a typical steel H-frame structure. Some special configurations may be required for longer spans in areas of rough topography. Three-pole structures may be required at angle points, locations where the line turns. Wood poles would be treated with Pentachlorophenol (PCP) at the pole manufacturing facility. Steel poles would be weathering steel or zinc galvanized. As shown in Figure 1-5, typical poles would be approximately 85 feet in length with nearly 10 of the 85 feet below ground surface. The span between structures is expected to be about 800 feet. It is estimated that 12 poles will be installed on NFS lands.

The Proposed Action Right of Way (ROW) is 125 feet wide, and the length of the proposed action is 71.23 miles. The total number of acres within the ROW on NFS land is expected to be approximately 13.17 total acres. This represents the amount of NFS lands contained within the proposed transmission line ROW. The actual number of acres impacted is much lower.

At the present time, two or three equipment staging areas are proposed. Staging areas will be located along existing road ROWs to minimize natural resource and environmental impacts. The exact locations of the staging areas are not known at this time. The proponent will make efforts to ensure these staging areas avoid sensitive species habitat. The FS will not permit the development or use of staging areas on NFS lands.

The expansion of the Teckla substation in section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation would have minimal impact on recreation on NFS lands. The expansion of the substation has been completed and any impacts associated with the substation expansion are addressed under cumulative impacts in the Environmental Consequences section of this document .

1.4.2 Proposed Action Outside of NFS Lands

Basin Electric's Proposed Action extends beyond the affected NFS lands described above for a total of approximately 71.23 miles from the Teckla substation. The proposed transmission line and associated ROW is generally located west and south of Gillette,

Wyoming, and runs primarily south to north, although the southern portion will run east to west. The proposed transmission line extends approximately 8 miles west from the Teckla substation to a point where it angles northwest in Section 6, Township 41N, Range 71W, 6th PM. The proposed transmission line continues northwest for approximately 16 miles to the existing Hartzog CT site and substation in Sections 19 and 20, Township 44N, Range 74W, 6th PM. From the existing Hartzog substation and CT site, the proposed transmission line continues to the north for approximately 25 miles, running generally parallel to State Highway 50 (SH – 50). In Section 7 Township 48N Range 74W, 6th PM the alignment angles to the northwest again for approximately 5 miles to the existing Barber Creek substation in Section 33, Township 49N, Range 75W, 6th PM. From the Barber Creek substation, the proposed transmission line would continue north for approximately 10 miles crossing Interstate 90 (I - 90). The transmission line would terminate at the Carr Draw substation in Section 8, Township 50N, Range 65W ,6th PM, west of Gillette, Wyoming. At the Carr Draw substation, the proposed 230 kV transmission line connects with an existing 230 kV transmission line.

Outside NFS land, the proposed transmission line crosses primarily open grasslands and rangelands. To the south, the terrain is generally flat, with low-lying hills and knolls that are dissected by shallow drainages. To the north, the terrain is more severely dissected by ephemeral drainages and erosional features. Elevation along the ROW ranges from 4,500 feet above mean sea level (msl) at the north end to a high of 5,400 feet above msl near the Hartzog substation. Detailed topographic maps of the proposed transmission line route are provided in Figures 1-6a, 1-6b, and 1-6c.

Private landowners own most of the land and along the portion of the proposed alignment outside of NFS land. The Bureau of Land Management (BLM) and the State of Wyoming also own land along the Proposed Action. The Proposed Action impacts 67.03 miles (over 94% of the entire line) of private land. The remaining portions of the line impact land administered by the BLM (0.34%) and the State of Wyoming (4.32%).

Similar to NFS lands, the remainder of the transmission line would be constructed primarily of conventional, two-pole H-frame structures. The design of the line would allow for future 69 kV tie-ins at the existing Hartzog substation and at the Barber Creek substation. The proposed transmission line may contain a double circuit segment from the Barber Creek

substation to the Carr Draw substation. The Proposed Action may include a double circuit segment in which a 115 kV transmission line would be constructed on the same poles as the 230 kV transmission line (Figure 1-2). The design of the 115 kV segment would not exactly match the design of the 230 kV line presented in Figure 1-5. The primary difference between the 230 kV transmission line and the 115 kV (or 69kV) lines would be the horizontal distance between the lines. The distance between lines on the 115 kV segment is estimated to be approximately 12 to 14.5 feet. It is more typical that the horizontal distance between these lines is 14.5 feet. The distance between lines on the 230 kV segment is estimated to be approximately 19 feet based on the typical H-frame structure.

The proponent has worked diligently with private landowners to reach access agreements for the Proposed Action ROW. As a last resort, the proponent can enter into condemnation actions when access agreements cannot be reached.

Two or three equipment staging areas are proposed. Staging areas will be located along existing road ROWs to minimize natural resource and environmental impacts. The proponent will make efforts to ensure these staging areas avoid sensitive species habitat.

Photographs of the transmission line ROW are presented in Appendix A along with an accompanying map showing locations where each photograph was taken.

1.5 DECISION FRAMEWORK

Through the environmental analysis process, the Forest Supervisor will determine whether or not, and if so where and how, a power transmission line ROW permit would be issued to Basin Electric authorizing the use of 13.17 acres of NFS land, that would protect natural resources and the environment, while also accommodating the proposed uses, and providing for public safety. Surface developments are required to be consistent with the Land and Resource Management Plan for the Thunder Basin National Grassland Medicine Bow-Routt National Forest Grassland Plan (FS 2001a Chapter 1, pg. 9-30), and applicable laws and regulations.

1.6 PUBLIC INVOLVEMENT

The proposal was listed in the Schedule of Proposed Actions (FS 2002b pg. 6). The proposal was provided to the public and other agencies for comment during scoping from April 15 through May 20, 2002. The public was invited to provide comment and identify issues on the proposed transmission line. Comments on the proposal should have identified current uses and perceptions, as well as, future needs and desires. Comments about this project were due to the FS by May 20, 2002. The following five commenters submitted written or verbal comments during the public scoping period:

- State of Wyoming Office of Federal Land Policy
- Wyoming Office of State Lands and Investments
- Wyoming State Historic Preservation Officer (SHPO)
- Wyoming Game and Fish Department
- Mr. Wendall Funk

The request for public comment was also mailed to other Federal, state, and local agencies, adjacent land owners, and individuals or organizations who may be interested in or affected by decisions related to the Basin Electric proposal. A list of notified parties is presented in Appendix B.

The U. S. Fish and Wildlife Service (USFWS) was scoped with during meetings with State area representatives of that Department of Interior agency in Cheyenne, WY on March 8, 2002 and on June 24, 2002. These discussions focused on the location of the Proposed Action, impacts the proposed action may or may not have on plant and wildlife species, and field survey techniques.

In addition, as part of the public involvement process, the FS requested publishing a “Request For Comments” notification in the Casper Star-Tribune on April 17, 2002.

Comments received in response to the solicitation, including names and addresses of those who comment, are considered part of the public record on this Proposed Action and are available for public inspection. Comments submitted anonymously were accepted and considered; however, those who submitted anonymous comments do not have standing to appeal the subsequent decision under 36 Code of Federal Regulations (CFR) Part 215.

Using the comments from the public and other agencies, an interdisciplinary team developed a list of issues to address.

1.7 ISSUES

After an analysis of the comments received, the FS responsible official determined that none of the issues or concerns expressed by the public is significant or would likely represent an issue that is highly controversial. Non-significant issues were identified as those: (1) outside the scope of the Proposed Action; (2) already decided by law, regulation, Grassland Plan, or other higher level decision; (3) irrelevant to the decision to be made; or (4) conjectural and not supported by scientific or factual evidence. The Council for Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)…" A list of non-significant issues and reasons regarding their categorization as non-significant may be found in the project record.

As for issues, the Forest Service identified 6 topics raised during scoping:

1. Whether or not the proposal contributes significantly to the nation's continued dependence on fossil fuel energy consumption.
2. Whether or not the proposed enhanced electric grid will be developed primarily to serve the desires of extractive industries in the Powder River Basin, or the needs of truly rural and scattered towns and ranches.
3. Whether or not the proposal will seriously [adversely] impact the public's land.
4. Whether or not Basin Electric will "fairly compensate" the national public for the effected Forest land that it will impact by securing land elsewhere that is adjacent to private public land, such as the in holdings northeast of the Teckla substation.
5. Whether or not the 230 kV line will adversely impact the landscape or environment by effecting the surface and ground water near where chemically treated poles will be installed.
6. Whether or not the proposed transmission line will produce strong electric and magnetic fields that will have an adverse impact on human and animal health and safety locally.

Each of these issues is addressed in this EA.

2.0 COMPARISON OF ALTERNATIVES

This section describes and compares the alternatives considered for the Teckla to Carr Draw 230 kV Transmission Line Project. It includes a description and map of each alternative considered. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Some of the criteria used to compare the alternatives are based upon the design of the alternative and on the environmental, social and economic effects of implementing each alternative.

The proponent conducted a systematic evaluation of alternative ROWs to locate the most feasible alignment. The ROW evaluation included:

- Conducting a needs analysis that assessed short and long-term power demands in the area
- Minimizing the involvement of, and impact(s) to Federal land
- Studying the entire proposed area of the project using aerial photographs, maps, and existing land use databases
- Identifying tie-ins or connections to existing electrical system infrastructure, consisting of four substations, two CT sites, and existing 230kV transmission lines
- Reviewing physical limitations, such as rugged topography, railroad crossings, and dry lake beds, that may result in structural instability of the poles
- Screening the area of the project to identify restricted and potentially incompatible areas, including conflicting land uses, existing structures or developments, and potentially challenging environmental features such as ponds, lakes, wetlands, and rugged terrain
- Completing field surveys by a multidisciplinary team including a project engineer, environmental compliance specialist, and land use planner
- Identifying alternative corridors
- Holding meetings with landowners along various alternative corridors to identify potential conflicts and incompatibilities and to assess the probable level of cooperation
- Conducting a comparative assessment of selected environmental corridors using criteria on environmental, land use, engineering, and cost evaluation
- Identifying the preferred ROW for the proposed project based on consideration of the above factors

An initial screening process followed, by a field reconnaissance, identified potential alternatives to the proposed corridor. The initial task involved: (1) delineation of the boundaries of the ROW relative to the existing substations and proposed endpoints of the alignment, and (2) examination of aerial photographs, maps of existing and future land uses, transportation and utility maps, and maps that show environmental features including floodplains, wetlands, and soils. This initial review was completed to eliminate from further consideration areas that are obviously unsuitable as a site for the transmission line. Based on the results of the screening evaluation, acceptable sections and nodes of the ROW were identified, drawn on a map, and combined into route alignments. Alternative alignments also were identified, drawn on a map, and combined into route alignments. Alternative alignments were evaluated through field reconnaissance and screened against specific evaluation criteria defined above.

2.1 ALTERNATIVES

For the remainder of this document, Alternative 1 refers to the 'No Action' alternative, under which no electric power transmission line would be constructed. Alternative 2 refers to the Proposed Action, and Alternative 3 refers to Avoiding Former Nest Location.

2.1.1 Alternative 1 – No Action

Under the No Action alternative, current management plans would continue to guide management of the project area. The No Action alternative would forego construction of a 230 kV transmission line. No changes would be made to resources in the study area, and no immediate effects to resources would be expected. Other consequences of the No Action alternative are discussed in Section 3.0.

2.1.2 Alternative 2 – Proposed Action

The Proposed Action consists of a 71.23-mile long transmission line from the Teckla substation south of Wright, Wyoming to the Carr Draw substation, west of Gillette (Figure 2-1). Additional details regarding the Proposed Action are provided in Section 1.4.

2.1.3 Alternative 3 – Avoiding Former Nest Location

Alternative 3 consists of a 71.54-mile long transmission line from the Teckla substation south of Wright, Wyoming to the Carr Draw substation west of Gillette (Figure 2-2). This alternative would restrict surface occupancy within a 0.25 buffer of the former nest location Additional details regarding the consequences of Alternative are discussed in Section 3.0.

Alternative 3 was developed because a nest used by both Swainson's and ferruginous hawks did at one time exist within 0.25 mile of the ROW in Section 4, Township 41N. Range 71W, 6th PM. While nest relocation permit approval from the USFWS was pending, persons monitoring the nest on February 21, 2003 observed that the nest and the tree that supported the nest were removed from their original location. The exact day that the tree and nest were taken is not known. However, it is known that the nest was in place on February 18, 2003.

The FS does not condone or support illegal activity, nor does the FS allow illegal activity to benefit or hasten their review or approval of any project. Representatives of the proponent reported the taking of the nest and tree to USFWS law enforcement officials the day the nest and tree were discovered missing. Subsequent to the notification, the proponent's representatives met with USFWS law enforcement on March 3, 2003 to provide observation data and to assist with the ongoing investigation. The ongoing USFWS law enforcement investigation has determined that the taking of the nest was not related to this project.

The proponent commits to not taking active nests and complying with the Grassland Plan, and consulted with USFWS to locate to a replacement nest structure on an alternate location to comply with surface occupancy requirements of the Grassland Plan.

Alternative 3 has an alignment very similar to the Proposed Action. The difference between Alternative 3 is and the Proposed Actions is that Alternative 3 avoids the former nest location by maintaining a 0.25 distance from the former nest site in Section 4, Township 41N. Range 71W, 6th PM (Figure 2-2).

Routing around the former nest location would impact more Federal land than the proposed route. Alternative 3 would cross approximately 1.66 miles of Federal land (Table 2-1). The ROW under the Proposed Action would only cross approximately 1.12 miles of Federal land.

TABLE 2-1
TECKLA TO CARR DRAW 230 kV TRANSMISSION LINE
ALTERNATIVE 3 TRANSMISSION LINE LENGTH BY OWNER TYPE

	Total	Forest Service	State of Wyoming	BLM	Private Landowner Property
Miles	71.54	1.42	2.82	0.24	67.06
Percentage	100	1.98	3.94	0.33	93.75

Alternative 3 is longer than the Proposed Action, has a greater impact on NFS lands, and will require angle points on NFS lands. In addition, the construction costs associated with Alternative 3 are much greater than the construction costs of the Proposed Action.

2.2 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

The proponent used the following screening criteria to test the validity, reasonableness and or practicality of alternatives to the Proposed Action:

- Minimization of the length of the corridor on Federal lands
- Minimization of the overall length of the corridor
- Minimization of road and railroad crossings
- Proximity to the two existing combustion turbine sites at Barber Creek and Hartzog
- Proximity to the four existing substations
- Ability to tie-in with the existing 230 kV transmission line at the Teckla substation and at the Carr Draw substation
- High accessibility for construction and maintenance
- Minimization of the number of permits required for construction and operation
- Minimization of visual impact
- Construction issues such as stability in closed basin lake beds and highly dissected terrain
- Minimization of the number of farmsteads and ranches adjacent to the corridor
- Minimization of the number of properties the transmission line would cross

- Minimization of potential impacts to known wetlands, threatened and endangered (T&E) species, sensitive habitats, waters of the U.S., and other environmental resources
- Willingness of property owners to sell rights-of-way and provide access
- Minimization of costs associated with acquisition, construction, and maintenance of the ROW

Based on these screening criteria and the need for the Proposed Action, several alternatives to the Proposed Actions were considered but eliminated from further consideration. These alternatives, and the reasons for their elimination, are discussed in the following sections.

2.2.1 Alternative 4 – Teckla to Hartzog Diagonal

A diagonal corridor from the Teckla substation directly to the Hartzog CT and substation site would present the shortest potential route connecting existing substations, for the transmission line along the southern ROW. However, several obstacles to this alignment were encountered. One concern with the diagonal route regarded terrain. The diagonal traverses rougher terrain than the proposed route. Alternative 4 is presented in Figure 2-3.

Diagonal routing from Teckla would impact more Federal land than the proposed route. The diagonal route would cross approximately 6.08 miles of Federal land (Table 2-2). The ROW under the Proposed Action would only cross approximately 1.12 miles of Federal land.

TABLE 2-2
TECKLA TO CARR DRAW 230 kV TRANSMISSION LINE
ALTERNATIVE 4 TRANSMISSION LINE LENGTH BY OWNER TYPE

	Total	Forest Service	State of Wyoming	BLM	Private Landowner Property
Miles	66.26	5.84	2.08	0.24	58.10
Percentage	100	8.81	3.13	0.36	87.70

Landowners in the area were opposed to the diagonal routing across their land. Landowner concerns and disapproval of the diagonal routing resulted in the consideration of other alternatives. The diagonal route would also cross dry lakebeds in closed basins. These dry lakebeds are unsuited for the installation of poles due the geotechnical composition of soils in the area. Placing poles in these areas would result in unstable structures.

Due to the amount of Federal land impacted, landowner disapproval, geotechnical issues, and unfavorable terrain, Alternative 4 was deemed unsuitable in favor of the proposed route.

2.2.2 Alternative 5 – North from Teckla Along SH-59 then West to Hartzog

The north-south corridor north of Teckla and the east-west corridor westward to Hartzog was also reviewed. Several obstacles to this alignment were encountered. Routing north from Teckla would be longer than the proposed route. The Proposed Action is shorter than Alternative 5, 71.23 miles compared to 75.02 miles. Alternative 5 crosses more Federal land than the proposed route. Alternative 5 would cross approximately 6.65 miles of Federal land, more than the proposed route. The proposed route only crosses approximately 1.12 miles of Federal land (Table 2-3). Alternative 5 is presented in Figure 2-4.

TABLE 2-3
TECKLA TO CARR DRAW 230 kV TRANSMISSION LINE
ALTERNATIVE 5 TRANSMISSION LINE LENGTH BY OWNER TYPE

	Total	Forest Service	State of Wyoming	BLM	Private Landowner Property
Miles	75.02	6.41	1.86	0.24	66.50
Percentage	100	8.55	2.48	0.32	88.65

There were also landowner objections to Alternative 5. One landowner, a sheepherder, herds sheep with a one-man helicopter. A 230 kV transmission line crossing the property would severely restrict his ability to herd sheep. The Proposed Action crosses less private land making it a better alternative for private landowners.

Alternative 5 would also require alignment around a number of “ranchette” developments south of the town of Wright. Routing around these ranchettes would increase the number of angles in the line and increase the overall length of the transmission line. Construction along this route would adversely affect more occupied dwellings and would require more angles in the transmission line. The additional angles would require additional poles creating more of a detrimental impact from a visual quality perspective.

Alternative 5 would cross SH-59 twice. These road crossings would make the transmission line more visible to the general public and increase the overall length of the transmission line.

Due to the amount Federal lands impacted, landowner disapproval, increased number of angles, and the number of road crossings, Alternative 5 was deemed unsuitable in favor of the Proposed Action.

2.2.3 Alternative 6 – North from Teckla Along Burlington Northern Santa Fe (BNSF) Railroad Tracks then West to Hartzog

The north-south corridor north of Teckla and then east-west corridor westward to Hartzog was also reviewed. Several obstacles to this alignment were encountered. Alternative 6 crosses more Federal land than the proposed route. Routing north from Teckla along the railroad tracks would impact more Federal land and be longer than the proposed route. The Proposed Action is shorter than Alternative 6, 71.23 miles compared to 75.90 miles. Alternative 6 would cross approximately 4.67 miles of Federal land (Table 2-4). The proposed route only crosses approximately 1.12 miles of Federal (NFS and BLM) land. Alternative 6 is presented in Figure 2-5.

TABLE 2-4
TECKLA TO CARR DRAW 230 kV TRANSMISSION LINE
ALTERNATIVE 6 TRANSMISSION LINE LENGTH BY OWNER TYPE

	Total	Forest Service	State of Wyoming	BLM	Private Landowner Property
Miles	75.90	3.95	3.58	0.72	67.64
Percentage	100	5.21	4.72	0.95	89.12

There were also landowner objections to Alternative 6.

This alternative has more railroad crossings than the proposed route. Construction along this route would adversely affect more occupied dwellings and would require more angles in the transmission line than the proposed route.

Additionally, routing in this manner would parallel an existing transmission line. This parallel alignment is acceptable when other alternatives do not exist. However, the parallel alignment of Alternative 6 presents electrical system load reliability concerns. Impacts from wind or other types of problematic events could damage both lines, and undermine or disrupt the transmission of electricity on both lines. These types of events would disrupt

power in the entire electrical grid system, whereas a non-parallel alignment would maintain one segment of the electrical grid, permitting electricity to be rerouted.

Due to the amount Federal lands impacted, land owner disapproval, unfavorable railroad crossings, and electrical system reliability issues, Alternative 6 was deemed unsuitable in favor of the Proposed Action.

2.2.4 Alternative 7 – South from Teckla then Northwest to Hartzog

The proposed alignment for Alternative 7 was to route the transmission line south from the Teckla substation then west and north to Hartzog. Several obstacles to this alignment were encountered. An alignment from the Teckla substation to the south would increase the length of the transmission line. Alternative 7 crosses more Federal land than the proposed route. Routing south from Teckla would impact more Federal land and be longer than the proposed route. The Proposed Action is shorter than Alternative 7, 71.23 miles compared to 74.61 miles. Alternative 7 would cross approximately 2.30 miles of Federal land. The proposed route only crosses approximately 1.12 miles of Federal land (Table 2-5). Alternative 7 is presented in Figure 2-6.

TABLE 2-5
TECKLA TO CARR DRAW 230 kV TRANSMISSION LINE
ALTERNATIVE 7 TRANSMISSION LINE LENGTH BY OWNER TYPE

	Total	Forest Service	State Of Wyoming	BLM	Private Landowner Property
Miles	74.61	2.06	0.57	0.24	71.74
Percentage	100	2.76	0.77	0.32	96.16

Alternative 7 would also cross land currently leased for coal mining activities. Although there is no current mining activity on this land, the possibility of mining exists in this area. Construction of the transmission line in a southerly direction from Teckla is feasible. However, the risk of having to move the transmission line if coal mining activities occurred would result in rerouting the line and causing additional environmental impacts from reconstruction.

Routing south from Teckla would also impact known mountain plover and black footed ferret habitat associated with an existing black-tailed prairie dog colony, in Section 3, Township 41N, Range 71W, 6th PM. The prairie dog colony just south of Teckla potentially is prime habitat for mountain plover and black-footed ferret. Construction activities in this area may impact this habitat. Additional impacts on habitat would take place if transmission line re-routing occurred due to future coal mining activities taking place. Landowner objections to Alternative 7 were also raised. As this alignment angles toward the Hartzog CT and substation, landowner objections intensified.

Due to these issues, increasing the overall length of the transmission line, potential coal mining activities disturbing the transmission line, potential impact to habitats, and landowner objections, Alternative 7 was abandoned in favor of the proposed route.

2.2.5 Alternative 8 – Avoiding BLM Land

Alternative 8 proposed routing the transmission line around the BLM land in Section 5, Township 49N, Range 75W, 6th PM. Alternative 8 would avoid BLM land by routing the line across a dissected draw in Section 5, Township 49N, Range 75W, 6th PM. Crossing this draw was unrealistic from a construction perspective and would increase the length of the span from one pole to the next creating potential stability issues. In addition, avoiding BLM land in this area would increase the overall length of the transmission line from 71.23 miles to 71.62 miles (Table 2-6). Alternative 8 is presented in Figure 2-7.

TABLE 2-6
TECKLA TO CARR DRAW 230 kV TRANSMISSION LINE
ALTERNATIVE 8 TRANSMISSION LINE LENGTH BY OWNER TYPE

	Total	Forest Service	State of Wyoming	BLM	Private Landowner Property
Miles	71.62	0.87	3.08	0.00	67.68
Percentage	100	1.21	4.30	0.00	94.49

Due to the increased overall length of the transmission line and topographic limitations to construction, Alternative 8 was deemed unsuitable in favor of the Proposed Action.

2.2.6 Comparison of Proposed Action ROW and Alternatives: Acreage Impacted

The total number of acres Impacted by the Proposed Action was compared to the total number of acres impacted under each ownership classification.

Table 2-7 presents the acreage impacts of the Proposed Action ROW, and the impacts of each alternative. Table 2-7 considers the impact, presented as acreage and percent of total acreage, of the 125-foot wide ROW and the length of the ROW on Federal, State, and private lands.

TABLE 2-7
TECKLA TO CARR DRAW 230 kV TRANSMISSION LINE
TRANSMISSION LINE ROW ACREAGE BY OWNER TYPE

Action or Alternative	Total Land Disturbed Acres	Federal Land Disturbed (FS and BLM) Acres	Federal %	State Land Disturbed Acres	State %	Private Land Disturbed Acres	Private %
Alternative 1 (No Action)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternative 2 (Proposed Action)	1079.26	18.35	1.56	46.65	4.32	1015.81	94.12
Alternative 3 (Avoiding Former Nest Location)	1083.87	25.10	2.31	42.70	3.94	1016.07	93.75
Alternative 4	1003.88	101.23	9.17	31.47	3.13	880.36	87.70
Alternative 5	1136.624	109.66	8.87	28.18	2.48	1007.65	88.65
Alternative 6	1150.00	77.02	6.16	54.27	4.72	1024.87	89.12
Alternative 7	1130.44	37.86	3.08	8.65	0.77	1087.01	96.16
Alternative 8	1085.22	14.38	1.21	46.65	4.30	1025.40	94.49

Alternative 3 disturbs more acres of Federal land than does the Proposed Action. Alternative 4, considered but eliminated, disturbs approximately 76 fewer total acres than the Proposed Action. However, the total acres and percentage of Federal land impacted is much higher. The Proposed Action is the best alternative available when evaluating the total acres impacted and minimizing the total acres and percentage of Federal land impacted.

2.3 PROPOSED ACTION – IMPACT(S) MITIGATION MEASURES COMMON TO ALL ALTERNATIVES

The proponent has identified several areas where their environmental policies and standard construction and maintenance practices result in no significant environmental impacts. These policies and practices, or mitigation measures, apply to NFS lands and the remainder of the project ROW.

2.3.1 Land Use

The following are specific measures that will be taken to protect land use in the proposed project corridor:

- A commitment to follow the recommendations of the District Conservationist to minimize soil erosion.
- No closure of access to grazing operations to minimize local occupational disruption.

2.3.2 Wetlands

No transmission line poles will be installed in wetland areas. The proponent's environmental and construction policy with regard to wetlands is avoidance. The proposed project ROW does, or is located near, a few wetland areas. On private land, field reconnaissance identified 4 potentially jurisdictional wetlands in Section 29, Township 45N, Range 74W, 6th PM; Section 32 Township 47N, Range 74W, 6th PM; Section 24, Township 48N, Range 75W, 6th PM; Section 33, Township 49N, Range 75W, 6th PM; and 8 man–induced wetlands, such as wetlands induced by stock ponds, or windmill wells used to support livestock watering. The man-induced wetlands are located in Section 6, Township 41N, Range 71W, 6th PM; Section 33, Township 42N, Range 72W, 6th PM; Section 32, Township 44N, Range 74W, 6th PM; Section 24, Township 47N, Range 75W, 6th PM; Section 32, Township 48N, Range 74W, 6th PM; Section 31, Township 48N, Range 74W, 6th PM; Section 13, Township 48N, Range 75W, 6th PM; Section 29, Township 50N, Range 75W, 6th PM. However, no poles will be placed in wetland areas. Small jurisdictional wetland areas within the proposed transmission line ROW will be avoided.

Two or three equipment staging areas are currently planned and will be installed along existing road ROWs to minimize land use disturbance and impacts. No staging areas will be placed in wetland areas.

2.3.3 Threatened, Endangered, and Sensitive Species

Mitigation measures were developed in order to minimize the potential direct and cumulative effects from implementation of the proposed project with regard to raptors and mountain plover. Construction within wetland areas will be avoided to protect the wetland and associated vegetation such as the Ute ladies'-tresses orchid.

The presence of new aboveground transmission lines may increase the potential for raptor electrocutions. The line spacing (width between parallel lines) of the proposed 230 kV transmission line H-frame structure is sufficient to ensure that the potential for raptor electrocutions is insignificant. The proposed action would be constructed to minimize the potential for raptor electrocution by ensuring an 80 inch distance between conductors and ground wire (Figure 1-5). The line spacing between parallel lines on the H-frame structure is approximately 19 feet. For the 115 kV double circuit segment of the proposed transmission line between the Barber Creek and Carr Draw substations, the minimum spacing between parallel lines is expected to be between 12 and 14.5 feet. This distance between horizontal lines is also large enough to minimize the likelihood of raptor electrocutions.

It is possible that a 69kV double circuit will be used instead of the 115 kV in the Barber Creek to Carr Draw segment. Since the local utility provider typically constructs 69KV transmission lines to 115 kV standards, the line spacing will be great enough to minimize the likelihood of raptor electrocutions. The proponent recommends that the utility providers that may eventually tap into the 230 kV transmission line with 69kV tie-ins implement adequate and accepted raptor electrocution prevention methods regarding line spacing, distribution, and perching.

In the areas where occupied raptor nests are located, the proponent will install alternative nest structures, and not perform construction activities until completion of the raptor nesting season. The proponent will also place balls or corkscrew identification markers on the lines in areas where nests and known roosts are found.

To protect existing mountain plover nesting activities, a buffer of ¼ mile will be established and no construction activity will be permitted if an active nest is located, until the young have fledged to prevent direct loss of the nest or indirect impacts from human-related disturbance. Prime mountain plover habitat was identified in Sections 19, 30, and 31, Township 44N, Range 74 West, 6th PM. Prime mountain plover habitat was also identified south of the Teckla substation in Section 3, Township 41N, Range 71W, 6th PM. No construction activity would be conducted in areas identified and confirmed as prime mountain plover habitat from March 15 through July 31 to be protective of potentially nesting mountain plover. The proponent will sequence construction activities along the remaining ROW to implement construction in prime mountain plover habitat during the non-nesting periods.

The proponent would place anti-perching devices on poles near this prime plover habitat to prevent raptors from preying on mountain plover. Staging areas would be installed outside of areas identified as prime plover habitat along existing road ROWs to prevent habitat disturbance and impacts.

2.3.4 Vegetation

Construction would be sequenced to limit disruption to any area at one time to reduce the impact of construction on vegetation. Any topsoil removed during construction should be stored and replaced after project completion. No permanent roads would be constructed. Existing roads will be used to the extent possible. After construction is complete, any compacted soil due to transmission pole construction and areas outside of substation expansion will be tilled and the area would be reseeded with native grasses and forbs.

2.3.5 Transportation

No permanent roads will be constructed during the construction of the Proposed Action, or to maintain the proposed 230 kV transmission line after construction is complete. Two track depressions of vegetation may occur during construction. ROW surveying and staking; and construction, operation, and maintenance of the proposed transmission line ROW would comply with all applicable state and local regulations and permit requirements. However, the proponent and its contractors would implement the following mitigation measures to avoid or minimize any potential impacts to transportation routes within the study area:

- Construction vehicles would not exceed the posted weight limit of bridges.
- Construction along or across roads and highways would incorporate an appropriate traffic control plan in accordance with the Manual of Uniform Traffic Control Devices.
- Permits would be obtained from the Wyoming Department of Transportation for encroachment across highways.
- No permanent access roads would be installed.
- All right-of-way access would be from the nearest existing public roadway and would avoid or minimize intrusion into off-site areas. Access to the right-of-way may also be obtained as stipulated in the individual easement agreements.
- Staging areas would be established adjacent to existing roads.

2.3.6 Surface Water Quality Management

The proponent would protect surface water quality by implementing project appropriate best management practices (BMPs) during construction (EPA 2003, http://cfpub.epa.gov/npdes/stormwater/menuofbmps/bmp_files.cfm). No permanent roads would be constructed minimizing the potential for erosion and sedimentation of existing streams. Equipment staging areas would be constructed, maintained, and reclaimed using project appropriate BMPs.

2.3.7 Soils

No significant impacts to soils are expected; however, the following practices should be implemented in areas that are susceptible to erosion. Impacts to soil would be limited to locations where poles will be installed. The anticipated soil disturbance related to pole installation for the entire project is estimated to be 0.15 acres. This is an exaggerated estimate based on maximum diameter of pole holes (36 inches), and an assumption of an 800-foot span between poles, 72-mile transmission line, and 2.1 poles per span support to accommodate locations where a 3 pole structure would be required.

Potential damages to soil resources in the area can be reduced or controlled by applying the following erosion and mitigation control measures beginning in the early stages of development:

- No permanent roads would be constructed.
- Disturbed areas would be reclaimed as soon as practicable after construction ends in those areas.
- Areas where cover is removed would be re-seeded with native plant species.
- Natural ground cover would be retained to the extent possible.
- Construction and wind barriers would be used to decrease erosion.
- Reseeding would be done as soon as possible after the final grading has been completed.

2.4 GRASSLAND PLAN CONSISTENCY AND COMPLIANCE

The Grassland Plan was reviewed, and the ID team has determined that the Proposed Action, based on USFWS agreement regarding placement of an alternative nest site, is consistent with the goals of the Grassland Plan and the Management Area Direction for the project area. The Management Area Prescription category for the project area identifies the need to temper NFS land management objectives with landowner's uses and objectives. In this prescription category, human activities have altered the landscape, motorized transportation is common, and sights and sounds of people predominate. The Proposed Action would not adversely impact the Theme, Desired Condition, and Standards and Guidelines that apply to the management area. In addition, implementation of the Proposed Action would not move the Management Area Direction away from the Desired Future Condition goals. Floodplains, wetlands, threatened and endangered species, minerals, global warming, and cultural resource implications have been considered and will not be adversely affected.

The analysis that is documented in this EA is tiered to the Grassland Plan, and to the Final Environmental Impact Statement (EIS) and Record of Decision for that planning, analysis, and decision process. Information and management requirements from that plan are referenced in this document. The Grassland Plan establishes the management direction that is appropriate on this National Grassland. It includes grassland-wide and site-specific standards and guidelines that can assist the land manager to achieve the goals and objectives, and desired conditions on the grassland that are consistent with the Plan. The Teckla to Carr Draw 230 kV Transmission Line area of the Thunder Basin National Grassland contains lands that have a single management emphasis. This Management

Area Prescription is described above. Factors that were considered in determining whether the proposed electric power transmission line development project is consistent with Grassland Plan requirements and direction include:

- The Purpose and Need for the project
- The Grassland Plan management area prescriptions relevant to the Analysis Area
- The current conditions in the Teckla to Carr Draw 230 kV Transmission Line area of the Thunder Basin National Grasslands compared with the desired conditions for land ownership pattern and emphases as described in the Grassland Plan.
- The necessity to continue the development of CBM, coal, and oil and gas resources in an area where significant resource potential exists, where progress toward that goal has already been made, and where the Grassland Plan goal is to emphasize and allow this development to occur. By doing so, this action would meet intended Grassland Plan goals and objectives for providing energy to the country at the same time that wildlife and threatened, endangered and sensitive species habitat needs, and other resource needs and considerations have been met or exceeded.

3.0 ENVIRONMENTAL CONSEQUENCES

This section describes the physical, biological, social, and economic environments of the affected ROW and the potential changes to, and possible environmental effects on those environments that could occur after implementation of the Proposed Action or the No Action alternatives. The baseline information provided in this section will assist in evaluating potential environmental impacts that could result from the Proposed Action.

Each potentially affected resource is addressed in terms of a study area that includes the area at, and near to where the Proposed Action would be implemented. The study area boundary can vary as to location depending on the resource being considered, and the extent to which the resource could be affected by the Proposed Action. The study areas for certain other resource assessments may also vary based on the prevalence or scarcity of the resource in the region, its size and dispersion, its sensitivity to local disturbance, and the nature and amount of information available about the resource. For each resource and alternative evaluated, the proposed transmission line ROW is considered to be the 125-foot wide linear alignment along the centerline where the transmission line would be constructed, and is depicted as a red line on the figures/maps contained in this report. The length of the study area for any resource considered and evaluated is the entire 71.23 mile corridor from the Teckla substation to the Carr Draw substation), unless specified otherwise. The corridor for Alternative 3 is 71.54 miles. A description of the study area for each resource considered is presented in Table 3-1.

Analysis resources used in the evaluation of the affected environment included: a field survey, black and white aerial photographs, regulatory agency consultations, topographic maps, land use and ownership maps, previous environmental assessments, and other publicly available information. Field surveys concentrated on the centerline of the proposed transmission line area. Specific environmental resources in the proposed ROW that are considered are described in the following sections.

3.1 LAND USE MANAGEMENT

This section describes the existing/current land uses in the affected environment of the project and includes general and agricultural land use and formally classified lands. Figure 3-1 displays land use in and around the proposed ROW (UWSDVC 1996a see map).

TABLE 3-1
TECKLA TO CARR DRAW 230 KV TRANSMISSION LINE PROJECT
STUDY AREA BY ENVIRONMENTAL RESOURCE

Environmental Resource	Transmission Line Study Area
Land Use Management	Two and one-half mile wide area on each side of the center line of the proposed transmission line
Floodplains and Wetlands Management	Two and one-half mile wide area on each side of the center line of the proposed transmission
Cultural Resource Management	100-foot wide area on each side of the center line of the proposed transmission line and 5 acres surrounding the Teckla substation site
Paleontological Management	100-foot wide area on each side of the center line of the proposed transmission line
Threatened Endangered and Sensitive Wildlife Species Management	Campbell County
Threatened Endangered and Sensitive Wildlife Species Management	Campbell County
Fisheries Management	Campbell County
Recreation Management	Two and one-half mile wide area on each side of the center line of the proposed transmission line
Grazing and Rangeland Management	Two and one-half mile wide area on each side of the center line of the proposed transmission
Transportation Management	Project corridor and nearby airport
Air Quality Management	Campbell County
Surface Water Quality Management	Two and one-half mile wide area on each side of the center line of the proposed transmission
Soils Management	Campbell County
Socioeconomic and Community Resources	Campbell County
Scenery Management	Area from which the proposed transmission line and substation site may be visible
Noise and Radio and Television Interference	Two and one-half mile wide area on each side of the center line of the proposed transmission line
Human Health and Safety	Two and one-half mile wide area on each side of the center line of the proposed transmission line

General Land Use

The proposed transmission line would traverse a landscape that supports a mix of land uses, including: domestic livestock grazing; recreational hunting; leased and non-leased coal mining operations; and various transportation corridors. A substation located at the north end of the corridor project and an existing substation at the south end of the proposed project corridor mark the end points for the proposed transmission line. The majority of land that would be traversed by the proposed transmission line is privately owned. The State of Wyoming administers state lands scattered throughout the proposed project corridor that are intersected by the transmission line at two locations. Federal land administered by the FS is located at the start of the transmission line at the Teckla substation. The proposed transmission line crosses approximately 0.24 miles land administered by BLM in Section 5, Township 49N, Range 75W, 6th PM (UWSDVC 1996b see map). The proposed transmission line would cross several major transportation corridors including I-90, SH-50, SH-387, SH-59, and the BNSF railroad line. General land use in Campbell County is presented in Figure 3-1. The predominant land use along the ROW includes herbaceous rangeland, mixed rangeland, cropland and pasture.

Agriculture

Ranching is the principal enterprise in the proposed ROW. Cattle and sheep are the primary sources of income for many ranchers; cash crops are a secondary source because of the low annual precipitation in the area, the lack of irrigation water, and a relatively short growing season. The transmission line ROW will not be scarified, which would minimize surface disturbance during transmission line construction. None of the land occurring within the proposed ROW is classified as prime farmland.

Formally Classified Lands

The proposed ROW contains land that is administered by Federal and state agencies. The proposed project ROW consists of approximately 46.65 acres of state lands, including State school trust lands (Figure 1-4). When Wyoming was granted statehood in 1890, the U.S. Congress set aside Federally-owned sections 16 and 36 in each township to be placed in trust for the financial benefit of the State's public schools and certain other designated State

institutions. In Wyoming, State Trust Lands cover 3.6 million acres and are administered by the State of Wyoming, Office of State Lands and Investments. These lands, including the mineral resources, and the permanent mineral trust fund that they have generated are reserved for the sole benefit of the public schools and certain other designated public institutions in Wyoming. These lands are leased or sold to private parties to generate revenue for the state. Also the Federal government has granted additional lands to the State of Wyoming under various acts of the U.S. Congress.

In addition, 3.62 acres of Federal land administered by the BLM occur in the proposed ROW (Figure 1-4), and the FS administers 13.17 acres in the proposed project ROW.

The Thunder Basin National Grassland is located in Campbell, Converse, and Weston counties, Wyoming. It is administered by the USFS and totals 572,000 acres of land. The 13.17 acres of land within the ROW that is administered by the FS is within the Thunder Basin National Grassland. The Thunder Basin National Grassland Land and Resource Management Plan was developed by the FS to serve as a guide and to provide direction as to how the Thunder Basin National Grassland will be managed and administered. The 13.17 acres of NFS land within the ROW represent 1.22 percent of all land within the ROW. The involvement of Federal land in the project ROW has been minimized; State land is most affected by the Proposed Action.

The proposed ROW corridor does not cross Conservation Reserve Program (CRP) lands.

Mineral Resource Development

Campbell County is one of the major areas of mineral development in North America. Coal, oil, gas, and uranium have been the principal resources extracted from the area. In 1998, coal mines located east of the study area produced more than 293 million tons of coal (BLM 1999a pg. 1). In situ mining of uranium continues west of the study area. As of April 2003, there were 2,336 conventional-producing oil and gas wells (Lindemann 2003). Drilling for CBM resources began in the 1980s and accelerated in the late 1990s, with 11,495 productive CBM wells in the county in April 2003 (Lindemann 2003).

Oil, gas, and CBM wells and production infrastructure (such as compressor stations and pipelines) are located nearby the proposed power line ROW. A significant increase in the number of CBM wells is planned and a Final EIS has been released by BLM (BLM 2003). A decision on that proposed Powder River Basin Oil and Gas development is expected in the Spring of 2003. The proposed increase in the number of CBM wells and infrastructure is planned throughout Campbell County, including the area within the vicinity of the ROW. Based on the proposal to increase the number of CBM wells, the proponent has evaluated CBM development to ensure no proposed wells are within the ROW.

3.1.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management of land use would remain as current. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that would include installation of strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increased vehicular traffic to and from the generators for operation and maintenance, increased risk of fuel spills, and increased emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions) would have long-term direct, indirect and cumulative effects on land use in the project area.

3.1.2 Alternative 2 – Proposed Action

<u>Direct and Indirect Effects to NFS Lands</u>

The proposed project would have no significant impact on land use on NFS lands. The majority of the proposed transmission line traverses private land. The remaining land consists of state and Federal public lands. The NFS lands impacted by the ROW are limited to 13.17 acres or 1.22% of the entire project ROW (Table 2-6).

The short-term impacts to land use on NFS lands would be:

- Drilling hole foundations for installation of transmission line poles

The short-term disturbances to vegetation would be repaired soon after construction is completed. Disturbances to ranching operations would be expected to be infrequent and would last only a day per disruption.

The long-term impacts would include disruption of ranching and grazing caused by:

- Ongoing maintenance along the power line right-of-way

The small conversion of agricultural land to the transmission line ROW and substation construction area would have no significant impact on overall crop production or ranching activities. Since no permanent roads would be constructed, access would not be greatly enhanced and disturbance to NFS land and ranching operations would be insignificant.

Surface disturbance caused by installation of poles would be minimal on NFS lands. The anticipated soil disturbance and removal of land from grazing related to pole installation on NFS lands is estimated to be a maximum of 0.0019 acres. This is an exaggerated estimate based on maximum diameter of pole holes (36 inches), and an assumption of an 800-foot span between poles, a total span of 4,700 feet of transmission line on NFS lands, and 2.0 poles per span. Three pole structures are unlikely to be installed on NFS lands because there are no angle points on NFS lands and the terrain of NFS lands in relatively flat. No poles are anticipated to be installed on the 40 acre parcel of NFS land in Section 1, Township 41N, Range 73W, 6th PM because there is an angle point planned in Section 6, Township 41N, Range 72W, 6th PM, adjacent to this NFS land. This angle is very near NFS lands and the approximate span length of 800 feet would most likely make it unnecessary to place poles on this section of NFS land.

<u>Cumulative Effects on NFS Land</u>

Ranching, and recreation are the primary land use for NFS lands impacted by the Proposed Action. The cumulative impact of the proposed ROW would be anticipated to have no

significant effect on land uses or land use patterns. An estimated 0.0019 acres of NFS land would be impacted by the digging associated with power pole installation.

The expansion of the Teckla substation in Section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development was addressed previously by the FS in a separate analysis. It was determined that the substation would have a minimal impact on land use on NFS lands. The size of the existing substation is 6.5 acres and the approved expansion increases the size to 11.35 acres. This expansion results in 4.85 acres of NFS land being from a grazing and recreational land use to electric power transmission substation use. The expansion included removing topsoil, excavating, filling and grading, and fencing an additional 4.85 acres primarily for a 210-foot expansion of the facility on the south side and a 105-foot expansion along the west side of, and adjacent to the existing fenced area substation. This expansion increases the size of the substation to a facility dimension of 610 feet by 805 feet (USFS 2002b pg 8). The expansion of the substation has been completed.

This expansion would increase the size of the substation to include a total of approximately 11.3 acres with an overall facility dimension of 610 feet by 805 feet (USFS 2002b pg. 8). The expansion of distribution capacity would center on the installation of ancillary electrical facilities. In its application, the proponent states that, in its view, there "would be no negative effects on the residents and other permittees in the area, and there would be no environmental effects beyond the existing site" (FS 2002a pg. 2). The proponent states that no hazardous materials would be "used, transported or stored within the sought-after permit area (FS 2002a pg. 2).

Direct and Indirect Effects on Areas Outside NFS Lands

The proposed project would have a no significant impact on land use. The majority of the proposed transmission line traverses private land. The remaining land consists of state and Federal public lands. The State of Wyoming administers 46.65 acres of state lands scattered throughout the project ROW. The Federal lands are administered by BLM (3.62 acres) and USFS (13.17 acres). The majority of the remaining land consists of major transportation corridors including I-90, SH-50, SH-387, SH-59, and BNSF railroad line.

The short-term impacts to land use would be:

- Preparing 2 or 3 staging areas adjacent to county roads
- Drilling hole foundations for installation of transmission poles

Any short-term disturbances to vegetation would be repaired soon after construction is completed. Most disturbances to ranching would be expected to be infrequent and would last only a day per disruption. The small conversion of agricultural land to the transmission line right-of-way and substation construction area would have no significant impact on overall crop production or ranching activities. Since no permanent roads will be constructed, disturbance to ranching operations will be insignificant.

The anticipated reduction in ranching land related to pole installation for the entire length of the proposed transmission line ROW is estimated to be a maximum of 0.15 acres. This is an exaggerated estimate based on a maximum diameter of pole holes (36 inches), and an assumption of an 800-foot span between poles, a 72+ mile transmission line, and an average 2.1 poles per span support to accommodate locations where a 3-pole structure will be required

The small conversion of agricultural ranch land to the transmission line poles in the ROW and substation construction area would have no significant impact on overall crop production, ranching activities, or recreational activities in the area. Since access to the ROW is primarily across private land, no significant impact to public access is anticipated.

Cumulative Effects on Areas Outside NFS Land

Mining and gas exploration, and ranching and urban growth in the area, continue to change the overall land use of Campbell County. The cumulative impact of the proposed ROW would be anticipated to have no significant cumulative impact on land use. The primary land use in Campbell County consists of ranching, coal mining, and oil and gas development. These practices have been changing the landscape for many years, and future development of these resources and practices may continue to change the land use of the region.

3.1.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Lands

Alternative 3 would have no significant impact on land use on NFS lands. The majority of the proposed transmission line traverses private land. The remaining land consists of state and Federal public lands. The NFS lands impacted by the ROW are 21.47 acres or 1.98% of the entire project ROW (Table 2-7). Alternative 3 impacts more Federal land than the Proposed Action.

The short-term impacts to land use on NFS lands would be:

- Drilling hole foundations for installation of transmission line poles

The short-term disturbances to vegetation would be repaired soon after construction is completed. Disturbances to ranching operations would be expected to be infrequent and would last only a day per disruption.

The long-term impacts would include disruption of ranching and grazing caused by:

- Ongoing maintenance along the power line right-of-way

The conversion of agricultural land to the transmission line ROW and substation construction area would have no significant impact on overall crop production or ranching activities. Since no permanent roads would be constructed, access would not be greatly enhanced and disturbance to NFS land and ranching operations would be insignificant.

Surface disturbance caused by installation of poles would occur on NFS lands. The anticipated soil disturbance and removal of land from grazing related to pole installation on NFS lands is estimated to be a maximum of 0.0030 acres. This is an exaggerated estimate based on maximum diameter of pole holes (36 inches), and an assumption of an 800-foot span between poles, a total span of 7,500 feet of transmission line on NFS lands, and 2.1 poles per span. Under Alternative 3, three pole structures may be installed on NFS lands because angle points would be required on NFS lands. No poles are anticipated to be installed on the 40 acre parcel of NFS land in Section 1, Township 41N, Range 73W, 6th PM

because there is an angle point planned in Section 6, Township 41N, Range 72W, 6th PM, adjacent to this NFS land. This angle is very near NFS lands and the approximate span length of 800 feet would most likely make it unnecessary to place poles on this section of NFS land.

Cumulative Effects of Alternative 3 on NFS Land

Ranching and recreation are the primary land uses for NFS lands impacted by Alternative 3. The cumulative impact of the proposed ROW would be anticipated to have no significant effect on land uses or land use patterns. An estimated 0.003 acres of NFS land would be impacted by the digging associated with power pole installation.

The expansion of the Teckla substation in Section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation would have a minimal impact on land use on NFS lands. The size of the existing substation is 6.5 acres and the approved expansion increases the size to 11.35 acres. This expansion results in 4.85 acres of NFS land being from a grazing and recreational land use to electric power transmission substation use. The expansion included removing topsoil, excavating, filling and grading, and fencing an additional 4.85 acres primarily for a 210-foot expansion of the facility on the south side and a 105-foot expansion along the west side of, and adjacent to the existing fenced area substation. This expansion increases the size of the substation to a facility dimension of 610 feet by 805 feet (USFS 2002b pg 8). The expansion of the substation has been completed.

This expansion would increase the size of the substation to include a total of approximately 11.3 acres with an overall facility dimension of 610 feet by 805 feet (USFS 2002b pg. 8). The expansion of distribution capacity would center on the installation of ancillary electrical facilities. In its application, the proponent states that, in its view, there “would be no negative effects on the residents and other permittees in the area, and there would be no environmental effects beyond the existing site” (FS 2002a pg. 2). The proponent states that no hazardous materials would be “used, transported or stored within the sought-after permit area (FS 2002a pg. 2).

Direct and Indirect Effects of Alternative 3 on Areas Outside NFS Lands

Alternative 3 would have no significant impact on land use. The majority of the proposed transmission line traverses private land. The remaining land consists of state and Federal public lands. The State of Wyoming administers 42.70 acres of state lands scattered throughout the project ROW. The Federal lands are administered by BLM (3.62 acres) and USFS (21.47 acres). The majority of the remaining land consists of major transportation corridors including I-90, SH-50, SH-387, SH-59, and BNSF railroad line.

The short-term impacts to land use would be:

- Preparing 2 or 3 staging areas adjacent to county roads
- Drilling hole foundations for installation of transmission poles

Any short-term disturbances to vegetation would be repaired soon after construction is completed. Most disturbances to ranching would be expected to be infrequent and would last only a day per disruption. The small conversion of agricultural land to the transmission line right-of-way and substation construction area would have no significant impact on overall crop production or ranching activities. Since no permanent roads will be constructed, disturbance to ranching operations will be insignificant.

The anticipated reduction in ranching land related to pole installation for the entire length of the proposed transmission line ROW is estimated to be a maximum of 0.15 acres. This is an exaggerated estimate based on a maximum diameter of pole holes (36 inches), and an assumption of an 800-foot span between poles, a 72+ mile transmission line, and an average 2.1 poles per span support to accommodate locations where a 3-pole structure will be required

The small conversion of agricultural ranch land to the transmission line poles in the ROW and substation construction area would have no significant impact on overall crop production, ranching activities, or recreational activities in the area. Since access to the ROW is primarily across private land, no significant impact to public access is anticipated.

Cumulative Effects of Alternative 3 on Areas Outside NFS Land

Mining and gas exploration, and ranching and urban growth in the area, continue to change the overall land use of Campbell County. The cumulative impact of the ROW associated with Alternative 3 would be anticipated to have no significant cumulative impact on land use. The primary land use in Campbell County consists of ranching, coal mining, and oil and gas development. These practices have been changing the landscape for many years, and future development of these resources and practices may continue to change the land use of the region.

3.2 FLOODPLAINS AND WETLANDS MANAGEMENT

Based on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) of Campbell County reviewed on an Internet site hosted for FEMA by the Environmental Systems Research Institute (ESRI) and a field reconnaissance, it has been determined that no designated floodplains are located within the proposed project ROW (FEMA 2001, www.esri.com/hazards, click on "online hazard map"). Therefore, no floodplains would be impacted by construction or maintenance operations of the proposed transmission line or Alternative 3.

Section 404 of the Clean Water Act (CWA) provides a regulatory definition and assigns jurisdiction over protection of wetlands to the U.S. Army Corps of Engineers (USACE). Section 404 of the CWA defines jurisdictional wetlands as "…those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions". Wetlands generally include swamps, marshes, bogs, and similar areas. Figures 3-2a and 3-2b identify wetlands located in and around the project area.

Wetlands are important regional ecological resources in the area of the transmission line ROW, providing the following critical functions, among others:

- Filtration of sediments and pollutants that run off from surface water
- Retention of flood water

- Erosion control
- Resting, foraging, and nesting habitat for waterfowl and mammals
- Spawning areas for fish
- Amphibian habitat
- Habitat for hydrophytic vegetation

USACE considers an area a jurisdictional wetland only if it exhibits the following three characteristics: (1) evidence of hydric soils, (2) dominance of hydrophytic vegetation, and (3) wetland hydrology. There are no wetlands on Federal land within the project ROW. On private land, field reconnaissance identified four jurisdictional wetlands and nine man–induced wetlands, such as wetlands induced by stock ponds, or windmill wells used to support livestock watering. Wetland areas in the proposed ROW are presented on Figures 3-2a and 3-2b and are classified as jurisdictional or man-induced.

Northeastern Wyoming features an arid climate and few large wetland areas. Wetlands in the study area are predominantly associated with ephemeral draws or creek systems and man-made impoundments. Wetlands often occur in transition zones between open water and upland systems that are inundated or saturated for prolonged periods during the growing season (May through September for northeastern Wyoming).

The proposed transmission line ROW and the Associated with Alternative 3 cross twelve areas identified as wetlands based on field surveys and interpretation of aerial photography. National Wetlands Inventory (NWI) mapping information was also consulted to identify wetlands. Wetlands identified on NWI maps are typically mapped based on aerial photography without field checking; several potential wetlands identified on the NWI maps were found not to be jurisdictional wetlands based on the field reconnaissance (Figures 3-2a and 3-2b). The majority of these wetlands are considered palustrine emergent or palustrine open water wetlands (USFWS 2003 pg. 10) associated with impounded water, although some palustrine flat wetlands occur throughout the project ROW.

3.2.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management of wetlands would remain as is current. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the

transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These facilities could have long-term direct, indirect, and cumulative effects on wetland resources in the project area.

3.2.2 Alternative 2 – Proposed Action

Direct and Indirect Effects to NFS Lands

The Proposed Action would result in no significant impacts to floodplains and wetlands on NFS Lands because no wetlands or floodplains exist on NFS lands within the project ROW.

Cumulative Effects on NFS Land

No designated floodplain areas are associated with the proposed transmission line ROW or Teckla expansion. The expansion of the Teckla substation in section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation would have minimal impact on recreation on NFS lands. The expansion of the substation has been completed.

No jurisdictional wetlands are associated with the proposed transmission line ROW or other project components on NFS land. As a result, cumulative effects to wetlands from the proposed project are not expected during construction or operation of the project.

Direct and Indirect Effects to areas outside NFS Lands

No designated floodplain areas are associated with the proposed transmission line or other project components. As a result, direct or indirect effects to floodplains from the proposed project are not expected during construction or operation of the project.

The proposed project is expected to have no significant impact on wetlands. All wetlands and associated buffer areas crossed by or near the proposed transmission line ROW are narrow (less than 30-foot wide within the corridor) and are located in low areas between hills or draws, or on the edges of stock ponds. Poles for the proposed transmission line would be spaced at maximum 800-foot intervals and would generally be located on higher ground, along ridges, and away from low areas. Based on the proponent's standard construction and maintenance practices, no poles will be installed in wetland areas. Therefore there will be no direct impacts from the Proposed Action on wetlands.

Relatively large portions of the proposed transmission line ROW extend across undeveloped rural areas served by few or no access roads. Wetlands would not be affected by operation of the transmission line itself, and temporary impacts (less than 1 year in duration) will be prevented by avoiding wetland areas during construction.

- Based on the temporary nature of potential impacts, the proposed project would result in no significant cumulative adverse impacts.

Cumulative Effects on Areas Outside NFS Land

Based on existing land uses and projects within and near the project corridor, significant contributors to cumulative impacts to wetlands in the study area include the following:

- CBM development activities that include discharging of large volumes of produced well water into formerly dry areas, thereby creating new, temporary wetland areas, and crossing of wetland areas by drill rigs, crew vehicles, and other equipment.
- Cattle and ranching operations, including cattle and rancher vehicles that cross and enter wetland areas.

The Proposed Action is expected to have no significant impacts to wetlands since wetland areas will be avoided.

3.3.3 Alternative 3 – Avoiding Former Nest Location

Alternative 3 would result in no significant impacts to floodplains and wetlands on NFS Lands because no wetlands or floodplains exist on NFS lands within ROW associated with Alternative 3.

Cumulative Effects of Alternative 3 on NFS Land

No designated floodplain areas are associated with the ROW associated with Alternative 3 or Teckla expansion. The expansion of the Teckla substation in section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. The expansion of the substation has been completed.

No jurisdictional wetlands are associated with the ROW of Alternative 3 or other project components on NFS land. As a result, cumulative effects to wetlands from the proposed project are not expected during construction or operation of the project.

Direct and Indirect Effects of Alternative 3 on areas outside NFS Lands

No designated floodplain areas are associated with Alternative 3 or other project components. As a result, direct or indirect effects to floodplains from implementing Alternative 3 are not expected during construction or operation of the project.

Alternative 3 is expected to have no significant impact on wetlands. All wetlands and associated buffer areas crossed by or near the Alternative 3 ROW are narrow (less than 30-foot wide within the corridor) and are located in low areas between hills or draws, or on the edges of stock ponds. Poles for Alternative 3 would be spaced at maximum 800-foot intervals and would generally be located on higher ground, along ridges, and away from low areas. Based on the proponent's standard construction and maintenance practices, no poles will be installed in wetland areas. Therefore there will be no direct impacts from the Proposed Action on wetlands.

Relatively large portions of the ROW associated with Alternative 3 extend across undeveloped rural areas served by few or no access roads. Wetlands would not be affected by operation of Alternative 3, and temporary impacts (less than 1 year in duration) will be prevented by avoiding wetland areas during construction.

Cumulative Effects of Alternative 3 on Areas Outside NFS Land

Based on existing land uses and projects within and near Alternative 3, significant contributors to cumulative impacts to wetlands in the study area include the following:

- CBM development activities that include discharging of large volumes of produced well water into formerly dry areas, thereby creating new, temporary wetland areas, and crossing of wetland areas by drill rigs, crew vehicles, and other equipment.
- Cattle and ranching operations, including cattle and rancher vehicles that cross and enter wetland areas.

Alternative 3 is expected to have no significant impacts to wetlands since wetland areas will be avoided.

3.3 CULTURAL RESOURCE MANAGEMENT

This section presents a summary of the records search and field inspection for cultural resources of the Teckla to Carr Draw 230 kV Transmission Line Project. ACR Consultants, Inc. (ACR), of Sheridan, Wyoming, conducted a Class III Inventory for Basin Electric's proposed 230 kV transmission line ROW located in Campbell County, Wyoming. Field surveys were conducted in July and August, 2001 and in April of 2002. ACR inventoried a 200-foot wide corridor for this project to provide a buffer on either side of the ROW. ACR performed this cultural resource survey to ensure that the project will have no effect on cultural resources as defined in Section 106 of the National Historic Preservation Act and 36 CFR 800 under the State Historic Preservation Officer (SHPO). The Class III Cultural Resource Inventory prepared by ACR is included as Appendix C.

The file search, for this project, revealed that over 5,700 acres have been previously inventoried adjacent to the current 71.23-mile long corridor. Thirty-nine sites were recorded on those 5,700+ acres. Twenty (51%) of the previously recorded sites are lithic scatters. Eleven (28%) sites are prehistoric habitation sites consisting of an open camp, fire cracked rock, or stone rings. One site consists of a rock alignment of unknown cultural origin and construction date. The remaining previously recorded sites are historic. They include three homesteads, two roads/trails, a sheepherder camp, and an unknown site type. These sites are near to, but not within the boundary of the project ROW or construction staging areas.

Based on the low density of previously recorded sites near the current project ROW, ACR did not expect to identify many sites during this inventory.

Thirty-five (90%) of the 39 previously recorded sites lie between Townships 41 and 44 North. Only four sites (10%) are located between Townships 45 and 50 North. The disparity in site densities between the two areas is probably related to the topography. The terrain below Township 45N generally consists of gently rolling hills. Several ephemeral drainages bisect the area. Conversely, the terrain above Township 45N is characterized by a series of steeply sided hills. The area is not very accessible and lacks water resources. Seven (64%) of the sites recorded by ACR lie south of Township 45 North; four (36%) of the sites lie north of Township 45 North. These numbers generally correspond with previously recorded site densities. Cultural resources, archeological sites and isolated finds (IF) are presented in Appendix C.

ACR completed the archaeological work on BLM-administered land under authority of BLM Cultural Resource Use Permit No. 417-WY-SR01 (expired June 30, 2002). Fieldwork on the Thunder Basin National Grassland segment was completed under FS Special-Use Permit No. 99010 (expired November 30, 2002). ACR encountered eleven new cultural resource sites (four prehistoric, one multi-component, and six historic) during this field inventory (Figure 3-3).

The prehistoric sites consist of three lithic scatters and one lithic procurement locale. Each lithic scatter lacks diversification and density of materials. No diagnostic tools were identified at the sites.

Site 48CA3910 is a small lithic scatter located on a slope overlooking a northeast trending ephemeral drainage. Three artifacts were identified at the site; a purple porcellanite tertiary flake, gray porcellanite secondary flake, and a retouched gray and red banded quartzite secondary flake.

Site 48CA3913 is a small multi-component site consisting of a lithic scatter and windmill. The prehistoric component of the site consists of a widely dispersed lithic scatter. Only seven artifacts were identified in a 1,224 square meter area. These artifacts were a mottled white and brown quartzite core, a quartzite biface, two quartzite secondary flakes, a chert

tertiary flake, and two porcellanite secondary flakes. The historic component consists of a windmill. The wood tower is toppled and lies approximately 30 ft northeast of the well. Wood-towered windmills were common through the 1940s.

Site 48CA3914 a small, dispersed lithic scatter, grasses. Ground visibility on the site averages 80%. Previous disturbances appear to be limited to erosion and deflation. The site consists of a quartzite cobble, two quartzite cores, a quartzite biface, two quartzite secondary flakes, a chert cobble, five chert secondary flakes, and three fire-cracked rock (FCR) fragments. No cultural materials were recovered from the shovel test. The test revealed little to no potential to encounter intact subsurface deposits. Site 48CA3913 is a multi-component site consisting of a lithic scatter and historic windmill. Only seven widely dispersed artifacts comprise the prehistoric component. Materials represented here include quartzite and porcellanite, both readily accessible in the Powder River Basin. The historic windmill is collapsed. It does represent a distinctive style or construction method.

The six historic sites consist of two historic trash scatters, two homesteads, a stone cairn, and a possible habitation site. Trash scatters, homesteads, and stone cairns are well represented in the Powder River Basin. None of the recorded sites is unique or possesses information significant to the understanding of the history of the Powder River Basin.

This investigation was conducted with techniques considered adequate for locating cultural resources, which are visible on the ground. Overall, ground visibility, across the project area, was very good at 75%. ACR is confident that this cultural resource inventory adequately covered the project ROW.

All eleven sites encountered during this inventory are recommended as not eligible for nomination to the National Register of Historic Places (NRHP).

3.3.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management of cultural resources would remain as current. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads

and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions) would have long-term direct, indirect and cumulative effects on cultural resources that are known to exist in the project area.

3.3.2 Alternative 2 – Proposed Action

Direct and Indirect Effects in NFS Lands

No cultural sites were located on NFS lands. The Proposed Action would have no direct or indirect significant impacts on cultural resources on NFS lands.

Cumulative Effects on NFS Lands

No sites were located on NFS lands. The Proposed Action would have no significant cumulative effects on any known significant cultural resources.

Direct and Indirect Effects on areas Outside NFS Lands

Eleven sites were encountered on private land during this inventory and are recommended not eligible for the NRHP. The proposed Teckla to Carr Draw 230kV Transmission Line Project will therefore have no direct or indirect impacts on any known significant cultural resources. Cultural clearance is therefore recommended for the current project. However, should additional cultural resources be discovered during construction, the appropriate Federal permitting agency should be contacted immediately.

Cumulative Effects on Areas outside NFS Lands

All eleven sites encountered during this inventory were found on private land and are recommended not eligible for the NRHP. The proposed Teckla to Carr Draw 230kV

Transmission Line Project will therefore have no cumulative effects on any known significant cultural resources.

3.3.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Lands

No cultural sites were located on NFS lands. Alternative 3 would have no direct or indirect significant impacts on cultural resources on NFS lands.

Cumulative Effects of Alternative 3 on NFS Lands

No sites were located on NFS lands. Alternative 3 would have no significant cumulative effects on any known significant cultural resources.

Direct and Indirect Effects of Alternative 3 on areas Outside NFS Lands

Eleven sites were encountered on private land during this inventory and are recommended not eligible for the NRHP. Alternative 3 will therefore have no direct or indirect impacts on any known significant cultural resources.

Cumulative Effects of Alternative 3 on Areas outside NFS Lands

All eleven sites encountered during this inventory were found on private land and are recommended not eligible for the NRHP. Alternative 3 would therefore have no cumulative effects on any known significant cultural resources.

3.4 PALEONTOLOGICAL MANAGEMENT

Paleontological inventories were conducted to aid in complying with the NEPA and Thunder Basin National Grasslands Grassland Plan direction and were conducted on NFS lands in the vicinity of the proposed ROW. The Proposed Action is located in the Powder River Basin. The basin is bounded to the west by the Bighorn Uplift, to the southwest and south by the Casper Arch, Laramie Mountains, and Hartville Uplift, and to the east by the Black Hills Uplift. The Miles City Arch and the Cedar Creek Anticline to the north essentially separate the Powder River Basin from the Williston Basin (Ellis and others 1998 pg. 7).

The Paleontological Resources Inventory prepared by Lance Rom and Olga Potapova of Quality Services is included as Appendix D.

Barbara Beasley and Joanne Homuth of the FS researched paleontological records regarding previous inventories and known fossil resources for the ROW area on NFS lands. One previous paleontological inventory done near the eastern part of the project area is known to exist. This research was conducted by for the Dull Center Land Exchange. The inventory located a variety of plant fossils that were not considered significant paleontological resources.

The inventory areas within the NFS lands consisted of deep, well-developed soils. The soils were fine tan silt residuum in the western project area and fine to medium grained, silty, eolian-deposited, sands in the eastern portion. No bedrock exposures per se were present in the inventory area. A few sandstone concretions were located, unassociated with bedrock outcrops. Bedrock geology of the project ROW is the upper part of the Paleocene Fort Union Formation. The Fort Union Formation crops out along the margin of the basin, and is overlain by exposures of the Eocene Wasatch Formation in the central part of the basin (Ellis and others 1998 pg. 7).

No bedrock outcrops were located in or near the inventory areas on NFS lands. A few sandstone concretions were exposed in the eolian and residually derived soils that blanketed the bedrock formations.

For this specific paleontological inventory project, activities carried out are planned to locate exposed paleontological resources and make significance recommendations for these resources. Recommendations would also be made for applicability of monitoring for paleontological resources during project surface disturbance phases based upon geological formations and potential to locate buried paleontological resources.

The field survey technique utilized for the paleontological inventory was a pedestrian reconnaissance sweep of two corridors. Each corridor was 200 feet wide. The westernmost corridor was about 130 feet long. The eastern corridor was about 4,400 feet long. Field personnel looked for bedrock outcrops or other potential fossils that may have weathered out. The technique was to walk back and forth, zigzagging along the 200-foot wide

inventory corridor of the proposed route, looking for fossils, bedrock outcrops, and areas of high ground surface visibility. The field inventory was completed April 23, 2002.

No significant paleontological resources were identified on NFS land. If any paleontological materials are located on NFS land during project construction, all construction work in the vicinity of the paleontological discovery should stop until the FS identifies appropriate strategies to preserve significant paleontological specimens and data. No paleontological inventories were conducted for the remainder of the ROW because paleontological inventories are uniquely required to comply with the Grassland Plan.

3.4.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management of paleontological resources would remain as current. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions) may have long-term direct, indirect, and cumulative effects on paleontological resources in the project area.

3.4.2 Alternative 2 – Proposed Action

<u>Direct and Indirect Effects on NFS Lands</u>

No paleontological resources were located. All inventoried areas were covered with deep, well developed soils. No bedrock outcrops were seen. Some large sandstone concretions were present in and around the inventoried areas. The potential to locate or damage

paleontological materials during project construction is extremely low. Soils are developed deep enough to prevent any excavation needed for power poles or other construction activities from reaching bedrock.

No paleontological remains of any kind were located on NFS lands and no impacts to such resources are expected.

Cumulative Effects on NFS Lands

Because no paleontological resources were located on NFS lands and previous paleontological studies found no significant paleontological resources in the immediate area, the Proposed Action will have no cumulative impacts on any known significant paleontological resources.

No paleontological inventories were conducted for areas outside of NFS lands, because paleontological inventories are uniquely required on NFS lands, only, in order for the proposed project to comply with Grassland Plan standards and guidelines.

3.4.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Lands

No paleontological resources were located on NFS lands. All inventoried areas were covered with deep, well developed soils. No bedrock outcrops were seen. Some large sandstone concretions were present in and around the inventoried areas. The potential to locate or damage paleontological materials during project construction is extremely low. Soils are developed deep enough to prevent any excavation needed for power poles or other construction activities from reaching bedrock.

No paleontological remains of any kind were located on NFS lands and no impacts to such resources are expected.

Cumulative Effects of Alternative 3 on NFS Lands

Because no paleontological resources were located on NFS lands and previous paleontological studies found no significant paleontological resources in the immediate area, Alternative 3 would have no cumulative impacts on any known significant paleontological resources.

No paleontological inventories were conducted for areas outside of NFS lands, because paleontological inventories are uniquely required on NFS lands, only, in order for the proposed project to comply with Grassland Plan standards and guidelines.

3.5 THREATENED, ENDANGERED, AND SENSITIVE WILDLIFE SPECIES MANAGEMENT

The purpose of this section is to identify any effects of the Proposed Action to Federally listed Threatened, Endangered, Proposed, Sensitive, Candidate species, and Management Indicator Species (MIS) that potentially occur within the proposed ROW. A determination of effect was made in regard to all evaluated species based on information provided by the FS, United States Fish and Wildlife Service (USFWS), and the Bureau of Land Management (BLM), as well as research on species, including website searches on the Wyoming Natural Diversity Database (WYNDD) and Wyoming Game and Fish Department (WGFD) website, and field surveys conducted in 2001 and 2002. A detailed Biological Assessment and Biological Evaluation (BA/BE) is included as Appendix E. Figure 3-4 identifies Endangered, Threatened, and Sensitive Species in and around the project area.

The following section defines classifications under the ESA.

Threatened: An animal or plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Endangered: An animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range.

Proposed: Any species of animal or plant that is proposed in the Federal Register to be listed under Section 4 of the Endangered Species Act.

Candidate: Any animal or plant species considered by the USFWS as a candidate for possible addition to the Lists of Endangered and Threatened wildlife and plants.

Due to the potential for their habitat to exist in the Proposed Action ROW, the Threatened, Endangered, Proposed, or Candidate species to be evaluated in this EA are:

Federally Listed Threatened Species:
Bald eagle (*Haliaeetus leucocephalus*)

Federally Listed Endangered Species:
Black-footed ferret (*Mustela nigripes*)

Federally Listed Proposed or Candidate Species:
Mountain plover (*Charadrius montanus*): Proposed
Black-tailed prairie dog *(Cynomys ludovicianus)*: Candidate

Bald eagle (*Haliaeetus leucocephalus):* The bald eagle first became protected in 1967 (Sierra Club 2002: pg. 1). In 1973, after the Endangered Species Act was adopted, it continued to have endangered species status. The bald eagle is between 30 and 40 inches long and weighs approximately eight to nine pounds. The wingspan ranges from 6.5 to 7.5 feet. It is a large eagle mainly dark in color with a white head and tail, and a heavy yellow bill. Juvenile birds do not have a white head and tail and are dark in color. Bald eagles tend to inhabit sites that include feeding areas, perches, and night roosts (nests). Roosts are often used during successional years; eagles generally leave the roosts early in the morning and return to them at night. Bald eagles also use roost sites for shelter from inclement weather. Perches are used for hunting and resting. Nests are very large and are typically found in a fork of a large tree. Bald eagles eat everything from fish to small game.

Black-footed ferret (*Mustela nigripes*): The black-footed ferret was listed as an endangered species under the Endangered Species Act in 1967 (Texas Parks & Wildlife 2002: pg. 1). The black-footed ferret resembles the mink in shape and size. It is small (18 to 24 inches long), yellowish brown on top, and dark in color on the belly. The tip of the tail and feet are also typically dark in color. They have a dark or black mask around the eyes (Knopf 2000b: pg. 764). The prairie dog is their primary food source, consisting of approximately 90 percent of their diet. When there are no prairie dogs available, the black-footed ferret will feed on mice, eggs, birds, and small reptiles.

Mountain plover (*Charadrius montanus*): The mountain plover became a federally proposed threatened species in February 1999 (USFWS 2001a: pg. 1). The mountain plover is a light to sandy brown, small bird (7-9 inches tall), with a light colored breast. There is a whitish wing stripe, whitish wing linings, and a black band near the end of the tail.

During breeding season (March 15 through July 31), adults typically have a black forecrown, white forehead, and a thin black line from the eye to the beak (State of Nebraska 2001: pg. 2). Nests are commonly located near manure piles or rocks. Eggs are dark olive in color, with heavy dark spots, and are usually found in a shallow depression on the ground. Sometimes the depressions are lined with bits of cow dung, twigs, or grass. After hatching, chicks become adults after about 35 days (State of Nebraska 2001: pg. 4). Reports of the decline in mountain plover population were made as early as 1914. The Migratory Bird Treaty Act of 1916 protected it from hunting but populations still continued to decrease. Identified as a candidate species in 1982 under the Endangered Species Act, it has had Federal Proposed Threatened Status since 1997. They have apparently declined in their range an estimated 63 percent since 1966 (Fertig 1999: www.http://uwadmnweb.uwyo.edu/wyndd/default.htm). Reasons for their apparent decline likely include management of domestic livestock, prairie dog eradication, conversion of grassland habitat, and agricultural practices.

Black-tailed prairie dog *(Cynomys ludovicianus):* The black-tailed prairie dog is a candidate species under the Endangered Species Act (USFWS 2001c: pg 48). It is a large prairie dog (14 to 16.5 inches in length, average of 2.8 to 4.5 inches tall, adults typically weigh about 2 pounds) that is yellowish tan on the back and lighter in color on the belly. Ears are short and round and the tail consists of sparse hair and a black tip (Knopf 2000b: pg. 480-481). Colonies or "towns" are typically established in areas that have been heavily grazed by cattle. One prairie dog town can contain as many as several thousand prairie dogs and can encompass more than 100 acres. Typical life expectancy for black-tailed prairie dogs in the wild is 4 years. Mating season for black-tailed prairie dog is from early March to early April. After about one month, 4 to 6 young are born. Pups stay in the burrows for 5 to 6 weeks and by the end of the summer, they will have almost reached adult size (Knopf 2000b: pg. 480-481).

Additional species considered are those identified by the Regional Forester as Sensitive species. Species are classified as Sensitive when they meet one or more of the following three criteria:

1) The species is declining in numbers or occurrences, and evidence indicates it could be proposed for Federal listing as threatened or endangered if action is not taken to reverse or stop the downward trend.

2) The species habitat is declining, and continued loss could result in population declines that lead to Federal listing as threatened or endangered if action is not taken to reverse or stop the decline.

3) The species population or habitat is stable but limited.

The following sensitive species are those that may occur within the project area based on habitat and range.

Reptiles and Amphibians
Northern leopard frog *(Rana tipiens)*
Tiger salamander *(Ambystoma tigrinum)*

Mammals
Swift fox *(Vulpes Velox)*

Birds
Burrowing owl *(Speotyto cunicularia)*
Ferruginous hawk *(Buteo regalis)* (Proposed Sensitive)
Loggerhead shrike *(Lanitus ludovicianus)*
Long-billed curlew *(Numenius americanus)*
Upland sandpiper *(Bartramia longicauda)*

Northern leopard frog (*Rana pipiens*): The northern leopard frog is found throughout Wyoming, and considered to be relatively common (TWC, 2002: pg. 16). The breeding habitat of this frog is characterized by shallow, permanent or semi-permanent, standing water with at least some emergent vegetation (TWC, 2002: pg. 16). During winter, leopard frogs require deeper lakes or ponds with well-oxygenated water that does not freeze to the bottom (TWC, 2002: pg. 16). Most creeks, drainages, and impoundments in the project area are unlikely to hold water long enough into the summer to support tadpoles until metamorphosis. Furthermore, grazing and annual desiccation limit the growth of emergent vegetation such as cattails (*Typha* spp.), rushes (*Juncus* spp. and *Scirpus* spp.), and sedges (*Carex* spp.) in most wetland areas.

Tiger salamander (*Ambystoma tigrinum*): The tiger salamander is relatively common throughout Wyoming and has been documented during wildlife surveys for at least one adjacent coal mine (TWC, 2002: pg. 15-16). Salamanders are found in a variety of habitats, including sagebrush plains, forests, and meadows near water. Semi-permanent water bodies are required for breeding and to support larval salamanders through late summer (TWC, 2002: pg. 16). Adult salamanders are primarily terrestrial, but require protection from

the sun, wind, heat, and cold. Mammal burrows often provide suitable shelter from desiccation in the summer, and even serve as over wintering sites. Tiger salamanders feed on earthworms, large insects, small mice, and other amphibians (TWC, 2002: pg. 16)

Swift fox (*Vulpes velox*): Species information. The Regional Forester lists the swift fox as a sensitive species. The swift fox, also referred to as "kit fox", is one of the smallest foxes in the world, about the size of a domestic cat. The fur is light gray with orange-tan coloring on the sides and legs. The swift fox typically mates from January to February. They can run up to 25 miles per hour (mph). Their prey includes ground squirrels, rabbits, birds, insects, and grasses.

Burrowing owl (*Athene cunicularia*): The burrowing owl is a summer resident of open rangeland habitats throughout Wyoming, including the TBNG (TWC, 2002: pg. 17-18). Burrowing owls feed primarily on small mammals and insects. This owl requires burrows of fossorial mammals, primarily badgers and prairie dogs, for nesting and roosting (TWC, 2002: pg. 18). Most burrowing owl nests within the TBNG are found in prairie dog colonies (TWC, 2002: pg. 18). This species has a stable population trend (TWC, 2002: pg. 18).

Ferruginous hawk *(Buteo regalis)*: The Regional Forester lists the ferruginous hawk as a sensitive species. The ferruginous hawk is the largest hawk in North America, usually between 20 and 26 inches in length, averaging a wingspan of 53 to 60 inches, and weighing 2.2 to 4.5 pounds (Knopf 2000a: pg. 440). Adults have a rusty color on their back and shoulders, which extends downward onto the legs. The under-part is a whitish color spotted with rufous. Ferruginous hawks are carnivorous, commonly hunting by flying low to the ground over open fields at high speeds, soaring high above, hovering, or swooping down from perches. They primarily feed upon jackrabbits, ground squirrels, and mice. Eggs are fertilized and laid in April, and incubate for approximately 28 days. Young fledge within 38 to 50 days (Knopf 2000a: pg. 440).

Loggerhead shrike (*Lanius ludovicianus*): The loggerhead shrike is a common summer resident throughout Wyoming (TWC, 2002: pg. 17) and on the TBNG. Shrikes inhabit relatively open, heterogeneous habitats with perches for hunting, and thorns, sharp twigs, or barbed wire for impaling prey (TWC, 2002: pg. 17). This species will use a wide variety of

trees and shrubs for nesting (TWC, 2002: pg. 17). The population trend for this species is down throughout its range; it is listed as endangered in Canada (Stokes 1996).

Long-billed curlew (*Numenius americanus*): The long-billed curlew is a relatively uncommon summer resident of grasslands and sagebrush-grasslands in Wyoming, including the TBNG (TWC, 2002: pg. 17). This curlew prefers to nest in areas with large open expanses of grassland, with relatively low (less than one foot) vegetation, bare ground, and few shrubs (TWC, 2002: pg. 17). Lakeshores and river valleys are often used during fall as migration staging areas (TWC, 2002: pg. 17). The population trend for this species is stable to slightly down (TWC, 2002: pg. 17).

Upland sandpiper (*Bartramia longicauda*): The upland sandpiper is an uncommon summer resident of the eastern plains of Wyoming, including the TBNG (TWC, 2002: pg. 17). Typical habitat consists of prairies and meadows. This species feeds on worms and insects in grasslands. Nest sites are typically in a slight depression in grassy areas with sparse sagebrush, often near water. This species' population trend is slightly decreased (TWC, 2002: pg. 17).

Field surveys were conducted in 2001 and 2002 to verify the existence of evaluated species along the ROW. The following discussion is a summary of the various field surveys conducted for this project.

Baseline Habitat Assessment (Summer 2001): A Baseline Habitat Assessment and field reconnaissance was conducted in the summer of 2001. Surveys were conducted for plants, wildlife, and habitat within the proposed project ROW. The baseline habitat assessment survey was conducted on the entire length of the ROW. Surveys of the entire proposed ROW were conducted from 7/23 to 7/27 (2001) and from 7/31 to 8/3 (2001). Survey findings were used to identify locations where additional more detailed surveys were required.

Raptor Survey: A winter raptor survey was conducted from 3/19 to 3/22 (2002). The survey included the ROW that was accessible from county roads and private roads. Raptor surveys were conducted in accordance with the Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances.

Mountain plover Survey: Based on the findings of the Baseline Habitat Assessment survey, literature searches, and consultations with USFS and USFWS, mountain plover surveys were conducted along the ROW in areas identified as prime mountain plover habitat. Survey information was provided by the FS of known populations of mountain plover and locations of mountain plover habitat located on NFS land (FS 2002c:

personal communication). Intensive mountain plover surveys were conducted near the Prairie dog town near the Teckla substation. The formal mountain plover surveys were conducted in accordance with "Mountain Plover Survey Guidelines, U.S. Fish and Wildlife Service, 2001" (USFWS 2001a: pg. 1-6) to determine the presence or absence of the mountain plover and mountain plover habitat within National Forest Service (NFS) land and along the ROW at various points to provide information for the cumulative impact assessment. Tetra Tech conducted field surveys on 4/22, 4/24, 5/22, 5/23, 6/25, and 6/26 (2002). Habitat for the mountain plover was identified during the Baseline Habitat Assessment survey conducted in 2001 and during the winter raptor survey conducted in March 2002 in the southeastern portion of the ROW in Section 3, Township 41 North, Range 71 West, 6th PM near the prairie dog town. This finding corroborated previous habitat surveys conducted by the USFS in that area. Mountain plover habitat was also identified near the angle point of the transmission line near the isolate 40 acre parcel of USFS land in Section 1, Township 41 North, Range 73 West, 6th PM and in Sections 19, 30, and 31, Township 44 North, Range 74 West, 6th PM.

Black-tailed prairie dog: Survey information was provided by the FS for known black-tailed prairie dog colonies. Tetra Tech conducted field surveys in 2001 as well as in 2002 (4/22, 4/24, 5/22, 5/23, 6/10, and 6/11). Three prairie dog colonies were identified north of I-90; however, only 2 were within the ROW. The landowner apparently poisoned the two colonies within the ROW. The third is small and active. In addition, one colony exists near the Teckla substation. The size of this prairie dog colony was determined by GPS and mapping techniques and measured approximately 329.12 acres. As determined by the FS, a black-tailed prairie dog colony over 80 acres may be large enough to establish the possible existence of a viable population of black-footed ferret. Although this prairie dog colony is greater than 80 acres, the Proposed Action would not affect the area. Black-tailed prairie dogs are relatively abundant in Campbell County (TWC, 2002: pg. 16). The current Prairie Dog Management Plan determines management of prairie dogs on TBNG.

Swift Fox: A nocturnal swift fox survey was conducted in areas of previously identified habitat and none were identified in the vicinity of the ROW. Survey techniques were obtained from a swift fox survey conducted in 1998 by the FS at Cimarron National Grassland, Morton County, Kansas (FS 1998: pg. 3). Tetra Tech conducted nocturnal field surveys on 5/20 and 5/21 (2002). Accessible portions of the line were surveyed using standard spotlighting techniques.

The combination of field surveys and literature searches enabled the FS to identify any potential impacts to the evaluated species.

3.5.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management of wildlife resources would remain as current. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the

integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions) would have long-term direct, indirect, and cumulative effects on wildlife resources in the project area.

3.5.2 Alternative 2 – Proposed Action

Direct and Indirect Effects on NFS Lands

Bald eagle: Very few trees are located on the NFS lands or within 1 mile of the ROW surrounding the NFS land. However, the existing Teckla substation infrastructure, fence posts, and an existing transmission line may provide adequate roost sites. No bald eagles were observed on NFS land during the March raptor survey or any subsequent informal surveys. Furthermore, no known bald eagle populations or roost sites are located within 1 mile of the NFS land.

Transmission lines are known to increase the likelihood of raptor electrocutions and collisions. However, the line spacing on the Proposed Action is great enough to prevent raptor electrocution. Due to the fact that the lines will be designed in a manner to reduce the likelihood of raptor electrocution, and that raptors currently co-exist with the existing Teckla substation and associated transmission lines, the Proposed Action would have no significant impacts on bald eagle. After thoroughly considering the information addressed in this document, the determination of effect for the bald eagle is “not likely to adversely effect”.

Black-footed ferret: A prairie dog colony is located just south of Teckla on NFS land. However, the ROW does not cross the prairie dog colony. No known black-footed ferret populations are located within the ROW on NFS land. Because the ROW crosses no prairie dog colonies on NFS lands, the Proposed Action will have no significant direct or indirect impacts on the black-footed ferret. After thoroughly considering the information addressed in this document, the determination of effect for the black-footed ferret is “no effect”.

Mountain plover: Prime mountain plover habitat was identified on NFS land in the prairie dog colony located near the Teckla substation. One unconfirmed mountain plover sighting was within the prairie dog colony. No mountain plover nests were observed within the prairie dog colony. Direct effects include loss of habitat for the mountain plover in areas where the two-pole H-frame structures will be placed. The calculated direct habitat loss as a result of pole installation on NFS lands is limited to 0.0019 acres. However, there is extensive surrounding suitable habitat for the mountain plover. Therefore, there are no significant direct or indirect impacts anticipated from the Proposed Action on mountain plover on NFS lands. After thoroughly considering the information addressed in this document, the determination of effect for the mountain plover is "not likely to jeopardize continued existence or adversely modify proposed critical habitat" and "not likely to adversely effect".

Black-tailed prairie dog: A prairie dog colony is located just south of Teckla on NFS land that was measured to be approximately 329.12 acres (Figure 6-3). Eighty acres is the threshold established in the Grassland Plan to provide a viable population for the black-footed ferret. Since the Proposed Action does not include any construction within the area, a black-footed ferret survey was deemed unnecessary based on FS Black-Footed Ferret Survey Guidelines (FS 2002d: pg. 1-12). After thoroughly considering the information addressed in this document, the determination of effect for the black-tailed prairie dog is "no impacts".

Sensitive Species: No significant impacts from the Proposed Action are expected on the listed sensitive species. These species were not observed in the project ROW during field surveys, or appropriate habitat within the ROW was not identified on NFS lands.

Cumulative Effects on NFS Lands

No significant cumulative impacts on wildlife resources are expected as a result of the proposed action. Insignificant impacts to all listed species would be limited to increased erosion and sedimentation, due to the expansion of the existing Teckla substation. Other possible but unlikely cumulative effects include a decrease in wildlife in the area from decreased habitat and possible but unlikely electrocution of raptors.

Direct and Indirect Effects on Areas Outside of NFS Lands

Bald eagle: Bald eagles are known to have winter roosts in Campbell County, Wyoming. Although a bald eagle was observed during the March raptor survey, no known bald eagle populations or roost sites are located within 1 mile of the ROW and no significant impacts to bald eagles are anticipated as a result of the Proposed Action.

Black-footed ferret: Prairie dog colonies are located along the ROW; however, the prairie dogs have been poisoned. No known black-footed ferret populations are located within 1 mile of the ROW, so no significant impacts to black-footed ferrets are expected as a result of the Proposed Action.

Mountain plover: Two areas of prime mountain plover habitat were identified during informal habitat surveys. The first was in the general vicinity of the ROW along Highway 50 between Hartzog substation and Moore Road. Throughout this section, the ROW parallels Highway 50 at a distance of approximately 0.5 mile. Habitat observations made 0.3 miles east of the ROW on Moore Road were classified as marginal habitat. Consequently, it is inferred that the majority of this prime habitat zone does not extend to the ROW and would not be impacted by construction. One confirmed mountain plover sighting was in Section 31, Township 44 North, Range 74 West, 6th PM. No nests were observed.

Black-tailed prairie dogs: Other prairie dog colonies are located along the ROW; however, the prairie dogs have either have been poisoned or the colonies are less than 80 acres in size.

Sensitive Species: No direct and or indirect effects from the Proposed Action are expected on the listed sensitive species. These species were not observed in the project ROW during field surveys, or appropriate habitat within the ROW was not identified on NFS lands.

Cumulative Impacts on Areas Outside of NFS Lands

No significant cumulative impacts on wildlife resources are expected as a result of the proposed action. Insignificant impacts to all listed species would be limited to increased erosion and sedimentation from temporary road equipment staging areas, and expansion of

the existing Teckla substation. Other possible but unlikely cumulative effects include a decrease in wildlife in the area from decreased habitat.

3.5.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Lands

Bald eagle: Very few trees are located on the NFS lands or within 1 mile of the ROW surrounding the NFS land. However, the existing Teckla substation infrastructure, fence posts, and an existing transmission line may provide adequate roost sites. No bald eagles were observed on NFS land during the March raptor survey or any subsequent informal surveys. Furthermore, no known bald eagle populations or roost sites are located within 1 mile of the NFS land.

Transmission lines are known to increase the likelihood of raptor electrocutions and collisions. However, the line spacing on the Proposed Action is great enough to prevent raptor electrocution. Due to the fact that the lines will be designed in a manner to reduce the likelihood of raptor electrocution, and that raptors currently co-exist with the existing Teckla substation and associated transmission lines, Alternative 3 would have no significant impacts on bald eagle. After thoroughly considering the information addressed in this document, the determination of effect for the bald eagle is “not likely to adversely effect”.

Black-footed ferret: A prairie dog colony is located just south of Teckla on NFS land. However, the ROW does not cross the prairie dog colony. No known black-footed ferret populations are located within the ROW on NFS land. Because the ROW associated with Alternative 3 crosses no prairie dog colonies on NFS lands, the Proposed Action will have no significant direct or indirect impacts on the black-footed ferret. After thoroughly considering the information addressed in this document, the determination of effect for the black-footed ferret is “no effect”.

Mountain plover: Prime mountain plover habitat was identified on NFS land in the prairie dog colony located near the Teckla substation. One unconfirmed mountain plover sighting was within the prairie dog colony. No mountain plover nests were observed within the prairie dog colony. Direct effects include loss of habitat for the mountain plover in areas where the two-pole H-frame structures will be placed. The calculated direct habitat loss as a result of pole installation on NFS lands is limited to 0.0030 acres. However, there is

extensive surrounding suitable habitat for the mountain plover. Therefore, there are no significant direct or indirect impacts anticipated from Alternative 3 on mountain plover on NFS lands. After thoroughly considering the information addressed in this document, the determination of effect for the mountain plover is "not likely to jeopardize continued existence or adversely modify proposed critical habitat" and "not likely to adversely effect".

Black-tailed prairie dog: A prairie dog colony is located just south of Teckla on NFS land that was measured to be approximately 329.12 acres (Figure 6-3). Eighty acres is the threshold established in the Grassland Plan to provide a viable population for the black-footed ferret. Since the Alternative 3 does not include any construction within the area, a black-footed ferret survey was deemed unnecessary based on FS Black-Footed Ferret Survey Guidelines (FS 2002d: pg. 1-12). After thoroughly considering the information addressed in this document, the determination of effect for the black-tailed prairie dog is "no impacts".

Sensitive Species: No significant impacts from the Proposed Action are expected on the listed sensitive species. These species were not observed in the project ROW during field surveys, or appropriate habitat within the ROW was not identified on NFS lands.

Cumulative Effects on Alternative 3 on NFS Lands

No significant cumulative impacts on wildlife resources are expected as a result of Alternative 3. Insignificant impacts to all listed species would be limited. Other possible but unlikely cumulative effects include a decrease in wildlife in the area from decreased habitat and possible but unlikely electrocution of raptors.

Direct and Indirect Effects of Alternative 3 on Areas Outside of NFS Lands

Bald eagle: Bald eagles are known to have winter roosts in Campbell County, Wyoming. Although a bald eagle was observed during the March raptor survey, no known bald eagle populations or roost sites are located within 1 mile of the ROW and no significant impacts to bald eagles are anticipated as a result of the Proposed Action.

Black-footed ferret: Prairie dog colonies are located along the ROW associated with Alternative 3; however, the prairie dogs have been poisoned. No known black-footed ferret

populations are located within 1 mile of the ROW associated with Alternative 3, so no significant impacts to black-footed ferrets are expected as a result of the Alternative 3.

Mountain plover: Two areas of prime mountain plover habitat were identified during informal habitat surveys. The first was in the general vicinity of the ROW along Highway 50 between Hartzog substation and Moore Road. Throughout this section, the ROW parallels Highway 50 at a distance of approximately 0.5 mile. Habitat observations made 0.3 miles east of the ROW on Moore Road were classified as marginal habitat. Consequently, it is inferred that the majority of this prime habitat zone does not extend to the ROW associated with Alternative 3 and would not be impacted by construction. One confirmed mountain plover sighting was in Section 31, Township 44 North, Range 74 West, 6th PM. No nests were observed.

Black-tailed prairie dogs: Other prairie dog colonies are located along the ROW; however, the prairie dogs have either have been poisoned or the colonies are less than 80 acres in size.

Sensitive Species: No direct and or indirect effects from Alternative 3 are expected on the listed sensitive species. These species were not observed in the project ROW during field surveys, or appropriate habitat within the ROW was not identified on NFS lands.

Cumulative Impacts of Alternative 3 on Areas Outside of NFS Lands

No significant cumulative impacts on wildlife resources are expected as a result of implementing Alternative 3. Insignificant impacts to all listed species would be limited to increased erosion and sedimentation from temporary road equipment staging areas, and expansion of the existing Teckla substation. Other possible but unlikely cumulative effects include a decrease in wildlife in the area from decreased habitat.

3.6 THREATENED, ENDANGERED, AND SENSITIVE PLANT SPECIES MANAGEMENT

The purpose of this section is to identify any effects of the Proposed Action to Federally listed Threatened, Endangered, Proposed, and Candidate plant species under the ESA of 1973. A detailed BA/BE is included as Appendix E.

Due to the potential for their habitat to exist in the Proposed Action ROW, the Threatened, Endangered, Proposed, or Candidate plant species to be evaluated in this EA is the Ute ladies'-tresses orchid.

Ute ladies'-tresses orchid: *Spiranthes diluvialis* is listed as threatened under the Endangered Species Act. Habitat for the Ute ladies'-tresses orchid could exist in the project ROW. This perennial herb is approximately 1.5 feet in height and has tuberous-thickened roots. It has basal leaves and small white to ivory flowers that are arranged in a spiral pattern on the stem. Ute ladies'-tresses orchids are found in moist soils usually associated with floodplains, near streams or lakes, or wetland areas. It has also been known to occur in sagebrush steppe. In Wyoming, it is mostly found in flat floodplain terraces or abandoned oxbows. Ute ladies'–tresses orchids have been found in the western Great Plains in Converse, Goshen, Laramie, and Niobrara counties. Currently, there are four known populations in Wyoming, but no known concentrations in Campbell County.

There are no areas of moist soils located on NFS land within the ROW. Furthermore, no poles will be placed in wetland areas as a result of the proposed action. A field survey conducted in 2001, did not identify any Ute ladies'-tresses orchid populations within the ROW. Wetland identification surveys, including inspection for Ute ladies'-tresses orchid, were conducted from July 23 to July 27 and from July 31 to August 3, 2001. A USACE-qualified wetland scientist led the field crew and wetland surveys. No Ute ladies'-tresses orchids were observed during the survey. Other than jurisdictional and non-jurisdictional wetlands observed, no wet meadows, oxbows of stream channels, or perennial creeks were observed during the survey.

3.6.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management of plant resources would remain as current. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of

strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors, additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions, would have long-term cumulative effects on T&E and sensitive plant resources in the project area. The increase in vehicle traffic on temporary roads in the immediate area will potentially increase the amount of direct habitat loss for the Ute ladies'-tresses orchid.

3.6.2 Alternative 2 – Proposed Action

Direct and Indirect Effects on NFS Lands

There are no wetland areas on NFS land. Therefore, no Ute ladies'–tresses orchids have been identified on NFS lands. The Proposed Action will have no direct or indirect impacts on NFS lands. After thoroughly considering the information addressed in this document, the determination of effect for the Ute ladies'-tresses orchid is "no effect".

Cumulative Effects on NFS Lands

It is possible that produced water from future CBM development could result in wetlands or moist areas occurring on NFS land. However, the topography of the NFS lands has no topographic depressions for produced water to collect. In addition, the transmission line would have already been built, so no additional construction activities will occur that may harm Ute ladies'-tresses orchids. In addition, the proponent's policy is to avoid wetland areas. Therefore, there are no anticipated cumulative impacts on threatened, endangered, and sensitive plant species from the Proposed Action on NFS lands.

Direct and Indirect Effects Outside of NFS Areas

There are scattered jurisdictional and man-induced wetlands along the ROW. None of the two pole H-frame structures will be placed in wetland areas, which are the primary habitat for the Ute ladies'-tresses orchid. The proposed project will avoid all potential wetland areas, or areas that may by considered habitat for the Ute ladies'-tresses orchid.

Furthermore, a survey conducted in 2001 did not identify the presence of Ute ladies'-tresses orchids along the ROW.

Cumulative Effects Outside of NFS Areas

It is possible that produced water from future CBM development could result in wetlands or moist areas occurring throughout the ROW if ponds or lakes are constructed to contain CBM produced waters. These wetlands, created from the collection of produced waters, may not be of an adequate quality to support Ute ladies'-tresses orchids. In addition, the transmission line will have already been built so no additional construction activities will occur that may harm Ute ladies'-tresses orchids. Therefore, there are no anticipated cumulative impacts on threatened, endangered, and sensitive plant species from the proposed areas outside NFS lands.

3.6.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Lands

There are no wetland areas on NFS land. Therefore, no Ute ladies'–tresses orchids have been identified on NFS lands. Alternative 3 will have no direct or indirect impacts on NFS lands. After thoroughly considering the information addressed in this document, the determination of effect for the Ute ladies'-tresses orchid is "no effect".

Cumulative Effects of Alternative 3 on NFS Lands

It is possible that produced water from future CBM development could result in wetlands or moist areas occurring on NFS land. However, the topography of the NFS lands has no topographic depressions for produced water to collect. In addition, the transmission line would have already been built, so no additional construction activities will occur that may harm Ute ladies'-tresses orchids. In addition, the proponent's policy is to avoid wetland areas. Therefore, there are no anticipated cumulative impacts on threatened, endangered, and sensitive plant species from the Proposed Action on NFS lands.

Direct and Indirect Effects of Alternative 3 Outside of NFS Areas

There are scattered jurisdictional and man-induced wetlands along the ROW associated with Alternative 3. None of the two pole H-frame structures will be placed in wetland areas, which are the primary habitat for the Ute ladies'-tresses orchid. The proposed project will avoid all potential wetland areas, or areas that may by considered habitat for the Ute ladies'-tresses orchid. Furthermore, a survey conducted in 2001 did not identify the presence of Ute ladies'-tresses orchids along the ROW associated with Alternative 3.

Cumulative Effects of Alternative 3 Outside of NFS Areas

It is possible that produced water from future CBM development could result in wetlands or moist areas occurring throughout the ROW associated with Alternative 3 if ponds or lakes are constructed to contain CBM produced waters. These wetlands, created from the collection of produced waters, may not be of an adequate quality to support Ute ladies'-tresses orchids. In addition, the transmission line will have already been built so no additional construction activities will occur that may harm Ute ladies'-tresses orchids. Therefore, there are no anticipated cumulative impacts on threatened, endangered, and sensitive plant species from the proposed areas outside NFS lands.

3.7 FISHERIES MANAGEMENT

There are no existing perennial steams in the project ROW; therefore, no fishery areas exist in the project ROW.

Direct and Indirect Effects on NFS Lands

There are no fisheries on NFS lands. Therefore, the Proposed Action and Alternative 3 will have no impact on fisheries on NFS lands.

Cumulative Effects on NFS Lands

If CBM development continues and produced water is released to the surface, a potential for development of fisheries on NFS lands exists; however, this is a remote possibility and the water quality from these produced waters may not be adequate to support fisheries.

Direct and Indirect Effects on Areas Outside NFS Lands

There are no fisheries in the Proposed Action and Alternative 3 ROW outside of NFS lands. Therefore, the Proposed Action and Alternative 3 would have no impact on fisheries on areas outside NFS lands.

Cumulative Effects on Areas Outside NFS Lands

If CBM development continues and produced water is released to the surface, a potential for the development of fisheries exists in the future; however, water quality from these produced waters may not be adequate to support fisheries and the production of CBM waters is short-term and not sustainable. Therefore, it is anticipated the Proposed Action and Alternative 3 would have no cumulative impacts on fisheries outside NFS lands.

3.8 RECREATION MANAGEMENT

The lands affected by the transmission line are predominantly within an area identified in the Grassland Plan and are managed for intensive mineral production and mineral support facilities, such as pipelines, railroads, access roads, and power lines. Most of the lands affected by this project are privately held, with only a small portion designated as NFS, BLM, or State of Wyoming lands.

According to the Grassland Plan, the Recreation Opportunity Spectrum (ROS) for the NFS land in the ROW is towards the development scale, specifically semi-primitive motorized. Livestock grazing is the dominant land use. Mule Deer and antelope hunters use the area around the Teckla substation in the fall. The area around the existing Teckla substation is accessible on county roads. The lands around the Teckla substation may be surface mined by coal lessees. These lands are very near the North Antelope and Rochelle coal mine. The attractiveness of these lands to most recreationists is limited due to the surrounding heavy mineral exploitation activities; because they fall within mine permit boundaries, or are near the existing substation. Oil and gas, and CBM activities in the area limit the attractiveness of these lands for recreational activities. Little camping, hiking, or mountain biking have been observed in this area.

The NFS land in Section 1, Township 41N, Range 73W, 6th PM is completely surrounded by privately owned land and is inaccessible for recreational activity. Access to the NFS land in

Section 1, Township 41N, Range 73W, 6th PM is limited to off-road access across private land. Any use is of this land is dependant on obtaining permission from the private landowner. The remainder of the ROW is on privately held lands or on lands administered by BLM or the State if Wyoming.

3.8.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management of recreational resources would remain as current. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions) may have long-term direct, indirect, and cumulative effects on recreational resources in the project area.

3.8.2 Alternative 2 – Proposed Action

Direct and Indirect Effects on NFS Lands

If construction of the proposed transmission line occurs, the current management of recreation would continue. Larger blocks of NFS would remain accessible to the public for recreational activity. No significant changes would be made to recreational resources in the study area, and no significant direct or indirect impacts to resources would be expected. The public's use of the area for recreation would continue to be very limited, and would only be available to those persons who have obtained permission to cross non-Federal land to reach existing public land or around the existing Teckla substation.

Cumulative Effects on NFS Lands

If construction of the proposed transmission line occurs, there would be no significant impact to the management of recreation. Oil and gas and CBM activities in the area limit the attractiveness of these lands for recreational activities.

The expansion of the Teckla substation in section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation would have minimal impact on recreation on NFS lands. The expansion of the substation has been completed.

Direct and Indirect Effects on Areas Outside of NFS Lands

If construction of the proposed transmission line occurs, management of recreation would remain as current. No changes would be made to recreational resources in the study area, and no significant direct or indirect impacts to recreation resources would be expected. The public's use of the area for recreation would continue to be very limited, and would only be available to those persons who have obtained permission to access private land.

Cumulative Effects on Areas Outside of NFS Lands

If construction of the proposed transmission line occurs, management of recreation would remain as current. No changes would be made to resources in the study area, and no significant cumulative impacts to recreation resources would be expected.

3.8.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Lands

If construction of Alternative 3 occurs, the current management of recreation would continue. Larger blocks of NFS would remain accessible to the public for recreational activity. No significant changes would be made to recreational resources in the study area, and no significant direct or indirect impacts to resources would be expected. The public's use of the area for recreation would continue to be very limited, and would only be available

to those persons who have obtained permission to cross non-Federal land to reach existing public land or around the existing Teckla substation.

Cumulative Effects of Alternative 3 on NFS Lands

If construction of the Alternative 3 occurs, there would be no significant impact to the management of recreation. Oil and gas and CBM activities in the area limit the attractiveness of these lands for recreational activities.

The expansion of the Teckla substation in section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation would have minimal impact on recreation on NFS lands. The expansion of the substation has been completed.

Direct and Indirect Effects of Alternative 3 on Areas Outside of NFS Lands

If construction of Alternative 3 occurs, management of recreation would remain as current. No changes would be made to recreational resources in the study area, and no significant direct or indirect impacts to recreation resources would be expected. The public's use of the area for recreation would continue to be very limited, and would only be available to those persons who have obtained permission to access private land.

Cumulative Effects of Alternative 3 on Areas Outside of NFS Lands

If construction of the Alternative 3 line occurs, management of recreation would remain as current. No changes would be made to resources in the study area, and no significant cumulative impacts to recreation resources would be expected.

3.9 GRAZING AND RANGELAND MANAGEMENT

The Grassland Plan directs the management of grazing and rangeland uses within NFS lands. The direction of management activities in the Grassland Plan management in the area emphasizes livestock grazing management and maintaining rangeland in a satisfactory

condition. The proposed Teckla to Carr Draw 230 kV Transmission Line Project would occur within the area cooperatively administered by the FS and the Thunder Basin Grazing Association (TBGA) on the Thunder Basin National Grassland. The FS manages NFS lands and decides, based on rangeland conditions and livestock grazing interest, whether livestock grazing will be permitted on NFS lands.

Grazing does occur on lands affected by the Proposed Action. The Proposed Action will impact grazing activities briefly during the construction process. No significant long-term impacts to grazing and rangeland management after construction are expected.

3.9.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management grazing and rangeland resources would remain as current. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions) may have long-term direct, indirect, and cumulative effects on grazing and rangeland resources in the project area.

3.9.2 Alternative 2 – Proposed Action

<u>Direct and Indirect Effects on NFS Land</u>

The small conversion of grazing land to transmission line poles to meet the need for the Proposed Action and substation construction area would have no significant impact on overall grazing activities.

The short-term impacts to grazing would be limited to drilling hole foundations for installation of transmission poles. Surface disturbance caused by installation of poles would be minimal on NFS lands. The anticipated loss of grazing acreage related to pole installation on NFS lands is estimated to be 0.0019 acres. This is an exaggerated estimate based on maximum diameter of pole holes (36 inches), an assumption of an 800-foot span between poles, a length of 4,700 feet of transmission line on NFS lands, and 2.0 poles per span. Three pole structures are unlikely to be installed on NFS lands because there are no angle points on NFS lands and the terrain of NFS lands is relatively constant. No poles are anticipated to be installed on the 40 acre parcel of NFS land in Section 1, Township 41N, Range 73W, 6th PM because an angle is planned in Section 6, Township 41N, Range 72W, 6th PM. This angle is very near NFS lands and the approximate span length of 800 feet would make it unnecessary to place poles on the 130-foot section of ROW on NFS land. Another short-term impact would be the possible unauthorized movement of livestock between grazing pastures when fences have been cut or laid down during power line construction.

Cumulative Effects on NFS Land

Ranching and grazing are primary land uses for NFS lands impacted by the proposed transmission line. The cumulative impact of the proposed ROW on NFS lands would have no significant impact on grazing. Due to pole installation, an estimated 0.0019 acres of NFS land will be impacted and rendered unsuitable for grazing.

The expansion of the Teckla substation in Section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation would have minimal impact on grazing on NFS lands. The size of the existing substation is 6.5 acres and the approved expansion increases the size to 11.35 acres. This expansion results in 4.85 acres of NFS land being converted from a grazing and recreational land use to electric power transmission substation use. The expansion included removing topsoil, excavating, filling and grading, and fencing an additional 4.85 acres primarily for a 210-foot expansion of the facility on the south side and a 105-foot expansion along the west side of, and adjacent to the existing fenced area substation. This expansion increases the size of the substation to a facility dimension of 610 feet by 805 feet (USFS 2002b pg. 8). The expansion of the substation has been completed.

Direct and Indirect Effects on Areas Outside NFS Lands

The Proposed Action would have no significant impact on livestock grazing for the remainder of the ROW. The majority of the proposed transmission line traverses private land. The remaining land consists of state and Federal public lands. The State of Wyoming administers 46.65 acres of state lands scattered throughout the project ROW. The Federal lands are administered by BLM (3.62 acres) and USFS (13.17 acres). The majority of the remaining land consists of major transportation corridors including I-90, SH-50, SH-387, SH-59, and BNSF railroad line.

The short-term impacts to grazing would be limited to preparing two or three staging areas adjacent to existing roads, and drilling hole foundations for installation of transmission poles. The short-term impacts to grazing are limited to minor inaccessibility to grazing lands during construction. Most disturbances to grazing would be expected to be infrequent and would last only 1 day per disruption.

Surface disturbance caused by installation of poles would be minimal on areas outside of NFS lands. The anticipated reduction in grazing land related to pole installation for the entire Proposed Action is estimated to be a maximum 0.15 acres. This is an exaggerated estimate based on maximum diameter of pole holes (36 inches), an assumption of an 800-foot span between poles, 72-mile transmission line, and 2.1 poles per span support to accommodate locations where a 3-pole structure would be required.

The small conversion of agricultural land to the transmission line H-frame pole structures within the ROW and substation construction area would have no significant impact on overall grazing activities and rangeland management.

Cumulative Effects on Areas Outside NFS Land

Mining and gas exploration, as well as ranching and growth in the area, continue to change the overall land use of Campbell County. The cumulative impact of the Proposed Action would be anticipated to have no significant impact on grazing. The primary land use in this project area consists of ranching, coal mining, and oil and gas development. These practices have been changing grazing patterns for many years, and future practices may continue to change grazing activities in the region. The Proposed Action would provide

additional electric power to CBM well. This additional electric power will negate or minimize the need for generators at each CBM well. If fewer generators are installed at CBM wells, less grazing land would be converted to generator pads and less vehicular traffic to CBM wells is anticipated. Fewer generators and less vehicular traffic would also result in better air quality and an improved grazing environment from an air quality and noise perspective for livestock.

3.9.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Land

The small conversion of grazing land to transmission line poles to meet the need for Alternative 3 and substation construction area would have no significant impact on overall grazing activities.

The short-term impacts to grazing would be limited to drilling hole foundations for installation of transmission poles. Surface disturbance caused by installation of poles would be minimal on NFS lands. The anticipated loss of grazing acreage related to pole installation on NFS lands is estimated to be 0.0030 acres. This is an exaggerated estimate based on maximum diameter of pole holes (36 inches), an assumption of an 800-foot span between poles, a length of 7,500 feet of transmission line on NFS lands, and 2.1 poles per span. Three pole would likely be installed on NFS lands because there are three angle points on NFS lands. No poles are anticipated to be installed on the 40 acre parcel of NFS land in Section 1, Township 41N, Range 73W, 6th PM because an angle is planned in Section 6, Township 41N, Range 72W, 6th PM. This angle is very near NFS lands and the approximate span length of 800 feet would make it unnecessary to place poles on the 130-foot section of ROW on NFS land. Another short-term impact would be the possible unauthorized movement of livestock between grazing pastures when fences have been cut or laid down during power line construction.

Cumulative Effects of Alternative 3 on NFS Land

Ranching and grazing are primary land uses for NFS lands impacted by the proposed transmission line. The cumulative impact of the proposed ROW on NFS lands would have

no significant impact on grazing. Due to pole installation, an estimated 0.0030 acres of NFS land will be impacted and rendered unsuitable for grazing.

The expansion of the Teckla substation in Section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation would have minimal impact on grazing on NFS lands. The size of the existing substation is 6.5 acres and the approved expansion increases the size to 11.35 acres. This expansion results in 4.85 acres of NFS land being converted from a grazing and recreational land use to electric power transmission substation use. The expansion included removing topsoil, excavating, filling and grading, and fencing an additional 4.85 acres primarily for a 210-foot expansion of the facility on the south side and a 105-foot expansion along the west side of, and adjacent to the existing fenced area substation. This expansion increases the size of the substation to a facility dimension of 610 feet by 805 feet (USFS 2002b pg. 8). The expansion of the substation has been completed.

Direct and Indirect of Effects of Alternative 3 on Areas Outside NFS Lands

Alternative 3 would have no significant impact on livestock grazing for the remainder of the ROW. The majority of the proposed transmission line traverses private land. The remaining land consists of state and Federal public lands. The State of Wyoming administers 42.70 acres of state lands scattered throughout the ROW associated with Alternative 3. The Federal lands are administered by BLM (3.62 acres) and USFS (21.47 acres). The majority of the remaining land consists of major transportation corridors including I-90, SH-50, SH-387, SH-59, and BNSF railroad line.

The short-term impacts to grazing would be limited to preparing two or three staging areas adjacent to existing roads, and drilling hole foundations for installation of transmission poles. The short-term impacts to grazing are limited to minor inaccessibility to grazing lands during construction. Most disturbances to grazing would be expected to be infrequent and would last only 1 day per disruption.

Surface disturbance caused by installation of poles would be minimal on areas outside of NFS lands. The anticipated reduction in grazing land related to pole installation for the Alternative 3 is estimated to be a maximum 0.15 acres. This is an exaggerated estimate

based on maximum diameter of pole holes (36 inches), an assumption of an 800-foot span between poles, 72-mile transmission line, and 2.1 poles per span support to accommodate locations where a 3-pole structure would be required.

The small conversion of agricultural land to the transmission line H-frame pole structures within the ROW associated with and substation construction area would have no significant impact on overall grazing activities and rangeland management.

Cumulative Effects of Alternative 3 on Areas Outside NFS Land

Mining and gas exploration, as well as ranching and growth in the area, continue to change the overall land use of Campbell County. The cumulative impact of the Alternative 3 would be anticipated to have no significant impact on grazing. The primary land use in this project area consists of ranching, coal mining, and oil and gas development. These practices have been changing grazing patterns for many years, and future practices may continue to change grazing activities in the region. Alternative 3 would provide additional electric power to CBM well. This additional electric power will negate or minimize the need for generators at each CBM well. If fewer generators are installed at CBM wells, less grazing land would be converted to generator pads and less vehicular traffic to CBM wells is anticipated. Fewer generators and less vehicular traffic would also result in better air quality and an improved grazing environment from an air quality and noise perspective for livestock.

3.10 TRANSPORTATION MANAGEMENT

This section presents the transportation routes near the proposed transmission line ROW and Teckla substation. The length of the proposed transmission line is approximately 71.23 miles. This length of the transmission line under the Proposed Action would cross one interstate highway, three state highways, paved and unpaved roads, and an active railroad line, as shown in Figure 3-5. The transmission line also runs generally parallel to SH-50 for 20 miles. The following sections describe the various transportation routes and indicate where the transmission line crosses them. Figure 3-5 presents the names and locations of transportation routes where the transmission line and ROW cross or run adjacent and parallel to the proposed path of the transmission line.

Highways

As shown in Figure 3-5, the proposed transmission line ROW crosses SH-59 approximately 5 miles west of the existing Teckla substation and 13 miles south of Wright. SH-59 is a major transportation highway in the study area. SH-59 is a paved, undivided highway that runs north and south through eastern Gillette, Wyoming and connects Gillette to Douglas, Wyoming to the south. The proposed transmission line then crosses SH-387 3 miles east of the intersection of SH-50 and SH-387. SH-387 is a paved, undivided highway that connects the City of Wright, Wyoming to Midwest, Wyoming 52 miles to the southwest and is used as the major access to Casper, Wyoming.

The proposed transmission line then crosses SH-50 near Savageton, Wyoming 30 miles south of Carr Draw and generally parallels SH-50 for 20 miles south to SH-387. SH-50 is a paved, undivided highway that connects Gillette to SH-387. Finally, the proposed transmission line crosses I-90 10 miles directly south of Carr Draw, near the Barber Creek exit approximately 20 miles west of Gillette. I-90 is a multilane, divided interstate highway that runs predominantly east and west. I-90 connects Gillette to Buffalo, Wyoming, 66 miles to the west, and Gillette to Rapid City, South Dakota, 155 miles to the east.

Roads

Grassland areas located between major highways are served by a network of county roads both paved and gravel-surfaced, unmaintained private gravel-surfaced roads, 4-wheel drive roads, and two-track trails. Notable county roads in Campbell County that intersect the transmission line are shown on Figure 3-5 and include Matheson Road, Turnercrest Road, Todd Road, Moore Road, Black and Yellow Road, Savageton Road, Napier Road, Buffalo Cut Across Road, Barber Creek Road, Maycock Road, and Fortification Road

Railroad Lines

The southern end of the proposed transmission line intersects the BNSF railroad line 0.5 mile west of the Teckla substation near Matheson Road (Figure 3-5).

Airports

Commercial airline service is available at the Gillette Campbell County Airport. The Gillette Campbell County Airport is located 5 miles north of Gillette and 43 miles north of Wright. The airport is located 20 miles from the closest point of the alignment of the transmission line, near Carr Draw.

Roads Analysis

No new roads would be installed to build or construct the proposed 230 kV transmission line. Construction would be sequenced to limit disruption to any area at one time to reduce the impact of construction on vegetation. Two track depressions in vegetation may result from construction activities. If significant revegetation is required to repair these two track depressions, a revegetation plan will be developed, in compliance with applicable Federal, state, and local regulations and ordinances.

Two or three equipment staging areas will be constructed near existing road ROWs. No permanent road access will be required to access the staging areas.
The proponent and its contractors will implement the following mitigation measures to avoid or minimize any potential impacts to transportation routes within the study area:

- No permanent access roads would be installed to construct or maintain the proposed 230 kV transmission line or staging areas.
- Construction vehicles would not exceed the posted weight limit of bridges.
- Construction along or across roads and highways would incorporate an appropriate traffic control plan. Permits would be obtained from the Wyoming Department of Transportation for encroachment across highways.
- A State of Wyoming stormwater permit will be obtained for cosntruction of the staging areas.
- All ROW access would be from the nearest existing public roadway and would avoid or minimize intrusion into off-site areas. Access to the ROW may also be obtained as stipulated in the individual easement agreements.

3.10.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management of transportation resources would remain as current. No 230 kV transmission lines would be

constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions) may have long-term direct, indirect and cumulative effects on transportation resources in the project area.

3.10.2 Alternative 2 – Proposed Action

Direct and Indirect Effects on NFS Land

No significant direct or indirect impacts are expected to the transportation systems or roads on NFS lands. No roads will be installed on NFS lands and no transportation systems on NFS lands will be impacted. In addition, there are no anticipated air traffic issues with the Proposed Action.

Cumulative Effects on NFS Land

Because no roads will be installed and no transportation systems will be impacted, no significant cumulative impacts are expected to the transportation systems on NFS lands.

Direct and Indirect Effects on Areas Outside NFS Land

Short-term impacts may include minor traffic delays caused when wires are strung across roadways or rail lines. Any such short-term roadway or railway closings would be scheduled with appropriate authorities, clearly marked, and detour routes would be provided as necessary. Construction of the Proposed Action would be expected to cause only insignificant transportation impacts to public access as a result of minor roadway congestion from worker's vehicles. No roads will be installed on areas outside of NFS lands and no transportation systems outside of NFS lands will be significantly impacted.

The Proposed Action has been designed to minimize the number of road crossings on SH-59 and SH-50 while not adding lines to the existing utility corridors. Adding lines to the existing utility corridor would not reinforce the electrical circuit. The Proposed Action has also been designed to reduce the number of times the transmission line needs to cross railroads. The transmission line will cross the BNSF railroad west of the Teckla substation.

Cumulative Effects on Areas Outside NFS Land

No significant direct, indirect, or cumulative impacts are expected to the transportation systems of cities, counties, and the state. Short-term impacts may include minor traffic delays caused when wires are strung across roadways or rail lines. Any such short-term roadway or railway closings would be scheduled with appropriate authorities and clearly marked, and detour routes would be provided as necessary. Construction of the proposed project would not be expected to cause significant adverse transportation impacts to public access as a result of roadway congestion from worker's vehicles. No significant impacts are expected from transportation corridor crossings.

If the Proposed Action did not occur, vehicular traffic along roadways would increase due to the need to service and refuel generators at CBM wells. Air quality might also suffer due to the additional vehicular traffic servicing CBM wells.

3.10.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Land

No significant direct or indirect impacts are expected to the transportation systems or roads on NFS lands. No roads will be installed on NFS lands and no transportation systems on NFS lands will be impacted. In addition, there are no anticipated air traffic issues with Alternative 3.

Cumulative Effects of Alternative 3 on NFS Land

Because no roads will be installed and no transportation systems will be impacted, no significant cumulative impacts are expected to the transportation systems on NFS lands.

Direct and Indirect Effects of Alternative 3 on Areas Outside NFS Land

Short-term impacts may include minor traffic delays caused when wires are strung across roadways or rail lines. Any such short-term roadway or railway closings would be scheduled with appropriate authorities, clearly marked, and detour routes would be provided as necessary. Construction of Alternative 3 would be expected to cause only insignificant transportation impacts to public access as a result of minor roadway congestion from worker's vehicles. No roads will be installed on areas outside of NFS lands and no transportation systems outside of NFS lands will be significantly impacted.

Cumulative Effects of Alternative 3 on Areas Outside NFS Land

No significant direct, indirect, or cumulative impacts are expected to the transportation systems of cities, counties, and the state. Short-term impacts may include minor traffic delays caused when wires are strung across roadways or rail lines. Any such short-term roadway or railway closings would be scheduled with appropriate authorities and clearly marked, and detour routes would be provided as necessary. Construction of the proposed project would not be expected to cause significant adverse transportation impacts to public access as a result of roadway congestion from worker's vehicles. No significant impacts are expected from transportation corridor crossings.

If implementation of Alternative 3 did not occur, vehicular traffic along roadways would increase due to the need to service and refuel generators at CBM wells. Air quality might also suffer due to the additional vehicular traffic servicing CBM wells.

3.11 AIR QUALITY MANAGEMENT

Construction of the proposed transmission line would occur in Campbell County, which is classified as an attainment area for all regulated pollutants by the U.S. Environmental Protection Agency (EPA). The title "attainment area" indicates that all National Ambient Air Quality Standards (NAAQS) are being met. Table 3-2 lists the applicable NAAQS that must be maintained throughout construction of the transmission line (Title 40 Code of Federal Regulations (CFR) Part 50).

Published concentrations for nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), volatile organic compounds (VOCs), or lead near the Proposed Action are not available because there are no nearby monitoring stations for these criteria pollutants.

Data for particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) are available from a monitoring station at 1000 West 8th Street in Gillette, Wyoming. Concentrations of PM_{10} have been monitored at this site since 1995. Table 3-3 shows the PM_{10} data from the station for the last 6 years. Data from this station were used to approximate concentrations that may be found in the area of the proposed transmission line since no other monitoring stations are nearby.

TABLE 3-2
TECKLA TO CARR DRAW 230 kV TRANSMISSION LINE
NATIONAL AMBIENT AIR QUALITY STANDARDS

NAAQS ($\mu g/m^3$)						
Pollutant	**1-hour**	**3-hour**	**8-hour**	**24-hour**	**Quarterly**	**Annual**
PM_{10}	NA	NA	NA	150	NA	50
NO_2	NA	NA	NA	NA	NA	100
SO_2	NA	1,300	NA	365	NA	80
CO	40,000	NA	10,000	NA	NA	NA
Ozone	235	NA	157	NA	NA	NA
Lead	NA	NA	NA	NA	1.5	NA

Notes:

NA Not applicable
NAAQS National Ambient Air Quality Standards
$\mu g/m^3$ Micrograms per cubic meter

TABLE 3-3
TECKLA TO CARR DRAW 230 kV TRANSMISSION LINE
PM_{10} MONITORED VALUES

Station Name	Year	Number of Data Collection Days per Year	1st Max 24-hour Value ($\mu g/m^3$)	2nd Max 24-hour Value ($\mu g/m^3$)	Annual Mean ($\mu g/m^3$)
1000 West 8th Street	1995	51	75	46	16.1
	1996	56	46	38	16.1
	1997	50	120	29	16.7
	1998	56	36	36	17.6
	1999	48	49	42	19.1
	2000	53	67	60	20.7

Notes:

PM_{10} Particulate matter with an aerodynamic diameter of 10 microns or less
$\mu g/m^3$ Micrograms per cubic meter

3.11.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management of air quality resources would remain as current. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions) may have long-term direct, indirect and cumulative effects on air quality resources in the project area.

3.11.2 Alternative 2 – Proposed Action

Direct and Indirect Effects on NFS Lands

The proposed project would have no significant impacts on air quality on NFS lands. Construction of the transmission line and substation would result in short-term emissions from operation of vehicles (tailpipe emissions) and generation of fugitive dust. These construction-related emissions would have minor short-term indirect and direct impacts on air quality. These impacts would be restricted to short periods of construction along the proposed utility line corridor and would diminish after construction ceases. Air quality permits would not be required for construction.

Emissions of nitrogen oxides (NO_x), VOCs, CO, and SO_2 during construction would occur from the tailpipe of internal-combustion engines in a small dozer, a tractor, backhoes, a maintainer, fuel and maintenance trucks, four drilling rigs, a hydraulic lift truck, and from construction worker vehicles and supply trucks traveling to and from the work site.

Potential fugitive dust emissions (PM_{10} emissions) involve: (1) land disturbance emissions from construction of the Proposed Action, and (2) tailpipe emissions from construction vehicles. During construction, fugitive dust might be generated due to movement of construction vehicles along the transmission line.

Cumulative Effects on NFS Lands

Construction would have no significant long-term direct, indirect, or cumulative impacts on air quality along the Proposed Action ROW on NFS lands. Monitored background values for PM_{10} concentrations near the construction corridor do not currently exceed NAAQS, and short-term construction activities would not cause these background values to exceed NAAQS in the future. Because construction would not measurably increase background values, the cumulative effect on air quality from construction would be negligible.

Direct and Indirect Effects on Areas Outside of NFS Lands

The proposed project would have an insignificant effect on air quality on NFS lands. Construction of the utility line and substation would result in short-term emissions from operation of vehicles (tailpipe emissions) and generation of fugitive dust. These construction-related emissions would have minor short-term indirect and direct impacts on air quality. These impacts would be restricted to short periods of construction along the proposed utility line corridor and would diminish after construction ceases. Air quality permits would not be required for construction.

Emissions of NO_x, VOCs, CO, and SO_2 during construction would occur from the tailpipe of internal-combustion engines in a small dozer, a tractor, backhoes, a maintainer, fuel and maintenance trucks, four drilling rigs, a hydraulic lift truck, and from construction worker vehicles and supply trucks traveling to and from the work site.

Potential fugitive dust emissions (PM_{10} emissions) involve: (1) land disturbance emissions from construction of the Proposed Action, and (2) tailpipe emissions from construction vehicles. During construction, fugitive dust might be generated due to movement of construction vehicles along the transmission line.

Cumulative Effects on Areas Outside of NFS Lands

Beneficial effects on air quality could occur. If electric power would not be provided to CBM wells, fuel-powered generators would need to be installed at each well. Each generator would produce emissions, resulting in more emissions than would be produced if the CBM well generators were electrically powered instead of powered by internal combustion engines. In addition, vehicular traffic would be reduced to each well if generators were no longer required and fueling of generators was eliminated. This would have a positive impact on fugitive dust emissions since a reduction of vehicular traffic on unpaved roads is anticipated.

3.11.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Lands

Alternative 3 would have no significant impacts on air quality on NFS lands. Construction of the transmission line and substation would result in short-term emissions from operation of vehicles (tailpipe emissions) and generation of fugitive dust. These construction-related emissions would have minor short-term indirect and direct impacts on air quality. These impacts would be restricted to short periods of construction along the proposed utility line corridor and would diminish after construction ceases. Air quality permits would not be required for construction.

Emissions of nitrogen oxides (NO_x), VOCs, CO, and SO_2 during construction would occur from the tailpipe of internal-combustion engines in a small dozer, a tractor, backhoes, a maintainer, fuel and maintenance trucks, four drilling rigs, a hydraulic lift truck, and from construction worker vehicles and supply trucks traveling to and from the work site.

Potential fugitive dust emissions (PM_{10} emissions) involve: (1) land disturbance emissions from construction of the Proposed Action, and (2) tailpipe emissions from construction vehicles. During construction, fugitive dust might be generated due to movement of construction vehicles along the transmission line.

Cumulative Effects of Alternative 3 on NFS Lands

Construction would have no significant long-term direct, indirect, or cumulative impacts on air quality along the ROW associated with Alternative 3 on NFS lands. Monitored

background values for PM_{10} concentrations near the construction corridor do not currently exceed NAAQS, and short-term construction activities would not cause these background values to exceed NAAQS in the future. Because construction would not measurably increase background values, the cumulative effect on air quality from construction would be negligible.

Direct and Indirect Effects of Alternative 3 on Areas Outside of NFS Lands

Alternative 3 would have an insignificant effect on air quality on NFS lands. Construction of the utility line and substation would result in short-term emissions from operation of vehicles (tailpipe emissions) and generation of fugitive dust. These construction-related emissions would have minor short-term indirect and direct impacts on air quality. These impacts would be restricted to short periods of construction along the proposed utility line corridor and would diminish after construction ceases. Air quality permits would not be required for construction.

Emissions of NO_x, VOCs, CO, and SO_2 during construction would occur from the tailpipe of internal-combustion engines in a small dozer, a tractor, backhoes, a maintainer, fuel and maintenance trucks, four drilling rigs, a hydraulic lift truck, and from construction worker vehicles and supply trucks traveling to and from the work site.

Potential fugitive dust emissions (PM_{10} emissions) involve: (1) land disturbance emissions from construction of Alternative 3, and (2) tailpipe emissions from construction vehicles. During construction, fugitive dust might be generated due to movement of construction vehicles along the transmission line.

Cumulative Effects of Alternative 3 on Areas Outside of NFS Lands

Beneficial effects on air quality could occur. If electric power would not be provided to CBM wells, fuel-powered generators would need to be installed at each well. Each generator would produce emissions, resulting in more emissions than would be produced if the CBM well generators were electrically powered instead of powered by internal combustion engines. In addition, vehicular traffic would be reduced to each well if generators were no longer required and fueling of generators was eliminated. This would have a positive impact on fugitive dust emissions since a reduction of vehicular traffic on unpaved roads is anticipated.

3.12 SURFACE WATER QUALITY MANAGEMENT

Northeastern Wyoming is semi-arid with an average rainfall of 11.4 inches. Very few permanent water bodies are located within the 125 foot ROW of the proposed transmission line, though numerous ephemeral drainage channels, washes, and draws are present throughout the ROW. Flow in these ephemeral drainages is caused primarily by storms and snowmelt. In addition, several dammed stock watering impoundments are located within the project ROW. In recent years, development of CBM in the Powder River Basin has resulted in the temporary discharge of production-related groundwater to ephemeral drainages throughout the region. Much of the water produced by development of CBM is either impounded or flows east in formerly dry, ephemeral drainages to the Belle Fourche or Powder Rivers.

Water bodies that could potentially contain flowing water that would be crossed by the proposed transmission line are (from south to north):

- Spring Creek
- Four-Mile Creek
- North Four-Mile Creek
- Pinette Draw (of Beaver Creek)
- Dead Horse Creek
- Middle Prong Dead Horse Creek

In general, water in all of these creeks and drainages flows discontinuously and pools in lower areas during much of the year, flowing continuously only during and following high intensity rainfall events, during snowmelt over frozen soils, or as the result of produced waters from development of CBM. No other major rivers, lakes, streams, or reservoirs are located within several miles of the ROW.

A portion of the headwaters of the Belle Fourche River is located in the southern portion of the project corridor; however, water is not present in this area during most of the year. East of the Proposed Action, the Belle Fourche River flows in a predominantly east-northeasterly direction toward the Black Hills Region of South Dakota. Because very little surface water is present in the ROW at any time and stream flow is very low, the only practical use for surface water in the ROW is watering livestock, accomplished throughout the project

corridor by damming drainages and supplementing surface water with shallow groundwater pumped to the surface generally by windmills. CBM produced waters are generally retained, however, CBM waters are discharged to the Belle Fourche River and, as CBM development is increased, flow in the river may increase. Drainages west of SH-50 generally flow to the west to the Powder River and flow in this river may also increase with increased CBM development.

Flow events frequently result from snowmelt during the late winter and early spring. Although peak discharges from these events are generally low volume, the duration and percentage of annual runoff can be considerable. During the spring, storms increase soil moisture, decreasing its capacity for infiltration. Subsequent rainfall can result in both a large volume of runoff and high peak discharges. Surface water quality varies with the rate of stream flow because the concentrations of total dissolved solids decrease and the concentrations of suspended solids rise as flow increases. Natural surface water in the study area is generally adequate for watering livestock; however, humans do not consume surface water in the region. Discharges from development of CBM are generally not adequate for livestock watering or human consumption because high total dissolved solid concentrations and high cation and anion concentrations, primarily sodium, and bicarbonate or sulfate as the primary ions. Volume and timing of flow are also not generally adequate for sustained irrigation of cropland.

3.12.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management of surface water quality would remain as current. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an

increase in air emissions) may have long-term direct, indirect and cumulative effects on surface water quality resources in the project area.

3.12.2 Alternative 2 – Proposed Action

Direct and Indirect Effects on NFS Lands

No significant impacts to surface water quality water from the Proposed Action on NFS lands are anticipated. Surface water resources do not exist within the proposed ROW on NFS lands. In addition, transmission line poles would not be located adjacent to water bodies. Direct, temporary impacts to the quality of water in the streams, creeks, stock ponds, and drainages crossed by the proposed transmission line corridor are not anticipated to be significant. These impacts could result from movement of construction equipment and could include increased concentrations of total suspended solids when flowing, and sediment deposition. Construction occurring near these streams could also disturb adjacent vegetation, increasing the potential for erosion. Vehicle crossings of streams are not anticipated, but if required, could disturb bottom sediments and stream banks, contributing to increased sediment levels in the water. Bank stabilization and channelization may be required if vehicle crossings are necessary. Finally, fuel, solvents, or other hazardous materials could spill during construction near surface water bodies and could introduce contaminants into the water.

Construction would be conducted in accordance with a sediment and erosion control plan. The plan would be included with a water quality protection permit to be submitted under Section 401 of the CWA. Components of this plan would include, BMPs, short-term controls, avoidance of surface water drainages and wet areas such as wetlands and stock ponds, and revegetation of disturbed areas. Adoption of these BMPs will minimize impacts of sedimentation and erosion impacts to surface water quality.

- For equipment staging areas, topsoil would be replaced in any disturbed areas. Replacing the topsoil not only provides a better medium for plant growth and establishment, but may also contain native seed and plant parts that will accelerate growth and aid in establishing a new surface.
- Disturbed areas would be reclaimed as soon as practicable after construction ends in those areas.

- Temporary erosion control structures and BMPs, such as straw bales and silt fences, would be used to reduce erosion and sedimentation during and immediately following construction.
- Areas where cover is removed should be seeded with native plant species.
- No permanent roads would be constructed.
- Sediment and erosion control plans would be implemented.
- Natural ground cover would be retained to the extent possible.
- Construction and wind barriers should be used to decrease erosion.
- Areas should be reseeded during the first appropriate planting season after any grading has been completed.
- No surface drainages would be rerouted, dammed, or directly impacted by the installation of H-frame transmission line poles.

After construction, no direct, indirect, or cumulative impacts to surface water quality resulting from the Proposed Action are anticipated because surface disturbance would be limited to poles being placed in the ground. No roads would be installed minimizing surface disturbance.

It its possible that wood poles used for the proposed transmission would be preserved with PCP. PCP is used in industry as a wood preservative for power line poles, railroad ties, cross arms, and fence posts. When released into the environment, PCP generally adheres to soil particles, and is not transported to surface or groundwater. No significant impacts from PCP-treated poles are expected to surface water and surface soils due to declining PCP concentrations away from pole sites. No poles would be placed in wetlands, further reducing the chance of contaminating surface water.

Cumulative Effects on NFS Lands

There are no known significant cumulative effects or adverse impacts to surface water quality resources or their management that would occur by implementing the Proposed Action, because construction activities would follow the sediment and erosion control plan, and implementation project appropriate BMPs would prevent sedimentation of surface water (EPA 2003, http://cfpub.epa.gov/npdes/stormwater/menuofbmps/bmp_files.cfm). The expansion of the Teckla substation in section 3, Township 41N. Range 71W, 6th PM, which is a project

that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation expansion would have minimal impact on surface water quality on NFS lands. The expansion included removing topsoil, excavating, filling and grading, and fencing an additional 4.85 acres primarily for a 210-foot expansion of the facility on the south side and a 105-foot expansion along the west side of, and adjacent to the existing fenced area substation. This expansion increases the size of the substation to a facility dimension of 610 feet by 805 feet (USFS 2002b pg 8). The expansion of the substation has been completed.

Direct and Indirect Effects on Areas Outside of NFS Lands

No significant impacts to surface water from the Proposed Action are anticipated for the remainder of the ROW. Surface water resources within the proposed ROW are limited to several small streams and creeks, as well as various impounded stock ponds in pastureland and ephemeral streams and drainages. All water bodies and associated buffer zones that would be crossed by the transmission line are less than 30 feet wide. As a result, the proposed constructed pole interval of 800 feet anticipated for the proposed transmission line would enable water bodies and buffer zones along the proposed transmission line corridor to be physically spanned. In addition, H-frame poles would not be located adjacent to water bodies and wetlands are to be avoided based on the proponent's policies. Similar to NFS lands, if transmission line poles are treated with PCP, no significant impact on surface water quality is anticipated.

Direct, temporary impacts to the quality of water in the streams, creeks, stock ponds, and drainages crossed by the proposed transmission line corridor are not anticipated to be significant. These impacts could result from movement of construction equipment and could include increased concentrations of total suspended solids when streams are flowing, and sediment deposition. Construction occurring near these streams could also disturb adjacent vegetation, increasing the potential for erosion. Vehicle crossings of streams are not anticipated, but if required, could disturb bottom sediments and stream banks, contributing to increased sediment levels in the water. Bank stabilization and channelization may be required if vehicle crossings are necessary. Finally, fuel, solvents, or other hazardous

materials could spill during construction near surface water bodies and could introduce contaminants into the water.

Construction would be conducted in accordance with a sediment and erosion control plan. The plan would be included with a water quality protection permit to be submitted under Section 401 of the CWA. Components of this plan would include, BMPs, avoidance of surface water, and revegetation of disturbed areas. The adoption of these BMPs will minimize impacts of sedimentation and erosion impacts to surface water quality

After construction, no direct, indirect, or cumulative impacts to surface water quality resulting from the proposed transmission line are anticipated because surface disturbance would be limited to poles being placed in the ground. No permanent roads would be installed, minimizing surface disturbance.

Cumulative Effects on Areas Outside of NFS Lands

There are no significant cumulative impact or adverse impacts to surface water quality resources or their management that would occur by implementing this alternative because construction activities would follow BMPs to prevent sedimentation of surface water.

3.12.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Lands

No significant impacts to surface water quality water from the Alternative 3 on NFS lands are anticipated. Surface water resources do not exist within the ROW associated with Alternative 3 on NFS lands. In addition, transmission line poles would not be located adjacent to water bodies.

Direct, temporary impacts to the quality of water in the streams, creeks, stock ponds, and drainages crossed by the proposed transmission line corridor are not anticipated to be significant. These impacts could result from movement of construction equipment and could include increased concentrations of total suspended solids when flowing, and sediment deposition. Construction occurring near these streams could also disturb adjacent

vegetation, increasing the potential for erosion. Vehicle crossings of streams are not anticipated, but if required, could disturb bottom sediments and stream banks, contributing to increased sediment levels in the water. Bank stabilization and channelization may be required if vehicle crossings are necessary. Finally, fuel, solvents, or other hazardous materials could spill during construction near surface water bodies and could introduce contaminants into the water.

Construction would be conducted in accordance with a sediment and erosion control plan. The plan would be included with a water quality protection permit to be submitted under Section 401 of the CWA. Components of this plan would include, BMPs, short-term controls, avoidance of surface water drainages and wet areas such as wetlands and stock ponds, and revegetation of disturbed areas. Adoption of these BMPs will minimize impacts of sedimentation and erosion impacts to surface water quality.

- For equipment staging areas, topsoil would be replaced in any disturbed areas. Replacing the topsoil not only provides a better medium for plant growth and establishment, but may also contain native seed and plant parts that will accelerate growth and aid in establishing a new surface.
- Disturbed areas would be reclaimed as soon as practicable after construction ends in those areas.
- Temporary erosion control structures and BMPs, such as straw bales and silt fences, would be used to reduce erosion and sedimentation during and immediately following construction.
- Areas where cover is removed should be seeded with native plant species.
- No permanent roads would be constructed.
- Sediment and erosion control plans would be implemented.
- Natural ground cover would be retained to the extent possible.
- Construction and wind barriers should be used to decrease erosion.
- Areas should be reseeded during the first appropriate planting season after any grading has been completed.
- No surface drainages would be rerouted, dammed, or directly impacted by the installation of H-frame transmission line poles.

After construction, no direct, indirect, or cumulative impacts to surface water quality resulting from Alternative 3 are anticipated because surface disturbance would be limited to poles being placed in the ground. No roads would be installed minimizing surface disturbance. It its possible that wood poles used for the proposed transmission would be preserved with PCP. PCP is used in industry as a wood preservative for power line poles, railroad ties, cross arms, and fence posts. When released into the environment, PCP generally adheres to soil particles, and is not transported to surface or groundwater. No significant impacts from PCP-treated poles are expected to surface water and surface soils due to declining PCP concentrations away from pole sites. No poles would be placed in wetlands, further reducing the chance of contaminating surface water.

Cumulative Effects of Alternative 3 on NFS Lands

There are no known significant cumulative effects or adverse impacts to surface water quality resources or their management that would occur by implementing Alternative 3, because construction activities would follow the sediment and erosion control plan, and implementation project appropriate BMPs would prevent sedimentation of surface water (EPA 2003, http://cfpub.epa.gov/npdes/stormwater/menuofbmps/bmp_files.cfm). The expansion of the Teckla substation in section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation expansion would have minimal impact on surface water quality on NFS lands. The expansion included removing topsoil, excavating, filling and grading, and fencing an additional 4.85 acres primarily for a 210-foot expansion of the facility on the south side and a 105-foot expansion along the west side of, and adjacent to the existing fenced area substation. This expansion increases the size of the substation to a facility dimension of 610 feet by 805 feet (USFS 2002b pg 8). The expansion of the substation has been completed.

Direct and Indirect Effects of Alternative 3 on Areas Outside of NFS Lands

No significant impacts to surface water from Alternative 3 are anticipated for the remainder of the ROW. Surface water resources within the ROW associated with Alternative 3 are limited to several small streams and creeks, as well as various impounded stock ponds in

pastureland and ephemeral streams and drainages. All water bodies and associated buffer zones that would be crossed by the transmission line are less than 30 feet wide. As a result, the proposed constructed pole interval of 800 feet anticipated for the proposed transmission line would enable water bodies and buffer zones along the proposed transmission line corridor to be physically spanned. In addition, H-frame poles would not be located adjacent to water bodies and wetlands are to be avoided based on the proponent's policies. Similar to NFS lands, if transmission line poles are treated with PCP, no significant impact on surface water quality is anticipated.

Direct, temporary impacts to the quality of water in the streams, creeks, stock ponds, and drainages crossed by the proposed transmission line corridor are not anticipated to be significant. These impacts could result from movement of construction equipment and could include increased concentrations of total suspended solids when streams are flowing, and sediment deposition. Construction occurring near these streams could also disturb adjacent vegetation, increasing the potential for erosion. Vehicle crossings of streams are not anticipated, but if required, could disturb bottom sediments and stream banks, contributing to increased sediment levels in the water. Bank stabilization and channelization may be required if vehicle crossings are necessary. Finally, fuel, solvents, or other hazardous materials could spill during construction near surface water bodies and could introduce contaminants into the water.

Construction would be conducted in accordance with a sediment and erosion control plan. The plan would be included with a water quality protection permit to be submitted under Section 401 of the CWA. Components of this plan would include, BMPs, avoidance of surface water, and revegetation of disturbed areas. The adoption of these BMPs will minimize impacts of sedimentation and erosion impacts to surface water quality

After construction, no direct, indirect, or cumulative impacts to surface water quality resulting from the proposed transmission line are anticipated because surface disturbance would be limited to poles being placed in the ground. No permanent roads would be installed, minimizing surface disturbance.

Cumulative Effects of Alternative 3 on Areas Outside of NFS Lands

There are no significant cumulative impacts or adverse impacts to surface water quality resources or their management that would occur by implementing this alternative because construction activities would follow BMPs to prevent sedimentation of surface water.

3.13 SOILS MANAGEMENT

Soils in the proposed project area are formed primarily from the in-place weathering of the Wasatch Formation. These upland soils are formed as alluvium and eolian deposits and as residuum on fan remnants, relict terraces, hill slopes, ridges, buttes, breaks, escarpments, and pediments. Soils in the region are depicted in Figure 3-6 and generally fall into one of four mapped groups (NRCS 1994 see map):

- Hiland-Ulm-Shingle
- Forkwood-Ulm-Cushman
- Theedle-Shingle-Samday
- Cambria-Theedle-Kishona

The southeastern end of the ROW near Teckla is primarily composed of the Hiland-Ulm-Shingle soils unit (NRCS 1994 see map). Soils in this unit are shallow to very deep, medium to fine textured, and formed on fan remnants, ridges, pediments, and slopes ranging from 3 to 30 percent. The Hiland soils have a sandy loam surface layer over a sandy clay loam and sandy loam subsoil. Vegetation growth on this unit supports livestock grazing and wildlife habitat. The low annual precipitation, however, limits production of vegetation for heavy livestock grazing.

North of State Highway 387 is the Forkwood-Ulm-Cushman soils unit (NRCS 1994 see map). Soils in this unit are moderately deep to very deep, medium and moderately fine textured, and formed on fan remnants and hill slopes ranging from 0 to 15 percent. The Forkwood soils have a loam surface layer over a clay loam and loam subsoil and are very deep. Ulm soils have a loam or clay loam surface layer over a clay loam subsoil and are very deep. Cushman soils have a loam surface layer over a clay loam and loam subsoil and are moderately deep over interbedded sandstone and shale. Vegetation growth on this unit

is used to support livestock grazing and wildlife habitat. The low annual precipitation, however, limits production of vegetation for heavy livestock grazing.

North and West of the Forkwood-Ulm-Cushman soils unit are soils of the Cambria-Theedle-Kishona unit (NRCS 1994 see map). This unit is characterized by moderately deep to very deep, medium textured soils formed on fan remnants, ridges, and hill slopes ranging from 3 to 30 percent. Cambria soils include a loam surface layer over a clay loam and loam subsoil and are very deep. Theedle soils are described above. Kishona soils have a loam surface layer over a clay loam subsoil and are also very deep. Vegetation grown on this unit supports livestock grazing and wildlife habitat. The low annual precipitation, however, limits production of vegetation for heavy livestock grazing.

The Theedle-Shingle-Samday soils unit forms the dominant soil type at the northern end of the ROW (NRCS 1994 see map). This unit is shallow to moderately deep, medium and fine textured, and forms on ridges and gentle to steep slopes ranging from 3 to 60 percent. Theedle soils include a loam surface layer over a loam and clay loam subsoil and are moderately deep over interbedded sandstone and shale. Shingle soils have a loam or clay loam surface layer over loam and clay loam subsoil and are shallow over interbedded sandstone and shale. Samday soils include a clay loam or clay surface layer over a clay underlying material and are shallow over shale. Vegetation grown on this unit supports livestock grazing and wildlife habitat. The low annual precipitation, low water-holding capacity, and limited rooting depth of the Shingle and Samday soils, however, limit production of vegetation for heavy livestock grazing.

3.13.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management of soils would remain as current. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that would include installation of strategically placed power generators for CBM wells. Power distribution from these generators would

require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions) may have long-term direct, indirect and cumulative effects on soils in the project area.

3.13.2 Alternative 2 – Proposed Action

Direct and Indirect Effects on NFS Lands

No significant impacts to soils from the proposed project on NFS lands are anticipated. Surface disturbance caused by installation of poles would be minimal on NFS lands. The anticipated soil disturbance related to pole installation on NFS lands estimated to be a maximum of 0.0019 acres. This is an exaggerated estimate based on maximum diameter of pole holes (36 inches), an assumption of an 800 foot span between poles, 4,700 feet of transmission line, on NFS lands and 2.0 poles per span. Three pole structures are unlikely to be installed on NFS lands because there are no angle points on NFS lands and the terrain of NFS lands is relatively constant. No poles are anticipated to be installed on the 40 acre parcel of NFS land in Section 1, Township 41N, Range 73W, 6th PM because there is an angle is planned in Section 6, Township 41N, Range 72W, 6th PM. This angle is very near NFS lands and the approximate span length of 800 feet would make it unnecessary to place poles on this section of NFS land. None of the proposed pole sites will be located in areas with steep slopes or drainages.

It is possible that if wood poles are used for the proposed transmission line they would be preserved with PCP. PCP is used in industry as a wood preservative for power line poles, railroad ties, cross arms, and fence posts. When released into the environment, PCP generally adheres to soil particles. EPA de-listed PCP from the Toxicity Characteristic Rule as a toxic substance, since it does not meet the acute toxicity list criteria. Study results of in-service utility poles treated with PCP indicated that PCP contamination in soils is contained within inches of the utility pole. In 1996, a study was conducted of 180 PCP-treated poles in 28 states, in which researchers studied the release and migration of these preservatives in the environment. Data revealed a rapid decline of PCP concentrations with

increasing distance from the wood pole. PCP concentrations decreased by as much as two orders of magnitude between 3 inches from the poles and 8 inches from the poles, with an overall average decrease of slightly more than one order of magnitude over this distance. The data clearly showed that the highest preservative concentrations remain close to the poles. Results indicated that PCP migration away from the pole is highly variable and dependent upon the local soil type, soil chemistry, local weather and topography, level of pole treatment, age of pole and other factors.

No significant impacts from PCP-treated poles are expected to groundwater due to declining PCP concentrations away from pole sites. Groundwater in the project area is considerably deeper than maximum pole depth. PCP concentrations of significance are not expected to leach through soil into groundwater because PCP has a high partition coefficient. This property allows PCP to bind to organic matter in soils, reduces its water availability and subsequent mobility.

Direct impacts to soils within the project ROW could include localized increases in potential for erosion from wind and water runoff, compaction, temporary reduction in vegetation over story and under story cover, and rutting. Any areas that are disturbed by construction could be susceptible to erosion. The impacts from erosion are a function of the local soil type and land slope and the amount of disturbance.

Soil compaction and erosion from construction equipment can eventually lead to a decrease in the establishment of certain plants and vegetation. Compaction resulting from construction equipment increases the potential for erosion and leads to decreased absorption. Areas that are disturbed by construction equipment are expected to recover with native vegetation after the construction equipment is permanently removed and by implementing the sediment control plan and BMPs described above.

Cumulative Effects on NFS Lands

Expansion of the Teckla substation that is located in Section 3 of Township 41N. Range 71W, 6th PM, and which is a project that is connected and related to this proposed power line development was addressed previously by the FS in a separate analysis and decision. It was determined that the substation would have a no impact on soils on NFS lands.

Soil compaction and erosion from construction equipment may lead to the decreased establishment of certain plants and vegetation. Compaction resulting from construction equipment increases the potential for erosion and leads to decreased absorption. Areas that are disturbed by construction equipment are expected to recover with native vegetation after the construction equipment is permanently removed and by implementing the sediment control plan and BMPs described above. Topsoil from the Teckla expansion will be removed and stockpiled for future reclamation use. Gravel such as clinker will be placed over the remaining soils to facilitate operations.
The expansion of the substation is complete.

Direct and Indirect Effects on Areas outside of NFS Lands

No significant impacts to soils from the Proposed Action on areas outside of NFS lands are anticipated. Surface disturbance caused by installation of poles would be minimal on areas outside NFS lands. Impacts to soil will be limited to locations where poles will be installed. The anticipated soil disturbance related to pole installation for the entire project is estimated to be a maximum of 0.15 acres. This is an exaggerated estimate based on a maximum diameter of pole holes (36 inches), and an assumption of an 800-foot span between poles, 72-mile transmission line length, and 2.1 poles per span support to accommodate locations where a three pole structure will be required. Poles will generally be located at the top of hills or on level terrain. None of the proposed pole sites will be located in areas with steep slopes or incised drainages. Similar to NFS lands, if PCP treated poles are used, they are expected to have no significant impact to soils in along the ROW.

Direct impacts to soils within the project ROW could include localized increases in potential for erosion from wind and water runoff, compaction, temporary reduction in vegetation over story and under story cover, and rutting. Any areas that are disturbed by construction could be susceptible to erosion. The impacts from erosion are a function of the local soil type and land slope and the amount of disturbance.

Soil compaction and erosion from construction equipment can eventually lead to a decrease in the establishment of certain plants and vegetation. Compaction resulting from construction equipment increases the potential for erosion and leads to decreased absorption. Areas that are disturbed by construction equipment are expected to recover with native vegetation after the construction equipment is permanently removed and by

implementing the sediment control plan and BMPs described above. Topsoil at equipment staging areas will be removed and stockpiled. Staging areas will be reclaimed at project completion.

Cumulative Effects on Areas Outside NFS Lands

The effects of the Proposed Action will have no significant effect on soils outside of NFS lands. Soil compaction and erosion from construction equipment may lead to the decreased establishment of certain plants and vegetation. Compaction resulting from construction equipment increases the potential for erosion and leads to decreased absorption. Areas that are disturbed by construction equipment are expected to recover with native vegetation after the construction equipment is permanently removed and by implementing the sediment control plan and BMPs described above.

3.13.3 Alternative 3 –Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Lands

No significant impacts to soils from Alternative 3 on NFS lands are anticipated. Surface disturbance caused by installation of poles would be greater than the Proposed Action. The anticipated soil disturbance related to pole installation on NFS lands estimated to be a maximum of 0.0030 acres. This is an exaggerated estimate based on maximum diameter of pole holes (36 inches), an assumption of an 800 foot span between poles, 7,500 feet of transmission line, on NFS lands and 2.1 poles per span. Three pole structures are likely to be installed on NFS lands because there would be three angle points on NFS lands. No poles are anticipated to be installed on the 40 acre parcel of NFS land in Section 1, Township 41N, Range 73W, 6th PM because there is an angle is planned in Section 6, Township 41N, Range 72W, 6th PM. This angle is very near NFS lands and the approximate span length of 800 feet would make it unnecessary to place poles on this section of NFS land. None of the proposed pole sites will be located in areas with steep slopes or drainages.

It is possible that if wood poles are used for the proposed transmission line they would be preserved with PCP. PCP is used in industry as a wood preservative for power line poles,

railroad ties, cross arms, and fence posts. When released into the environment, PCP generally adheres to soil particles. EPA de-listed PCP from the Toxicity Characteristic Rule as a toxic substance, since it does not meet the acute toxicity list criteria. Study results of in-service utility poles treated with PCP indicated that PCP contamination in soils is contained within inches of the utility pole. In 1996, a study was conducted of 180 PCP-treated poles in 28 states, in which researchers studied the release and migration of these preservatives in the environment. Data revealed a rapid decline of PCP concentrations with increasing distance from the wood pole. PCP concentrations decreased by as much as two orders of magnitude between 3 inches from the poles and 8 inches from the poles, with an overall average decrease of slightly more than one order of magnitude over this distance. The data clearly showed that the highest preservative concentrations remain close to the poles. Results indicated that PCP migration away from the pole is highly variable and dependent upon the local soil type, soil chemistry, local weather and topography, level of pole treatment, age of pole and other factors.

No significant impacts from PCP-treated poles are expected to groundwater due to declining PCP concentrations away from pole sites. Groundwater in the project area is considerably deeper than maximum pole depth. PCP concentrations of significance are not expected to leach through soil into groundwater because PCP has a high partition coefficient. This property allows PCP to bind to organic matter in soils, reduces its water availability and subsequent mobility.

Direct impacts to soils within the ROW associated with Alternative 3 could include localized increases in potential for erosion from wind and water runoff, compaction, temporary reduction in vegetation over story and under story cover, and rutting. Any areas that are disturbed by construction could be susceptible to erosion. The impacts from erosion are a function of the local soil type and land slope and the amount of disturbance.

Soil compaction and erosion from construction equipment can eventually lead to a decrease in the establishment of certain plants and vegetation. Compaction resulting from construction equipment increases the potential for erosion and leads to decreased absorption. Areas that are disturbed by construction equipment are expected to recover with native vegetation after the construction equipment is permanently removed and by implementing the sediment control plan and BMPs described above.

Cumulative Effects of Alternative 3 on NFS Lands

Expansion of the Teckla substation that is located in Section 3 of Township 41N. Range 71W, 6th PM, and which is a project that is connected and related to this proposed power line development was addressed previously by the FS in a separate analysis and decision. It was determined that the substation would have a no impact on soils on NFS lands.

Soil compaction and erosion from construction equipment may lead to the decreased establishment of certain plants and vegetation. Compaction resulting from construction equipment increases the potential for erosion and leads to decreased absorption. Areas that are disturbed by construction equipment are expected to recover with native vegetation after the construction equipment is permanently removed and by implementing the sediment control plan and BMPs described above. Topsoil from the Teckla expansion will be removed and stockpiled for future reclamation use. Gravel such as clinker will be placed over the remaining soils to facilitate operations.

The expansion of the substation is complete.

Direct and Indirect Effects of Alternative 3 on Areas outside of NFS Lands

No significant impacts to soils from Alternative 3 on areas outside of NFS lands are anticipated. Surface disturbance caused by installation of poles would be minimal on areas outside NFS lands. Impacts to soil will be limited to locations where poles will be installed. The anticipated soil disturbance related to pole installation for the entire project is estimated to be a maximum of 0.15 acres. This is an exaggerated estimate based on a maximum diameter of pole holes (36 inches), and an assumption of an 800-foot span between poles, 72-mile transmission line length, and 2.1 poles per span support to accommodate locations where a three pole structure will be required. Poles will generally be located at the top of hills or on level terrain. None of the proposed pole sites will be located in areas with steep slopes or incised drainages. Similar to NFS lands, if PCP treated poles are used, they are expected to have no significant impact to soils in along the ROW.

Direct impacts to soils within the project ROW could include localized increases in potential for erosion from wind and water runoff, compaction, temporary reduction in vegetation over

story and under story cover, and rutting. Any areas that are disturbed by construction could be susceptible to erosion. The impacts from erosion are a function of the local soil type and land slope and the amount of disturbance.

Soil compaction and erosion from construction equipment can eventually lead to a decrease in the establishment of certain plants and vegetation. Compaction resulting from construction equipment increases the potential for erosion and leads to decreased absorption. Areas that are disturbed by construction equipment are expected to recover with native vegetation after the construction equipment is permanently removed and by implementing the sediment control plan and BMPs described above. Topsoil at equipment staging areas will be removed and stockpiled. Staging areas will be reclaimed at project completion.

Cumulative Effects of Alternative 3 on Areas Outside NFS Lands

The effects of Alternative 3 will have no significant effect on soils outside of NFS lands. Soil compaction and erosion from construction equipment may lead to the decreased establishment of certain plants and vegetation. Compaction resulting from construction equipment increases the potential for erosion and leads to decreased absorption. Areas that are disturbed by construction equipment are expected to recover with native vegetation after the construction equipment is permanently removed and by implementing the sediment control plan and BMPs described above.

3.14 SOCIOECONOMIC AND COMMUNITY RESOURCES

This section summarizes the socioeconomic conditions and community resources in Campbell County, Wyoming, that makes up the affected environment for socioeconomic resources. Specifically, this section addresses population, economic conditions, income, housing, local government facilities and services, and utilities.

Population

The Proposed Action is located in Campbell County. The City of Gillette and the town of Wright are the primary population centers in the area. In 2001, the U.S. Bureau of the

Census (USCB) estimated the population of Campbell County at 33,698 (USCB 2001). The 2000 population of the entire State of Wyoming is estimated at 493,782, which makes Campbell County approximately 7 percent of the state population. The estimated 2000 population of Gillette is 22,915, and Wright is 1,308.

Economic Conditions

The major industries in Campbell County in 1997 were mining, retail trade, local government, and services (Campbell County Economic Development Committee CCEDC 2001). Table 3-4 lists the employment by industry for Campbell County in 1997 (CCEDC 2001). In the Gillette area, the school district employs 1,239 people and is the largest employer, with Powder River Coal Company a close second at 957 employees (CCEDC 2001). Kennecott Energy is the third-largest employer with 719 employees, and Campbell County and the City of Gillette are the fourth-largest employers with 626 employees combined. The unemployment rate in Campbell County was 3.46 percent in 2000, a decrease from the 1990 rate of 5.13 percent.

Income

In 1998, the per capita personal income (PCPI) was $24,729 in Campbell County. This PCPI ranked sixth in the state, and was 102 percent of the state average, $24,312, and 91 percent of the national average, $27,203. In 1988, the PCPI for Campbell County was $15,768 and ranked fifth in the state. Between 1988 and 1998, the average annual rate of growth for the PCPI was 4.6 percent. During the same period, the average annual growth rate for the state was 5.3 percent and for the nation was 5.6 percent (BEA 2001). In 1997, approximately 7.8 percent of the population of Campbell County was below the poverty level, compared with 12 percent of the State of Wyoming (USCB 2001 http://www.census.gov/).

Housing

In 1990, there were 6,350 single-family houses in Campbell County (USCB 2001 http://www.census.gov/). Since 1990, 454 individual housing units have been built, resulting in 6,804 single-family houses (CCEDC 2001 http://www.gillettewyoming.net). In 2001, the

average cost of a new three-bedroom house in Gillette was $132,560 and in Wright $120,000 and the average cost of an existing three-bedroom house in Gillette was $106,110 and in Wright was $76,531. The average monthly rent for a three-bedroom house in Gillette was $750.

TABLE 3-4
TECKLA TO CARR DRAW 230 kV TRANSMISSION LINE
CAMPBELL COUNTY 1997 EMPLOYMENT BY INDUSTRY

Industry Category	Number of Employees	Percent of Employees
Mining	4,133	25%
Retail Trade	2,798	17%
Local government	2,792	17%
Services	2,391	15%
Construction	1,583	10%
Wholesale trade	767	5%
Transportation, communications, and public utilities	762	5%
Manufacturing	416	3%
Finance, insurance, and real estate	375	2%
State government	161	1%
Agriculture	92	1%
Federal government	84	1%

Source: Campbell County Economic Development Council

Environmental Justice

The population of Campbell County and the State of Wyoming for 2000 by race is displayed in Table 3-5. In 2000, the minority population in Campbell County was 5 percent (USCB 2001). By comparison, the minority population in the State of Wyoming was 10.2 percent. In 1997, approximately 7.8 percent of the population of Campbell County was below the poverty level, compared with 12 percent of the State of Wyoming as a whole.

Executive Order 12898, signed by President Bill Clinton on February 11, 1994, and titled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", provides that Federal agencies will make environmental justice part of their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of Federal programs on these populations. The Order requires the Forest Service to ensure effective public notification and access to information about the

proposed action, to work to gain public participation in the analysis and decision processes, and to mitigate such effects if they could occur.

The racial and economic status and composition of the community and persons living in and near the proposed project area in Campbell County, Wyoming was considered during a review of what effect the proposed Basin Electric 230 kV Transmission Line Right-of-way development project could have on socio-economic conditions in the analysis area. This review considered whether or not minorities, low-income populations or American Indian tribes are present in the area that could or would be affected by the project.

Public scoping for and about the site-specific Proposed Action included contacts with American Indian tribes known or presumed to have an interest in mineral development projects occurring on the Thunder Basin National Grassland. All local landowners, Campbell County Commissioners, the potentially affected grazing association, and the general public, were contacted directly or otherwise made aware of the proposal. Local landowner, county, tribal and general public representation participation was sought in a manner consistent with Forest, agency and departmental regulations and policy, and with government-to-government relationships between the United States and tribal governments.

After examining the possible environmental and human impacts of the decision that will be made about the project, the ID team and District Ranger determined that there are no disproportionately high and adverse human health or environmental effects that would occur to minority or low income groups, or American Indian tribes, and that the public involvement efforts undertaken by the ID Team were adequate to have identified such groups if they exist, or had an interest in the project. The District Ranger's determination is that there would be no disproportional social or economic adverse impacts to these groups as a result of the implementation of the proposed electric power transmission line development.

The District Ranger also has determined that equal access opportunity for minorities and people with disabilities would be maintained at a level at or above that which is presently found to exist in the project analysis area. It is highly unlikely that a reduction in the public use of the Federal lands in that area by such persons or groups as a result of the implementation of the proposed project would occur.

Local Government Facilities, Services, and Utilities

The City of Gillette provides a wide array of governmental services including law enforcement, fire protection, road and bridge infrastructure, solid waste disposal, medical and ambulance, public libraries, and education. Schools, churches, shopping centers, and other services are located throughout the city. There are numerous cultural and recreation opportunities within the Gillette area, including public golf courses, public swimming pools, public parks, ball fields, recreation centers, civic center, and museums. The 1,000 acre CAM-PLEX Multi-Events Facilities features a performing arts theater, a convention and exhibit hall, two large multipurpose pavilions, rodeo grounds, recreational vehicle campgrounds, a horse race track, and a 21-acre park and picnic area.

The public facilities and services, particularly the infrastructure, adequately serve the existing population and could support future growth. The City of Gillette provides residents and businesses with electric, water, sewer, and sanitation service. The town of Wright provides water, sewer, and sanitation services. PRECorp provides electric service to all areas of the county outside the Gillette city limits. KN Energy provides natural gas to the City of Gillette, town of Wright, and some county residents. MGTC, a subsidiary of Western Gas Resources, also serves some residential and industrial natural gas customers in the county.

TABLE 3-5
TECKLA TO CARR DRAW 230 kV TRANSMISSION LINE
2000 POPULATION BY RACE FOR CAMPBELL COUNTY AND WYOMING

Race	Campbell County	Wyoming
Total Population	33,698	493,782
Caucasian	96.1%	92.1%
African-American	0.2%	0.8%
American Indian and Alaskan Native	0.9%	2.3%
Asian	0.3%	0.6%
Native Hawaiian and Other Pacific Islander	0.1%	0.1%
Hispanic or Latino Origin	3.5%	6.4%

Source: U.S. Bureau of the Census 2000

3.14.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management socioeconomic and community resources would remain the same as current conditions. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions) may have long-term direct, indirect, and cumulative effects on socioeconomic and community resources in the project area.

3.14.2 Alternative 2 – Proposed Action

Direct and Indirect Effects on NFS Lands

No significant direct or indirect impacts on socioeconomic and community resources from the proposed project on NFS lands are anticipated. The NFS lands impacted by the Proposed Action are either inaccessible to the public or rarely used by the public due to existing substations, mining activities, or accessibility of other public lands within Campbell County.

Cumulative Effects on NFS Lands

The cumulative effects on socioeconomic and community resources from the proposed project on NFS lands would not be significant. The NFS lands impacted by the Proposed Action are either inaccessible to the public or rarely used by the public due to existing substations, mining activities, or accessibility of other public lands within Campbell County.

Direct and Indirect Effects on Areas Outside NFS Lands

No significant direct or indirect impacts on socioeconomic and community resources from the proposed project on areas outside NFS lands are anticipated. The proposed project would have no significant impact on population resources. The construction period for the proposed project is estimated at 6 to 12 months. Approximately 30 to 60 workers would be required throughout this construction period. It is not anticipated that the population of Campbell County and the greater Gillette metropolitan area would be impacted, as the number of workers required for installation of the proposed transmission line would be relatively small. It is anticipated that a large portion of the construction work force will be native to the Gillette area or Campbell County.

The Proposed Action would have no significant impact on economic conditions. The estimated labor cost for contract construction in 2001 dollars is $10 million to $12 million. The labor costs would be spread over the 1-year construction period and includes salaries, benefits, and overtime for contract supervisors, skilled and unskilled labor, and rental of trade equipment. The average monthly payroll is estimated at $1 million per month.

The proposed project would have no significant impact on environmental justice. Pursuant to Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, the Proposed Action has been evaluated to assess whether it would result in any disproportionately high and adverse human health or environmental effects on minority and low-income populations. The Proposed Action would not disproportionately affect any communities, including those of minority or low-income groups. No burdens would be imposed on any community resources, nor would the Proposed Action create any adverse health conditions. As a result, there are no significant impacts on minority or low-income populations.

The percentage of minorities in Campbell County is lower than in the State of Wyoming as a whole. In addition, in 1998, the PCPI was higher in Campbell County than in Wyoming as a whole (BEA 2001). Construction of the project would not present a disproportionate impact to human health or the environment on minorities or low-income populations in Campbell County. In addition, no additional burdens would be imposed on local minority or low-income services as a result of the proposed transmission line.

Cumulative Effects on Areas Outside of NFS Lands

No significant direct or indirect effects to socioeconomic and community resources from the Proposed Action on areas outside of NFS lands are anticipated. In addition to local expenditures by construction workers, other income generated by construction of the transmission line would include local purchases of materials. It is likely that the proponent would acquire a variety of construction materials and supplies within the greater Gillette area. These materials could include fencing, concrete, tools, fuels, and a variety of other construction-related materials. Local suppliers of these materials could expect increases in sales during the construction period. Because a primarily local work force would be used for construction of the proposed transmission line, the impact on housing would be negligible. The majority of income generated by the Proposed Action would be spent in the area and would result in increased sales tax receipts throughout the area. Assuming that 75 percent of these wages and salaries represent disposable income, and that the local spending capture rate is 20 percent for non-local construction workers, a total of $1 million to $2 million in local spending for goods and services would be expected as a result of the proposed transmission line project.

A significant portion of the work force proposed for construction of the project would be local; therefore, there should be no additional demand on local services such as police, medical facilities, fire, or educational services and there should be no detrimental impact to the community. No significant impact on the existing infrastructure would occur.

3.14.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Lands

No significant direct or indirect impacts on socioeconomic and community resources from Alternative 3 on NFS lands are anticipated. The NFS lands impacted by the Alternative 3 are either inaccessible to the public or rarely used by the public due to existing substations, mining activities, or accessibility of other public lands within Campbell County.

Cumulative Effects of Alternative 3 on NFS Lands

The cumulative effects on socioeconomic and community resources from the proposed project on NFS lands would not be significant. The NFS lands impacted by Alternative 3 are

either inaccessible to the public or rarely used by the public due to existing substations, mining activities, or accessibility of other public lands within Campbell County.

Direct and Indirect Effects of Alternative 3 on Areas Outside NFS Lands

No significant direct or indirect impacts on socioeconomic and community resources from the proposed project on areas outside NFS lands are anticipated. The proposed project would have no significant impact on population resources. The construction period for the proposed project is estimated at 6 to 12 months. Approximately 30 to 60 workers would be required throughout this construction period. It is not anticipated that the population of Campbell County and the greater Gillette metropolitan area would be impacted, as the number of workers required for installation of the proposed transmission line would be relatively small. It is anticipated that a large portion of the construction work force will be native to the Gillette area or Campbell County.

Alternative 3 would have no significant impact on economic conditions. The estimated labor cost for contract construction in 2001 dollars is $10 million to $12 million. The labor costs would be spread over the 1-year construction period and includes salaries, benefits, and overtime for contract supervisors, skilled and unskilled labor, and rental of trade equipment. The average monthly payroll is estimated at $1 million per month.

The proposed project would have no significant impact on environmental justice. Pursuant to Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, the Proposed Action has been evaluated to assess whether it would result in any disproportionately high and adverse human health or environmental effects on minority and low-income populations. Alternative 3 would not disproportionately affect any communities, including those of minority or low-income groups. No burdens would be imposed on any community resources, nor would Alternative 3 create any adverse health conditions. As a result, there are no significant impacts on minority or low-income populations.

The percentage of minorities in Campbell County is lower than in the State of Wyoming as a whole. In addition, in 1998, the PCPI was higher in Campbell County than in Wyoming as a whole (BEA 2001 http://www.bea.doc.gov). Construction of the project would not present a disproportionate impact to human health or the environment on minorities or low-income

populations in Campbell County. In addition, no additional burdens would be imposed on local minority or low-income services as a result of the proposed transmission line.

Cumulative Effects of Alternative 3 on Areas Outside of NFS Lands

No significant direct or indirect effects to socioeconomic and community resources from Alternative 3 on areas outside of NFS lands are anticipated. In addition to local expenditures by construction workers, other income generated by construction of the transmission line would include local purchases of materials. It is likely that the proponent would acquire a variety of construction materials and supplies within the greater Gillette area. These materials could include fencing, concrete, tools, fuels, and a variety of other construction-related materials. Local suppliers of these materials could expect increases in sales during the construction period. Because a primarily local work force would be used for construction of the proposed transmission line, the impact on housing would be negligible. The majority of income generated by Alternative 3 would be spent in the area and would result in increased sales tax receipts throughout the area. Assuming that 75 percent of these wages and salaries represent disposable income, and that the local spending capture rate is 20 percent for non-local construction workers, a total of $1 million to $2 million in local spending for goods and services would be expected as a result of the proposed transmission line project.

A significant portion of the work force proposed for construction of the project would be local; therefore, there should be no additional demand on local services such as police, medical facilities, fire, or educational services and there should be no detrimental impact to the community. No significant impact on the existing infrastructure would occur.

3.15 SCENERY MANAGEMENT

The region that comprises the project area is characterized by rolling rangeland with a few hay fields scattered along the project ROW. The City of Gillette is located approximately 20 miles east of the northern end of the proposed transmission line, and the town of Wright is located 15 miles north of the southern portion of the proposed transmission line. The central and southern sections consist of rolling rangeland, whereas the northern end of the ROW area is hilly terrain. Drainages, stock ponds, and creeks that occasionally consist of small stands of trees and shrubs are found throughout ROW. The Pumpkin Buttes are the main geologic feature visible in vicinity of the Proposed Action. No scenic drives, trails, or

viewpoints exist in the ROW. Photographs of the proposed ROW are presented in Appendix A with an accompanying map, Figure A-1, which shows each location.

Many types of past and present activities and development have impacted the landscape's natural state of sagebrush and short grass prairie. Linear features of highways, gravel roads, and two-track roads, existing transmission lines, fencing, and railroads transect the proposed ROW. Scattered ranches, windmills, existing transmission lines providing electric power to CBM wells, dwellings, water wells, coal mines, and oil, gas, and CBM wells are scattered throughout the area. Addition of new gravel roads, increased construction traffic, drill rigs, and CBM wells and infrastructure for CBM (such as gas lines, compressor stations, and small gas plants) that dot the landscape are evidence of recent CBM development in the region. Buried oil and gas pipelines cross the region in a north to south direction. Visual Resource Management Objectives provided in the draft Grassland Plan are to design and implement management activities to blend with the natural landscape. According to the Grassland Plan, Visual Quality Objective for the area is classified as modification, a classification that allows management activities to visually dominate the original characteristic landscape. Other features such as existing transmission lines, existing substation and fencing dominate the landscape.

3.15.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, management of aesthetics would remain the same as current practices. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions) may have long-term direct, indirect, and cumulative effects on aesthetics in the project area.

3.15.2 Alternative 2 – Proposed Action

Direct and Indirect Effects on NFS Lands

The Proposed Action would add a transmission line to NFS lands, but would have no significant direct or indirect impacts on the already linear features of the landscape. Currently, roads, fencing, and existing transmission lines occur on some of the NFS lands impacted by the Proposed Action in the vicinity of the Teckla substation. The remainder of the NFS land that could be impacted by the Proposed Action is inaccessible to the public. The proposed transmission line would traverse only 0.88 miles across NFS lands representing 1.22 percent of the total length of the transmission line.

Cumulative Effects on NFS Lands

The expansion of the Teckla substation in Section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation would have minimal impact on visual aesthetics on NFS lands. The size of the existing substation is 6.5 acres and the approved expansion increases the size to 11.35 acres. The expansion of the substation has been completed.

The Proposed Action would have no significant impact to the visual aesthetics of the area, since electrical facilities currently exist on NFS lands, or the NFS lands impacted are inaccessible to the public and not visible from state highways or county roads.

Direct and Indirect Effects on Areas Outside of NFS Lands

The Proposed Action would add a transmission line to the landscape, but would have minimal direct or indirect impacts on the already linear features of the landscape, as the existing roads, fencing, subsurface gas lines, and existing transmission lines that currently transect the area. In addition to the linear features of the area, CBM wells, CBM drilling and infrastructure facilities, and oil and gas wells dot the landscape. Coal mines and access roads are located on the east side of SH-59 and SH-14/16.

Approximately 71.23 miles of transmission line would be constructed to connect the existing Teckla substation with the existing Carr Draw substation. No permanent access roads would be constructed for the construction or maintenance of the transmission line. Existing access roads would be used to access transmission poles, however, in most areas no existing roads exist, therefore access would require driving across open country on private lands. Temporary equipment staging areas would be constructed near existing road ROWs.

Short-term construction activities would be visible during the project from highways and minor roads in the area. Equipment, traffic, signs, and raw earth would be visible and would create a temporary effect during construction.

Cumulative Effects on Areas Outside of NFS Lands

Existing impacts to the visual aesthetics in the area resulting from past and present CBM development, oil wells, and mining are considered to be significant. Mining has altered large areas of landscape, increasing traffic, smoke, and the overall aesthetics of the area east of project area. Impacts due to the oil and gas well and coal-bed methane development include increased traffic, new road construction, well development, transmission pipelines, coal-bed methane infrastructure facility, and electrical transmission lines and are visible throughout the area.

CBM development has created significant impact to surface water features by creating detention ponds and diversion structures that did not previously exist and perennial streams that were previously intermittently flowing. The increased water flow would temporarily change the visual landscapes by changing the topography as well as the vegetation types along water courses. CBM development may result in additional 69kV transmission lines being constructed in order to provide energy to the CBM wells.

This project will have no significant cumulative impact to the visual aesthetics of the general area outside of NFS lands, as past energy development and current permits for additional coal-bed methane projects have had and will have a significant impact on the visual aesthetics of the area. The incremental increase for this project will result in no significant impacts to aesthetics in the area, as other approved energy development projects, particularly coal-bed methane development, will continue to create significant impacts to visual aesthetics.

3.15.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Lands

Alternative 3 would add a longer transmission line with additional angle points than the Proposed Action to NFS lands, but would have no significant direct or indirect impacts on the already linear features of the landscape. Currently, roads, fencing, and existing transmission lines occur on some of the NFS lands impacted by Alternative 3 in the vicinity of the Teckla substation. The remainder of the NFS land that could be impacted by Alternative 3 is inaccessible to the public. The proposed transmission line would traverse 1.42 miles across NFS lands representing 1.98 percent of the total length of the transmission line. For comparison purposes, the Proposed Action traverses 0.88 miles across NFS lands.

Cumulative Effects of Alternative 3 on NFS Lands

The expansion of the Teckla substation in Section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation would have minimal impact on visual aesthetics on NFS lands. The size of the existing substation is 6.5 acres and the approved expansion increases the size to 11.35 acres. The expansion of the substation has been completed.

Alternative 3 would have no significant impact to the visual aesthetics of the area, since electrical facilities currently exist on NFS lands, or the NFS lands impacted are inaccessible to the public and not visible from state highways or county roads.

Direct and Indirect Effects of Alternative 3 on Areas Outside of NFS Lands

Alternative 3 would add a transmission line to the landscape, but would have minimal direct or indirect impacts on the already linear features of the landscape, as the existing roads, fencing, subsurface gas lines, and existing transmission lines that currently transect the area. In addition to the linear features of the area, CBM wells, CBM drilling and infrastructure facilities, and oil and gas wells dot the landscape. Coal mines and access roads are located on the east side of SH-59 and SH-14/16.

Alternative 3 would require 71.54 miles of transmission line to be constructed to connect the existing Teckla substation with the Carr Draw substation. No permanent access roads would be constructed for the construction or maintenance of the transmission line. Existing access roads would be used to access transmission poles, however, in most areas no existing roads exist, therefore access would require driving across open country on private lands. Temporary equipment staging areas would be constructed near existing road ROWs.

Short-term construction activities would be visible during the project from highways and minor roads in the area. Equipment, traffic, signs, and raw earth would be visible and would create a temporary effect during construction.

Cumulative Effects of Alternative 3 on Areas Outside of NFS Lands

Existing impacts to the visual aesthetics in the area resulting from past and present CBM development, oil wells, and mining are considered to be significant. Mining has altered large areas of landscape, increasing traffic, smoke, and the overall aesthetics of the area east of project area. Impacts due to the oil and gas well and coal-bed methane development include increased traffic, new road construction, well development, transmission pipelines, coal-bed methane infrastructure facility, and electrical transmission lines and are visible throughout the area.

CBM development has created significant impact to surface water features by creating detention ponds and diversion structures that did not previously exist and perennial streams that were previously intermittently flowing. The increased water flow would temporarily change the visual landscapes by changing the topography as well as the vegetation types along water courses. CBM development may result in additional 69kV transmission lines being constructed in order to provide energy to the CBM wells.

This project will have no significant cumulative impact to the visual aesthetics of the general area outside of NFS lands, as past energy development and current permits for additional coal-bed methane projects have had and will have a significant impact on the visual aesthetics of the area. The incremental increase for this project will result in no significant impacts to aesthetics in the area, as other approved energy development projects, particularly coal-bed methane development, will continue to create significant impacts to visual aesthetics.

3.16 NOISE, TELEVISION, AND RADIO INTERFERENCE

Transmission lines and substations are often associated with electrical effects that include interference with radio and television. The electrical characteristics of the environment around transmission lines and substations are primarily caused by of electric and magnetic fields (EMF) associated with the voltage (electric field) and current (magnetic field) running through the equipment. EMF extends from the conductors of transmission lines and substation equipment and decreases with distance from these features. Location, conductor spacing and arrangement, voltage and current, and other engineering considerations influence the relative strength of the fields in the vicinity of the facilities.

The electric current at the surface of the conductors is responsible for an effect referred to as the “corona”, or the electrical breakdown of the air into charged particles. The electrical field from the energized conductors of a transmission line may cause corona to occur on the conductors, insulators, and hardware of electric lines. Corona on conductors occurs when the EMF has been augmented by such factors as water drops, nicks, or insects. The Corona may result in audible noise, electromagnetic interference with radios or television, and visible light.

Corona effects are small during fair weather, but increase when moisture is present, such as during fog or rain. Audible noise generated from corona on transmission lines is generally described as a crackling, hissing, or humming noise. Interference with radio and television signals associated with corona on transmission line conductors is caused by electromagnetic noise generated at the frequencies used to transmit radio (especially AM) and television signals. Radio and television interference is also caused by spark gaps on distribution and low-voltage transmission lines. Conditions such as mechanical failure, vibration, or corrosion in a conductor can result in a loss of connection, allowing voltage to develop. If this voltage is sufficiently high, a spark can be generated that may result in audible noise or interference with radio and television signals. The Proposed Action will upgrade local utility infrastructure and will be composed of the most current materials. Any impacts to radio and television signals area expected to be minimal. Mobile telephone and citizen’s band radio signals are rarely, if ever, disrupted by corona effects since they operate at different frequencies than the noise generated by a corona.

Campbell County is predominantly rural, and existing ambient noise levels along much of the proposed ROW are generally low because the surrounding land is undeveloped or used for agriculture. Elevated levels of noise within the project ROW are associated with aircraft, automobiles, railroad traffic, truck traffic, and farm equipment. The project corridor crosses one BNSF rail line, I-90, SH-50, SH-387, and SH-59, and several private and county roads. The proposed alignment also extends parallel to SH-50 throughout much of the central portion of the ROW. In addition, development of the area with facilities for CBM, oil and gas, and coal mining is currently occurring at a fairly rapid pace, thus subjecting the area to noise associated with drilling, blasting, construction, and facility operation.

Much of the ROW consists of large tracts of rangeland and undeveloped grassland, with unpaved and infrequently traveled roads. Primary sources of noise in these areas include wind, livestock, wildlife, ranch/farm equipment, and ranch/farm truck traffic.

Topography in the ROW is mostly open, gently rolling range land with few or no trees. This terrain is unlikely to have any noticeable effect on propagation of noise from other noise sources in the ROW.

The majority of the ROW passes through uninhabited rangeland with a very low population density. The only areas within the ROW where television or radio interference would be of concern are areas along roadways, nearby rural residences, or facilities that receive radio or television signals via antennas, where radio or television signals may be temporarily influenced or disrupted. A few existing power lines are the primary sources of EMF in the area, although other electrical equipment produce low levels of EMF.

3.16.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, noise, and radio and television signals would not be impacted. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of

strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions) may have long-term direct, indirect, and cumulative effects on resources in the project area.

3.16.2 Alternative 2 – Proposed Action

Direct and Indirect Effects on NFS Lands

Burns & McDonnell calculated the possible noise-related impacts from the operation of a 230kV transmission line as part of an electrical effects analysis. According to those calculations, audible noise associated with the proposed transmission line is unlikely to cause annoyance even during precipitation events (Burns & McDonnell 2001 page A-4).

Noise associated with construction of the proposed transmission line would be intermittent and of relatively short duration. Construction at each pole location would typically occur up to 1 day at a time by different drilling and construction crews at several different times. All construction noise levels would conform to local ordinances. Direct impacts from noise created during construction of the Proposed Action would be a temporary, short-term nuisance to nearby residents and passers-by. Noise created during construction of the transmission line may also prevent wildlife from nearing the construction area.

Cumulative Effects on NFS Lands

Cumulative impacts associated with noise generated by construction and operation of the project are primarily associated with expansion of the existing Teckla substation. The expansion of the Teckla substation in section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation would have minimal impact on noise on NFS lands. The expansion included removing topsoil, excavating, filling and grading, and fencing an additional 4.85 acres

primarily for a 210-foot expansion of the facility on the south side and a 105-foot expansion along the west side of, and adjacent to the existing fenced area substation. This expansion increases the size of the substation to a facility dimension of 610 feet by 805 feet (USFS 2002b pg 8). The expansion of the substation has been completed.

Direct and Indirect Effects on Areas outside of NFS Lands

The potential noise-related impacts from the operation of a similar 230kV transmission line were calculated and reported by Burns & McDonnell as part of an electrical effects analysis. According to calculations by Burns & McDonnell, audible noise associated with the proposed transmission line is unlikely to cause annoyance even during precipitation events (Burns & McDonnell 2001 pg. A-4).

Noise associated with construction of the proposed transmission line would be intermittent and of relatively short duration. All construction noise levels would conform to local ordinances. Direct impacts from noise created during construction of the proposed project would be a temporary, short-term nuisance to nearby residents and passers-by. Since most of the transmission line construction activities are on remote private land, few residents will be impacted. Noise created during construction of the project may also prevent wildlife from nearing the construction area.

After construction is complete, energized transmission lines may emit audible noise as a low hum, crackle, or hissing at certain times as a result of the corona effect, which is common for transmission lines during rain or high humidity. Since the transmission line will be constructed with current materials and technology, audible noise is expected to be insignificant. Based on the distance of most local residences from the proposed transmission line, audible noise is expected to be very low or nonexistent. Line operation is expected to have no significant impacts from noise.

The majority of the proposed project is located in rural, unpopulated areas. In addition, direct and indirect impacts from noise associated with construction and operation of the proposed project would be small compared with vehicles on nearby highways and other roadways.

Interference with radio and television signals could occur in vehicles driving in the vicinity of, or homes located near, the transmission line. However, interference is expected to be limited, since radio and television interference generally occurs in older transmission lines with loose or dirty insulators and spark gaps.

The potential and possible impacts from radio and television signal interference was calculated as part of an electrical effects analysis and reported by Burns & McDonnell. According to calculations by Burns & McDonnell, a 230 kV transmission line may produce some AM radio interference within 150 feet of the proposed transmission line. (Burns & McDonnell 2001 pg. A-2, A-3). These calculations suggest that the proposed transmission line should not produce objectionable levels of television signal interference since the ROW avoids occupied dwellings. The proponent's policy is to investigate and correct problems with television and radio interference associated with its lines.

Cumulative Effects on Areas Outside of NFS Lands

Cumulative impacts associated with noise generated by construction and operation transmission line are primarily associated with noise from increased CBM development in the area. The proposed construction and operation of the transmission line is expected to have no significant cumulative impacts on noise and radio or television interference.

3.16.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Lands

Burns & McDonnell calculated the possible noise-related impacts from the operation of a 230kV transmission line as part of an electrical effects analysis. According to those calculations, audible noise associated with the proposed transmission line is unlikely to cause annoyance even during precipitation events (Burns & McDonnell 2001 page A-4).

Noise associated with construction of the proposed transmission line would be intermittent and of relatively short duration. Construction at each pole location would typically occur up to 1 day at a time by different drilling and construction crews at several different times. All construction noise levels would conform to local ordinances. Direct impacts from noise

created during construction of Alternative 3 would be a temporary, short-term nuisance to nearby residents and passers-by. Noise created during construction of the transmission line may also prevent wildlife from nearing the construction area.

Cumulative Effects of Alternative 3 on NFS Lands

Cumulative impacts associated with noise generated by construction and operation of Alternative 3 are primarily associated with expansion of the existing Teckla substation. The expansion of the Teckla substation in section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation would have minimal impact on noise on NFS lands. The expansion included removing topsoil, excavating, filling and grading, and fencing an additional 4.85 acres primarily for a 210-foot expansion of the facility on the south side and a 105-foot expansion along the west side of, and adjacent to the existing fenced area substation. This expansion increases the size of the substation to a facility dimension of 610 feet by 805 feet (USFS 2002b pg 8). The expansion of the substation has been completed.

Direct and Indirect Effects of Alternative 3 on Areas outside of NFS Lands

The potential noise-related impacts from the operation of a similar 230kV transmission line were calculated and reported by Burns & McDonnell as part of an electrical effects analysis. According to calculations by Burns & McDonnell, audible noise associated with the proposed transmission line is unlikely to cause annoyance even during precipitation events (Burns & McDonnell 2001 pg. A-4).

Noise associated with construction of the proposed transmission line would be intermittent and of relatively short duration. All construction noise levels would conform to local ordinances. Direct impacts from noise created during construction of the proposed project would be a temporary, short-term nuisance to nearby residents and passers-by. Since most of the transmission line construction activities are on remote private land, few residents will be impacted. Noise created during construction of the project may also prevent wildlife from nearing the construction area.

After construction is complete, energized transmission lines may emit audible noise as a low hum, crackle, or hissing at certain times as a result of the corona effect, which is common for transmission lines during rain or high humidity. Since the transmission line will be constructed with current materials and technology, audible noise is expected to be insignificant. Based on the distance of most local residences from the proposed transmission line, audible noise is expected to be very low or nonexistent. Line operation is expected to have no significant impacts from noise.

The majority of the proposed project is located in rural, unpopulated areas. In addition, direct and indirect impacts from noise associated with construction and operation of the proposed project would be small compared with vehicles on nearby highways and other roadways.

Interference with radio and television signals could occur in vehicles driving in the vicinity of, or homes located near, the transmission line. However, interference is expected to be limited, since radio and television interference generally occurs in older transmission lines with loose or dirty insulators and spark gaps.

The potential and possible impacts from radio and television signal interference was calculated as part of an electrical effects analysis and reported by Burns & McDonnell. According to calculations by Burns & McDonnell, a 230 kV transmission line may produce some AM radio interference within 150 feet of the proposed transmission line. (Burns & McDonnell 2001 pg. A-2, A-3). These calculations suggest that the proposed transmission line should not produce objectionable levels of television signal interference since the ROW avoids occupied dwellings. The proponent's policy is to investigate and correct problems with television and radio interference associated with its lines.

Cumulative Effects of Alternative 3 on Areas Outside of NFS Lands

Cumulative impacts associated with noise generated by construction and operation transmission line are primarily associated with noise from increased CBM development in the area. The proposed construction and operation of the Alternative 3 is expected to have no significant cumulative impacts on noise and radio or television interference.

3.17 HUMAN HEALTH AND SAFETY

Direct contact with electric conductors on transmission lines is commonly referred to as shock hazard. Transmission lines, as with household electrical wiring, can inflict serious electric shocks if precautions are not taken to minimize the hazard. Avoidance of objects, such as antennas and irrigation equipment, near the ROW for the transmission line is a proper precaution that should be observed. All of the proponent's transmission lines are designed and constructed in accordance with the National Electrical Safety Code (NESC) standards to minimize shock hazard.

The flow of electricity produces EMF. Magnetic and electric fields are strongest at the source of electrical power and drop off markedly as the distance from the source increases. In many cases, people are exposed to higher levels of EMF from household appliances than from transmission lines because the EMF source is closer.

Numerous sources of EMF exist in nature and in the occupational and residential environments. However, public awareness of the ubiquitous nature of these fields, and the historical controversy over their potential effects on living systems, have stimulated the research community to define more precisely the physical properties of these fields and to delineate the thresholds for their possible effects on human health and the environment.

Certain epidemiological investigations have indicated potential risk factors in a number of residential and occupational studies from exposure to EMF. However studies report no statistically significant correlation. In 1996, the National Research Council (NRC) completed a study of research on EMF that had been under way since 1979. The study concluded that the evidence so far "does not show that exposure to these fields (such as EMF) presents a human health hazard" (NRC 1996 pg. 2).

A substantial amount of research on EMF has been completed and is continuing, the body of research on health effects is still preliminary and inconclusive. The emerging evidence no longer allows the assertion that there are no risks; still, there is no basis for asserting that there are significant risks.

The proponent typically implements a comprehensive occupational health and safety program that is designed to protect workers during all phases of construction of the Proposed Action. The comprehensive program will meet or exceed all Federal, state, and local requirements and will include a construction safety plan and an operation and maintenance procedures plan.

Key elements of the plan may include:

- Responsibilities of construction team and subcontractors
- Job site rules and regulations
- Emergency response procedures
- Safety inspections and audits
- Medical services and first aid
- Personal protective equipment
- Standard construction procedures
- Accident investigation and reporting

EDR, searched available local, state, and Federal environmental records to identify recognized environmental conditions (RECs). RECs are defined as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. EDR searched available Federal, state, county, and local environmental records for information related to environmental concerns at the property. RECs, associated with sites identified through the search are provided in the EDR Radius Map Report (EDR Report) located in Appendix E.

For the Proposed Action, an EDR Radius Map Report using a 2.5-mile buffer on each side of the transmission line was conducted. No RECs were found along the ROW.

3.17.1 Alternative 1 – No Action

If construction of the proposed 230 kV transmission line does not occur, current human health and safety environments would remain. No 230 kV transmission lines would be constructed in the proposed ROW, and no immediate direct or indirect effects to resources from the transmission line would be expected. However, projected growth in power loads and the transmission system required to carry these loads would not be met, and the integrity of the electrical grid system in Campbell County would not be improved. Under this scenario, alternate power supplies would be required that will include installation of strategically placed power generators for CBM wells. Power distribution from these generators would require larger tracts of land on which to build the generators, increase vehicular traffic to and from the generators for operation and maintenance, increase the risk of fuel spills, and increase emissions of air pollutants from generator operation. These factors (additional generators at CBM wells, the increased potential for fuel spills, and an increase in air emissions) may have long-term direct, indirect, and cumulative effects on human health and safety in the project area.

3.17.2 Alternative 2 – Proposed Action

Direct and Indirect Effects on NFS Lands

The proposed transmission line would be constructed to NESC standards and, as a result, would not present significant direct or indirect impacts posed by safety or electrical hazard to the general public. Potential shock hazards may result from objects such as antennas and irrigation equipment that impedes the transmission line vicinity. General operation of the transmission line on NFS lands would not present a safety or electric hazard to the general public since the proponent's standard grounding policies effectively mitigate the possibility of nuisance shocks caused by induced currents from stationary objects.

Operation of the transmission line would result in increased EMF levels in the area adjacent to the transmission line. However, numerous sources of EMF exist in nature and in occupational and residential environments. Certain epidemiological investigations have suggested potential risks to residential and occupational populations from exposure to EMF. However, many studies report no statistically significant correlation. In October 1996, NRC completed a study of research on EMF that had been ongoing since 1979 and concluded that the evidence so far "does not show that exposure to these fields presents a human

health hazard" (NRC 1996 pg. 2). Laboratory studies have also been predominantly inconclusive. Because the majority of the proposed alignment would be located in rural, undeveloped areas, the potential for effects is further diminished and no significant direct or indirect impacts are anticipated.

Cumulative Effects on NFS Lands

In addition to the direct and indirect effects of the Proposed Action, the expansion of the Teckla substation, The expansion of the Teckla substation in section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation would have no significant impact on human health and safety on land use on NFS lands. The expansion of the substation has been completed.

The remoteness of the Teckla facility and the small amount of human activity that occurs near the Teckla substation prevents significant exposure to EMF. Additionally, any potential hazard posed by EMF would be effectively mitigated by construction of a fence with warning signs posted at appropriate intervals surrounding the substation. Construction of a chain-link fence would also control access to the property to authorized personnel only, and would bar trespassers or other personnel who are not authorized or qualified to be on the property.

Direct and Indirect Effects on Areas Outside of NFS Lands

The proposed transmission line would be constructed to NESC standards and, as a result, would not present significant indirect or direct impacts posed by safety or electrical hazard to the general public. Potential shock hazards may result from objects such as antennas and irrigation equipment that impedes the transmission line vicinity. General operation of the transmission line would not present a safety or electric hazard to the general public since the proponent's standard grounding policies effectively mitigate the possibility of nuisance shocks caused by induced currents from stationary objects.

Operation of the transmission line would result in increased EMF levels in the area adjacent to the transmission line. However, numerous sources of EMF exist in nature and in occupational and residential environments. Certain epidemiological investigations have

suggested potential risks to residential and occupational populations from exposure to EMF. However, many studies report no statistically significant correlation. In October 1996, NRC completed a study of research on EMF that had been ongoing since 1979 and concluded that the evidence so far "does not show that exposure to these fields presents a human health hazard" (NRC 1996 pg. 2). Laboratory studies have also been predominantly inconclusive. Because the majority of the proposed alignment would be located in rural, undeveloped areas, the potential for effects is further diminished and no significant direct or indirect impacts are anticipated.

Other potential safety hazards include air travel safety and safety to sensitive facilities, such as schools. The proposed transmission line does not impede Gillette Campbell County Airport air space. No impacts will occur to existing schools, health facilities, or hazardous materials sites during construction or operation of the project.

Cumulative Effects on Areas Outside of NFS Lands

There are no significant cumulative impacts anticipated to human health and safety as a result of the Proposed Action. The proposed transmission line would be designed to minimize the likelihood of shock or electrocution. Any additional transmission lines that may tap in to the proposed transmission line would also be designed to prevent harm to humans. The Proposed Action is in a rural area and it is unlikely that human activity near the transmission line ROW would result in significant exposure to EMF or electrical shock.

3.17.3 Alternative 3 – Avoiding Former Nest Location

Direct and Indirect Effects of Alternative 3 on NFS Lands

Alternative 3 would be constructed to NESC standards and, as a result, would not present significant direct or indirect impacts posed by safety or electrical hazard to the general public. Potential shock hazards may result from objects such as antennas and irrigation equipment that impedes the transmission line vicinity. General operation of the transmission line on NFS lands would not present a safety or electric hazard to the general public since the proponent's standard grounding policies effectively mitigate the possibility of nuisance shocks caused by induced currents from stationary objects.

Operation of the transmission line would result in increased EMF levels in the area adjacent to the transmission line. However, numerous sources of EMF exist in nature and in occupational and residential environments. Certain epidemiological investigations have suggested potential risks to residential and occupational populations from exposure to EMF. However, many studies report no statistically significant correlation. In October 1996, NRC completed a study of research on EMF that had been ongoing since 1979 and concluded that the evidence so far "does not show that exposure to these fields presents a human health hazard" (NRC 1996 pg. 2). Laboratory studies have also been predominantly inconclusive. Because the majority of the proposed alignment would be located in rural, undeveloped areas, the potential for effects is further diminished and no significant direct or indirect impacts are anticipated.

Cumulative Effects of Alternative 3 on NFS Lands

In addition to the direct and indirect effects of Alternative 3, the expansion of the Teckla substation, The expansion of the Teckla substation in section 3, Township 41N. Range 71W, 6th PM, which is a project that is connected and related to this proposed power line development, was addressed previously by the FS in a separate analysis. It was determined that the substation would have no significant impact on human health and safety on land use on NFS lands. The expansion of the substation has been completed.

The remoteness of the Teckla facility and the small amount of human activity that occurs near the Teckla substation prevents significant exposure to EMF. Additionally, any potential hazard posed by EMF would be effectively mitigated by construction of a fence with warning signs posted at appropriate intervals surrounding the substation. Construction of a chain-link fence would also control access to the property to authorized personnel only, and would bar trespassers or other personnel who are not authorized or qualified to be on the property.

Direct and Indirect Effects of Alternative 3 on Areas Outside of NFS Lands

Alternative 3 would be constructed to NESC standards and, as a result, would not present significant indirect or direct impacts posed by safety or electrical hazard to the general public. Potential shock hazards may result from objects such as antennas and irrigation equipment that impedes the transmission line vicinity. General operation of the transmission

line would not present a safety or electric hazard to the general public since the proponent's standard grounding policies effectively mitigate the possibility of nuisance shocks caused by induced currents from stationary objects.

Operation of the transmission line would result in increased EMF levels in the area adjacent to the transmission line. However, numerous sources of EMF exist in nature and in occupational and residential environments. Certain epidemiological investigations have suggested potential risks to residential and occupational populations from exposure to EMF. However, many studies report no statistically significant correlation. In October 1996, NRC completed a study of research on EMF that had been ongoing since 1979 and concluded that the evidence so far "does not show that exposure to these fields presents a human health hazard" (NRC 1996 pg. 2). Laboratory studies have also been predominantly inconclusive. Because the majority of the proposed alignment would be located in rural, undeveloped areas, the potential for effects is further diminished and no significant direct or indirect impacts are anticipated.

Other potential safety hazards include air travel safety and safety to sensitive facilities, such as schools. Alternative 3 does not impede Gillette Campbell County Airport air space. No impacts will occur to existing schools, health facilities, or hazardous materials sites during construction or operation of the project.

Cumulative Effects of Alternative 3 on Areas Outside of NFS Lands

There are no significant cumulative impacts anticipated to human health and safety as a result of Alternative 3. The proposed transmission line would be designed to minimize the likelihood of shock or electrocution. Any additional transmission lines that may tap in to the proposed transmission line would also be designed to prevent harm to humans. Alternative 3 is in a rural area and it is unlikely that human activity near the transmission line ROW would result in significant exposure to EMF or electrical shock.

4.0 CONSULTATION AND COORDINATION

The FS consulted the following individuals; Federal, state and local agencies; tribes; and non-FS individuals during the development of this environmental assessment:

ID TEAM MEMBERS

Mr. Joseph Reddick, FS Lands Use Sepcialist
Mr. William Steenson, FS Environmental Coordinator
Mr. Tim Byer, FS Wildlife Biologist
Mr. Mike Sierz, FS Environmental Coordinator
Ms. Joanne Homuth, FS Mining Leasing Specialist

FEDERAL, STATE, AND LOCAL AGENCIES

Mr. Brad Rogers, USFWS Biologist
Mr. Dominic Domenici, USFWS Senior Resident Agent
Mr. Tom Bills, BLM Biologist

OTHER ORGANIZATIONS AND ENTITIES

Mr. Jim K. Miller, Basin Electric Manager, Environmental Affairs
Mr. Jim Berg, Basin Electric Project Manager
Mr. Bob Hammer, Tetra Tech Program Manager
Mr. Bob Farnes, Tetra Tech Project Manager
Mr. Jim Bowlby, Tetra Tech Technical Manager
Ms. Robyn Odom, Tetra Tech Biologist
Ms. Karmen Griffith, Tetra Tech Biologist
Mr. Chris Collins, Tetra Tech Biologist

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APPENDIX A

PROJECT PHOTOGRAPHIC LOG

Photograph No. 1 Date: August 2001
Description: Looking south at the Teckla Substation crossing (NE ¼, Section 3; Township 41 North; Range 71 West)

Photograph No. 2 Date: August 2001
Description: Looking east at Highway 59 crossing (SW ¼, Section 36; Township 42 North; Range 72 West)

Photograph No. 3 Date: April 2002
Description: Looking southwest along the 40-acre ¼, ¼ section of NFS land on the southwest corner of the ROW crossing (NE ¼ Section 1; Township 41 North; Range 73 West)

Photograph No 4 Date: April 2002
Description: Looking west on the 40-acre ¼, ¼ section of NFS land on the southwest corner of the ROW (NE ¼ Section 1; Township 41 North; Range 73 West)

Photograph No. 5 Date: August 2001
Description: Looking northeast across ROW (SE ¼, Section 3; Township 42 North; Range 74 West)

Photograph No. 6 Date: August 2001
Description: Looking northwest across ROW (Mid-Section 32; Township 43 North; Range 74 West)

Photograph No. 7 Date: August 2001
Description: Looking west from Highway 50 at business (SE ¼, Section 18; Township 45 North; Range 74 West)

Photograph No. 8 Date: August 2001
Description: Looking south from the Highway 50 crossing area (NW ¼, Section 17; Township 45 North; Range 74 West)

Photograph No. 9 Date: August 2001
Description: Looking south across coal-bed methane development area (NE ¼, Section 5; Township 45 North; Range 74 West)

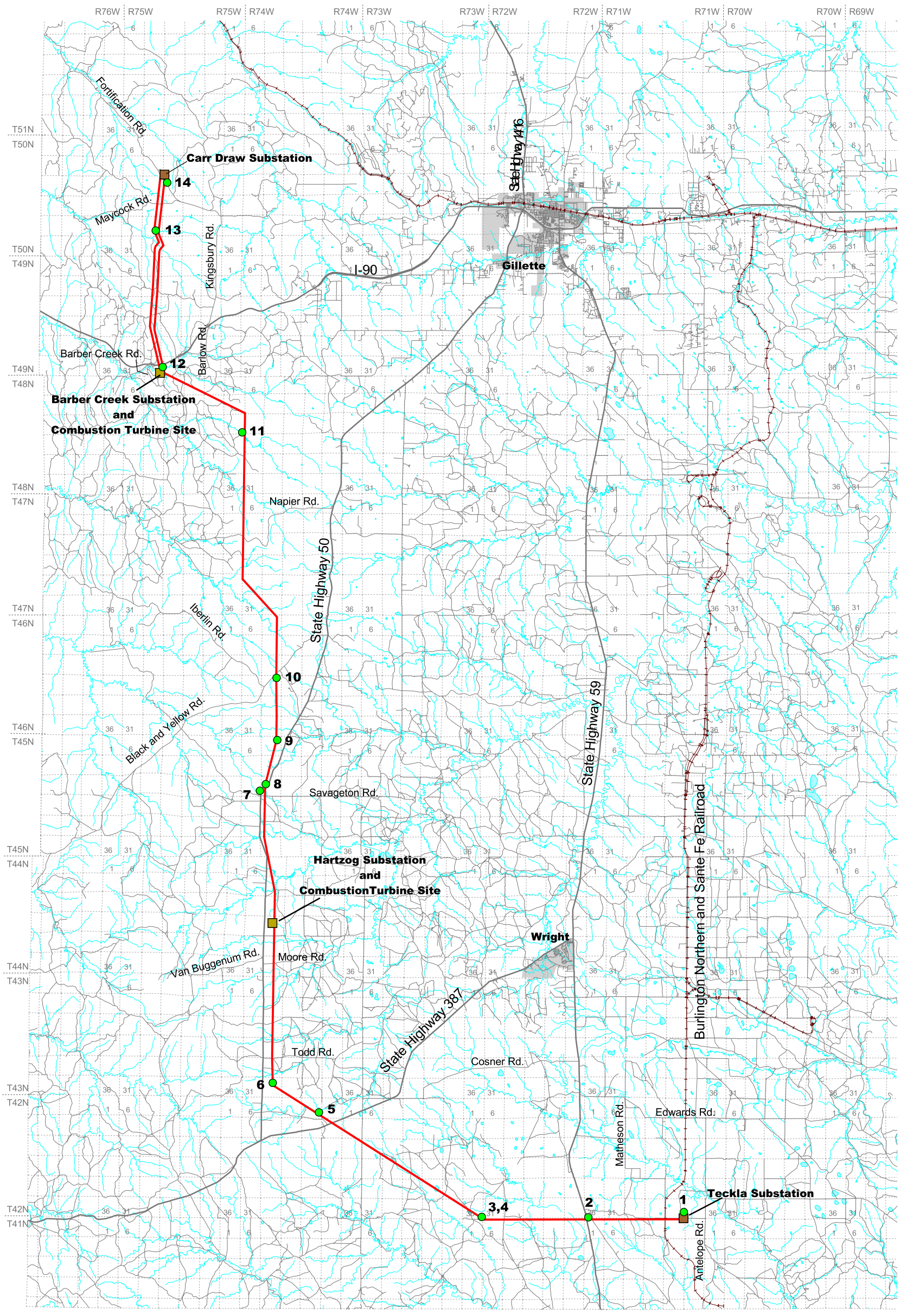
Photograph No. 10 Date: August 2001
Description: Looking south from Black and Yellow Road crossing (SE ¼, Section 17; Township 46 North; Range 74 West)

Photograph No. 11 Date: July 2001
Description: Looking south along ROW (SE ¼, Section 13; Township 48 North; Range 75 West)

Photograph No. 12 Date: July 2001
Description: Looking north at the North Prong Dead Horse Creek crossing; I-90 crossing in background (SW ¼, Section 33; Township 49 North; Range 75 West)

Photograph No .13 Date: July 2001
Description: Looking south at the Barber Creek crossing (SE ¼, Section 29; Township 50 North; Range 75 West)

Photograph No. 14 Date: July 2001
Description: Looking south from the Fortification Road crossing (NW ¼, Section 16; Township 50 North; Range 75 West)



Legend

- Proposed Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Photographic Location
- Railroad
- Major Roads
- Roads
- Streams
- Water Bodies
- Incorporated Place
- Section Lines

N

5 0 5 Miles

FIGURE A-1
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
PHOTO LOG

USDA

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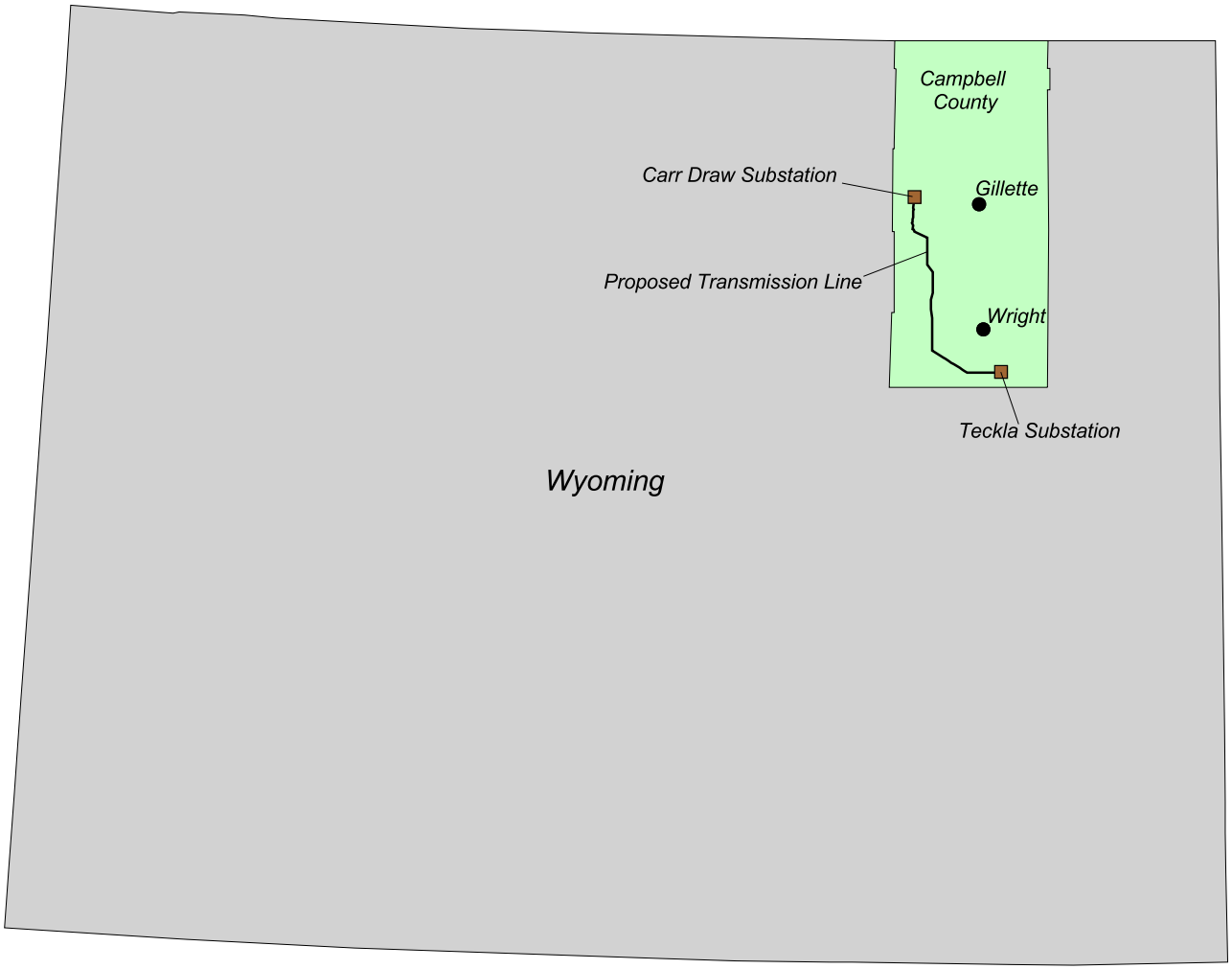

N

40 0 40 Miles

FIGURE 1-1
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
BA/BE
REGIONAL LOCATION

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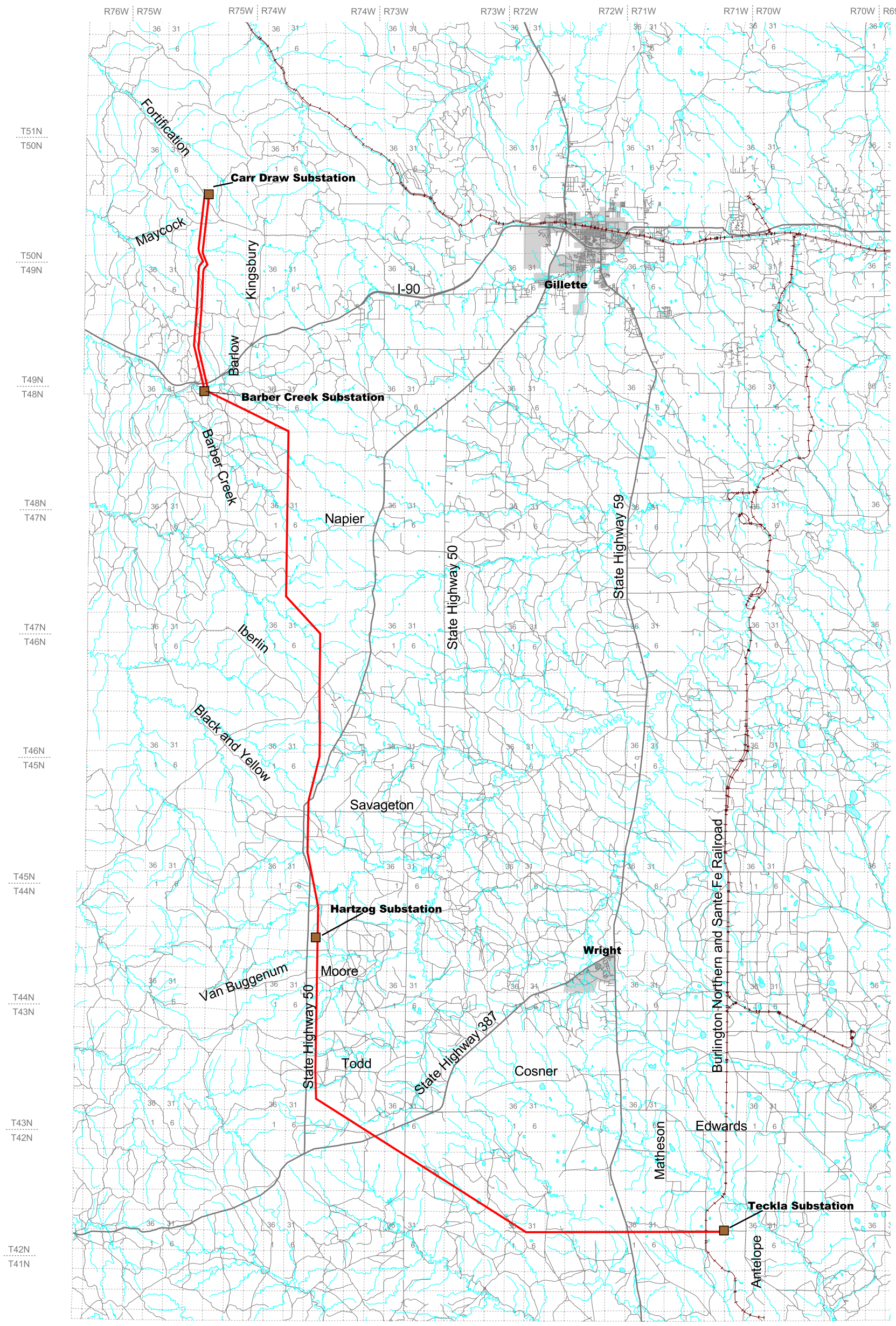

Legend

- Proposed Alignment of Transmission Line
- Proposed Double Circuit Segment
- Substation
- Railroad
- Major Roads
- Roads
- Streams
- Water Bodies
- Incorporated Place
- Section Lines

N

5 0 5 Miles

FIGURE 1-2
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
BA/BE
PROJECT LOCATION MAP

revised June 18, 2002

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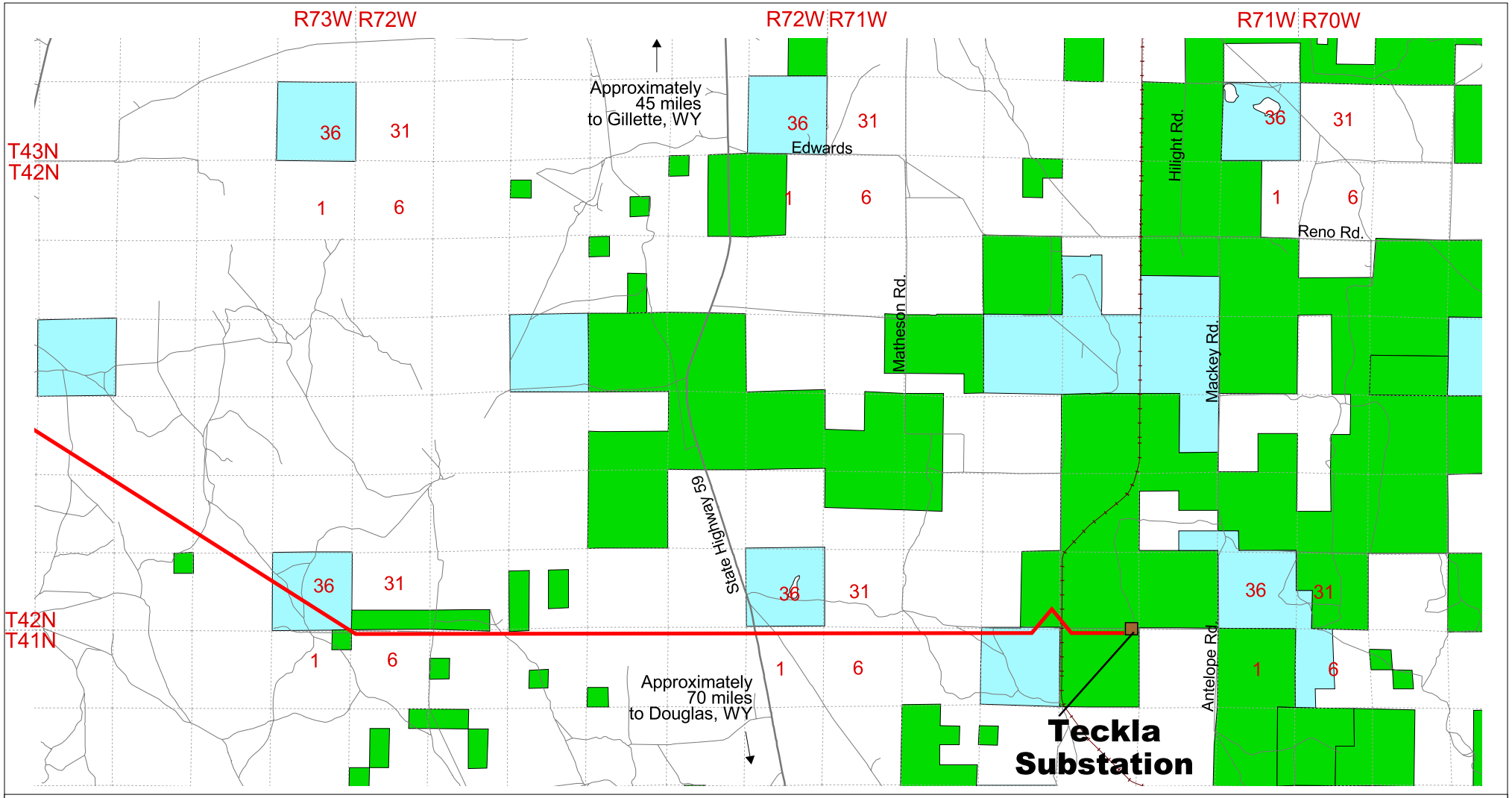

Legend

- Proposed Alignment of Transmission Line
- Existing Substation
- State of Wyoming Property
- U.S. Forest Service Property
- Railroad
- Major Roads
- Roads

N

1 0 1 2 Miles

FIGURE 1-3
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
CROSSES FOREST SERVICE LAND IN
SECTION 1 T 41N , R 73W and
SECTION 3 T 41N, R 71W
NATIONAL FOREST SYSTEM LANDS

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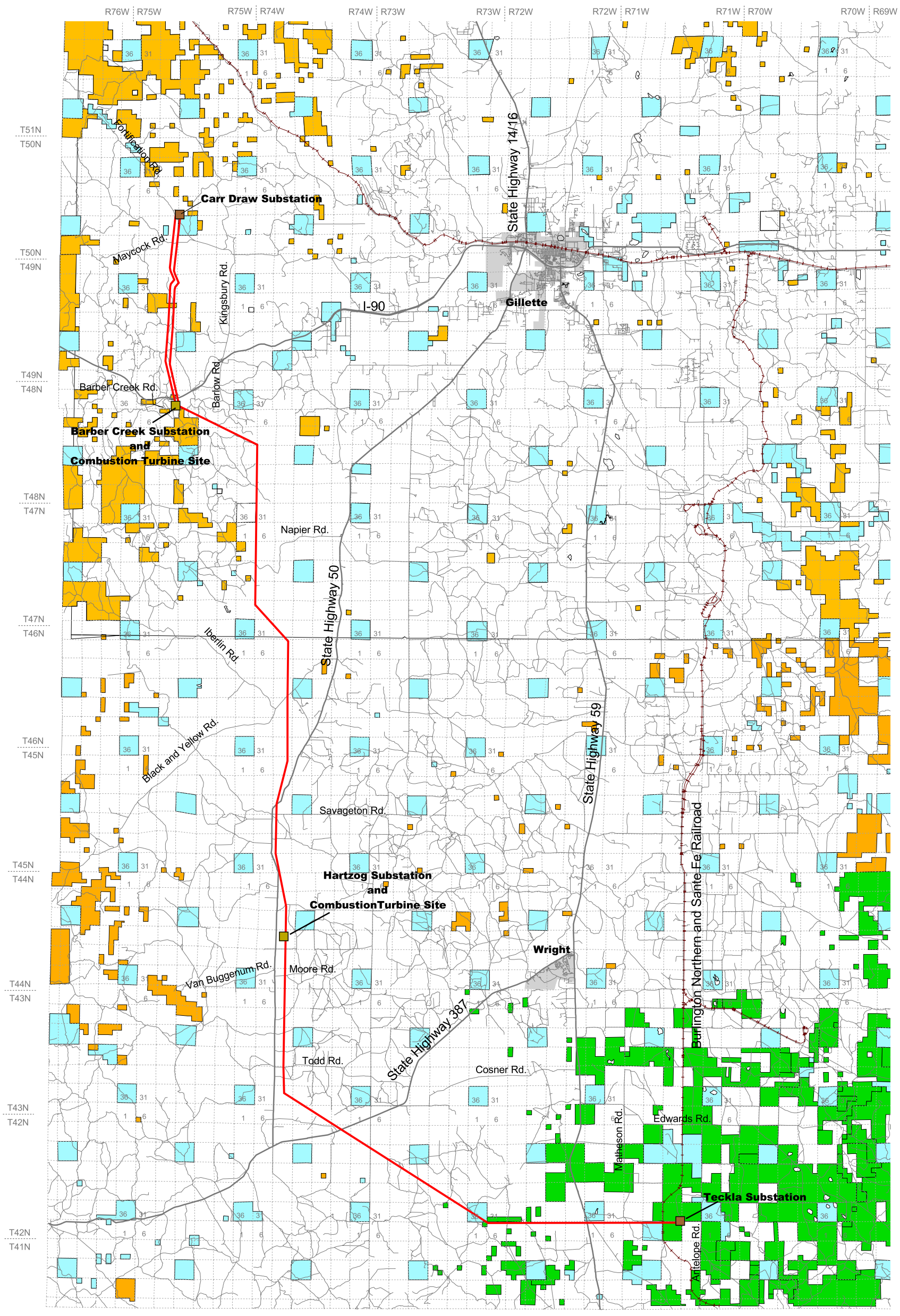

Legend

- Proposed Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- State of Wyoming
- U.S. Bureau of Land Mangement
- U.S. Forest Service
- Railroad
- Major Roads
- Roads
- Incorporated Place
- Section Lines

N

5 0 5 Miles

FIGURE 1-4
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
LAND OWNERSHIP

revised June 18, 2002

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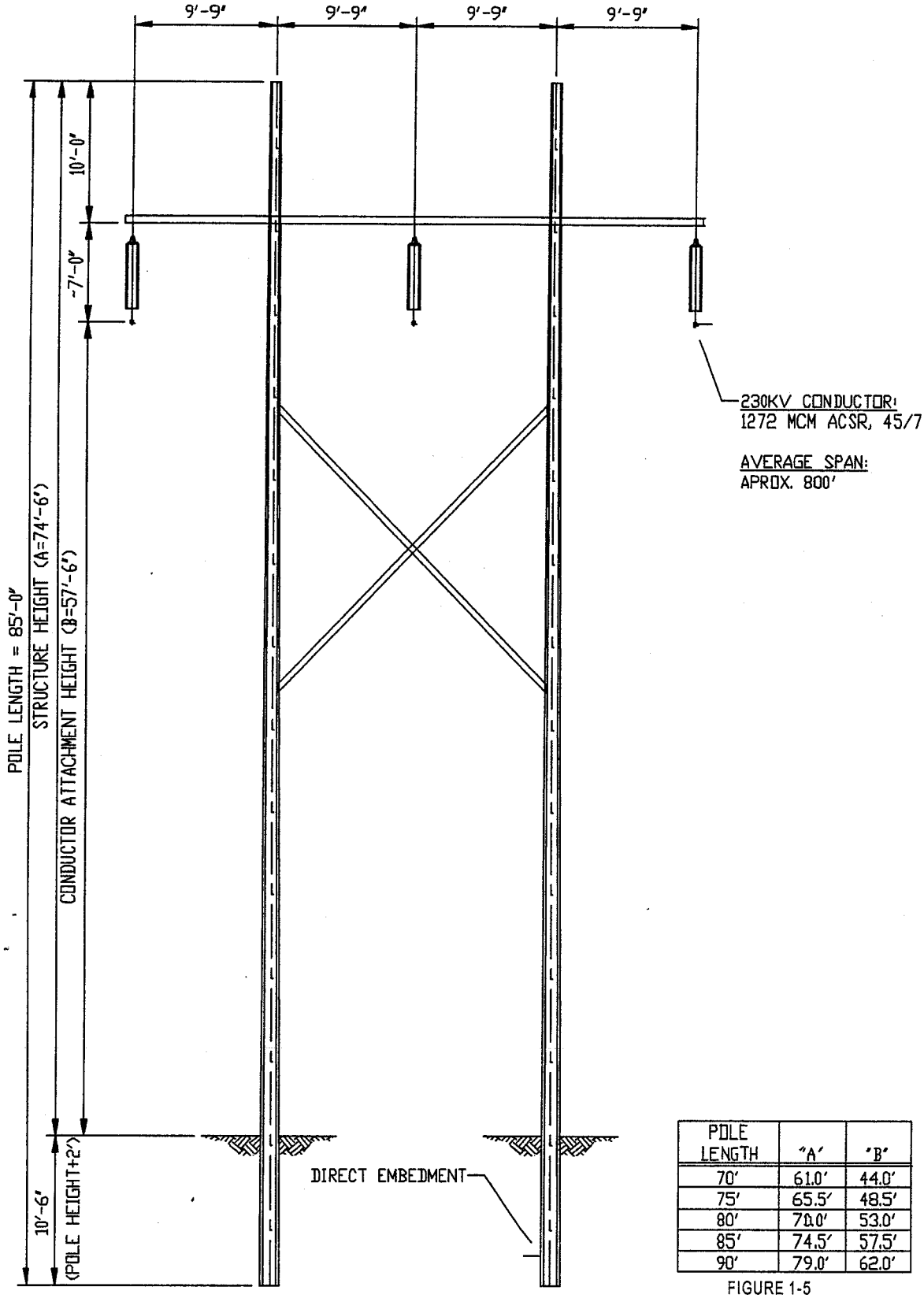
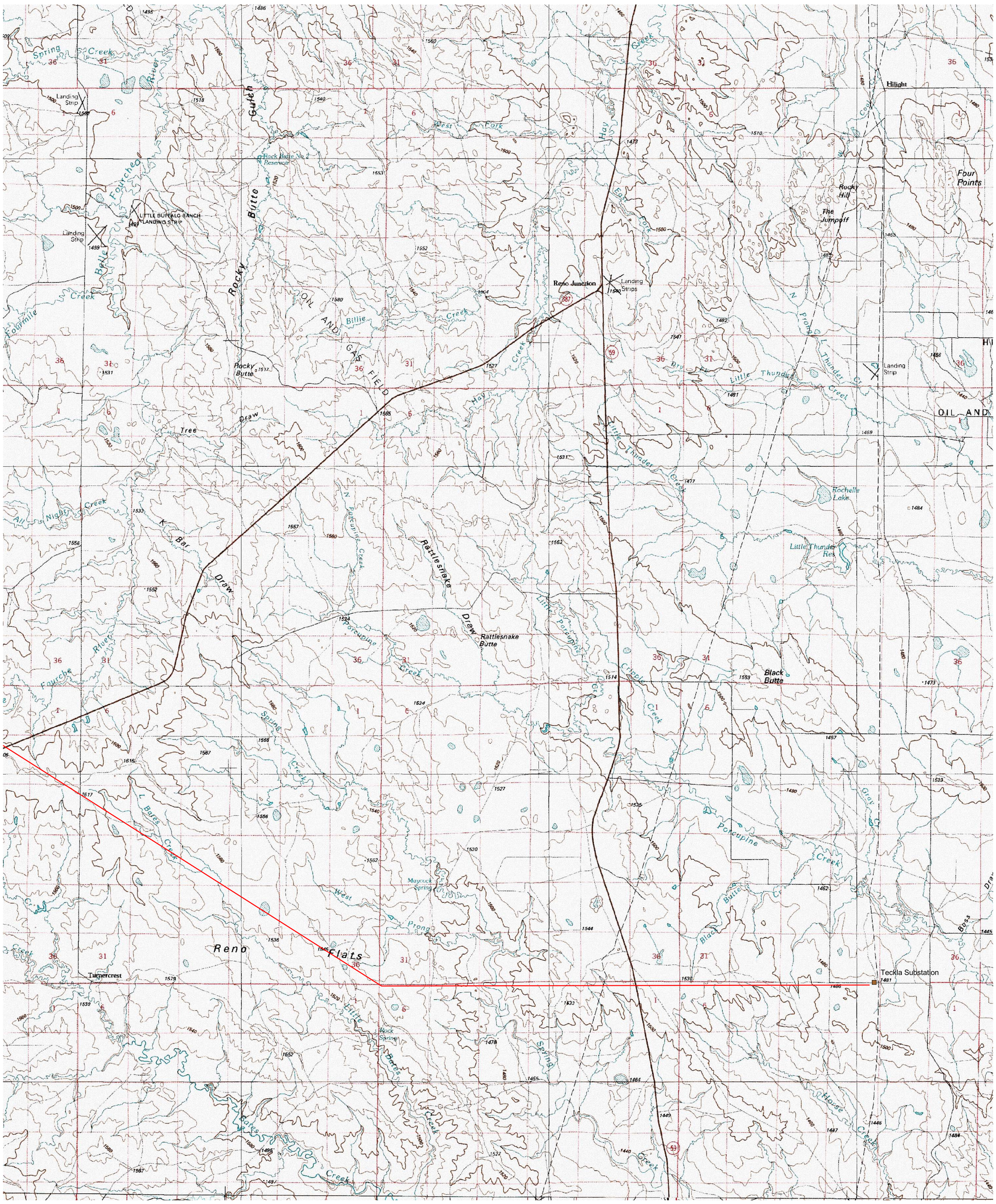


POLE LENGTH	"A"	"B"
70'	61.0'	44.0'
75'	65.5'	48.5'
80'	70.0'	53.0'
85'	74.5'	57.5'
90'	79.0'	62.0'

FIGURE 1-5
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
TYPICAL STEEL H-FRAME STRUCTURE (TYPE: HS)
230KV SINGLE CIRCUIT



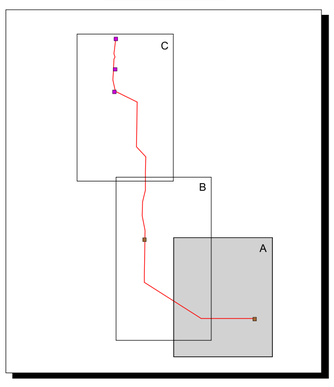
Legend

- Proposed Alignment of Transmission Line
- Substation
- Substation and Combustion Turbine Site

Notes

* Elevations are presented in meters
* Contour interval is 20 meters
* Gillette Quadrangle is compiled from USGS 1:24,000 topographic maps dated 1971-1972. Map edited 1974.
* Reno Junction Quadrangle compiled from USGS 1:24,000 topographic maps dated 1953-1972. Planimetry Revised from aerial photographs taken 1973-1974 and other source data. Map edited 1974.

Location Map



N

1 0 1 2 Miles

FIGURE 1-6A
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
TOPOGRAPHIC MAP - SOUTH

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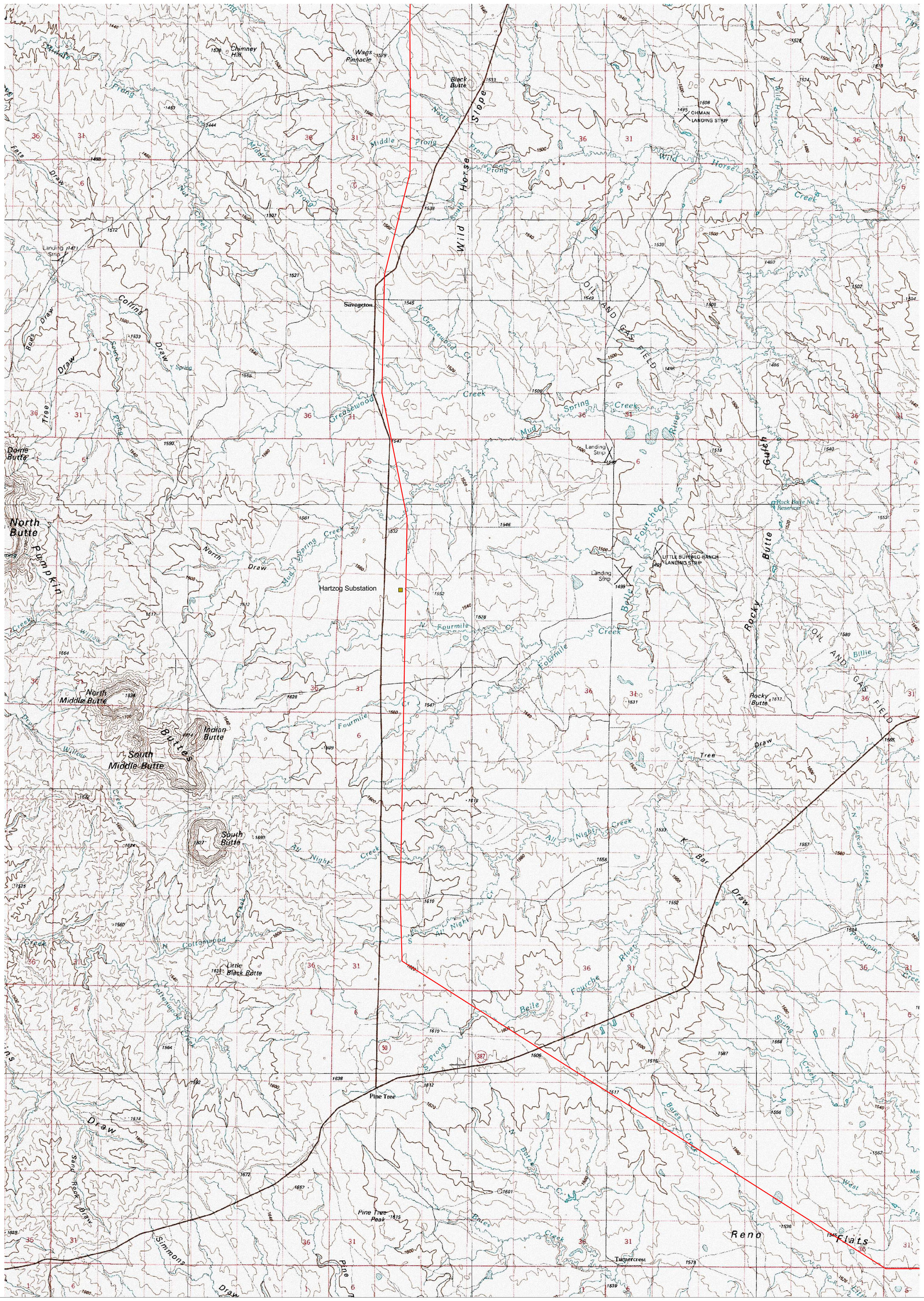


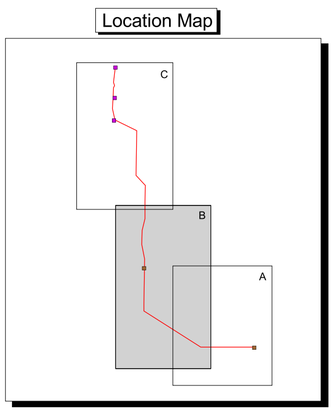
Legend

- Proposed Alignment of Transmission Line
- Substation
- Substation and Combustion Turbine Site

Notes

* Elevations are presented in meters
* Contour interval is 20 meters
* Gillette Quadrangle is compiled from USGS 1:24,000 topographic maps dated 1971-1972. Map edited 1974.
* Reno Junction Quadrangle compiled from USGS 1:24,000 topographic maps dated 1953-1972. Planimetry Revised from aerial photographs taken 1973-1974 and other source data. Map edited 1974.

Location Map



N

1 0 1 2 Miles

FIGURE 1-6B
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
TOPOGRAPHIC MAP - CENTRAL

USDA

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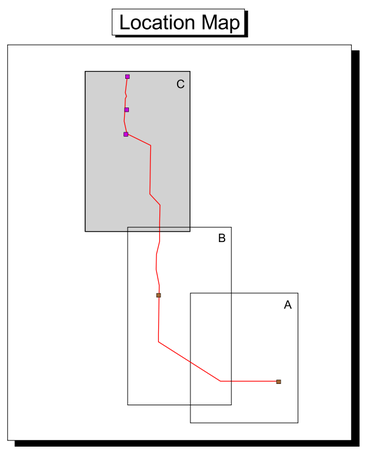
Legend

- Proposed Alignment of Transmission Line
- Substation
- Substation and Combustion Turbine Site

Notes

* Elevations are presented in meters
* Contour interval is 20 meters
* Gillette Quadrangle is compiled from USGS 1:24,000 topographic maps dated 1971-1972. Map edited 1974.
* Reno Junction Quadrangle compiled from USGS 1:24,000 topographic maps dated 1953-1972. Planimetry Revised from aerial photographs taken 1973-1974 and other source data. Map edited 1974.

Location Map



N

1 0 1 2 Miles

FIGURE 1-6C
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
TOPOGRAPHIC MAP - NORTH

USDA

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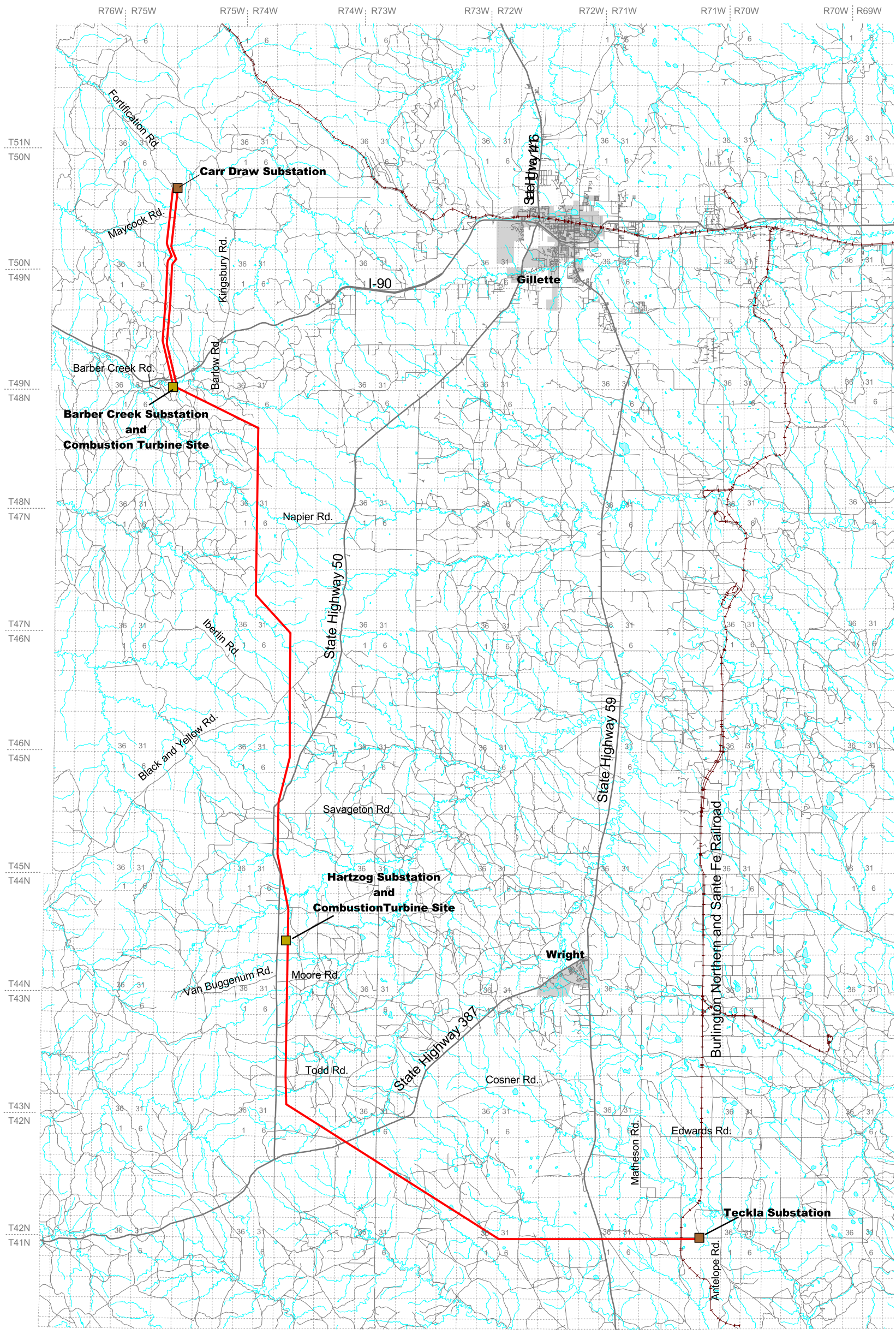

Legend

- Proposed Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Railroad
- Major Roads
- Roads
- Streams
- Water Bodies
- Incorporated Place
- Section Lines

N

5 0 5 Miles

FIGURE 2-1
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
PROPOSED ACTION

USDA

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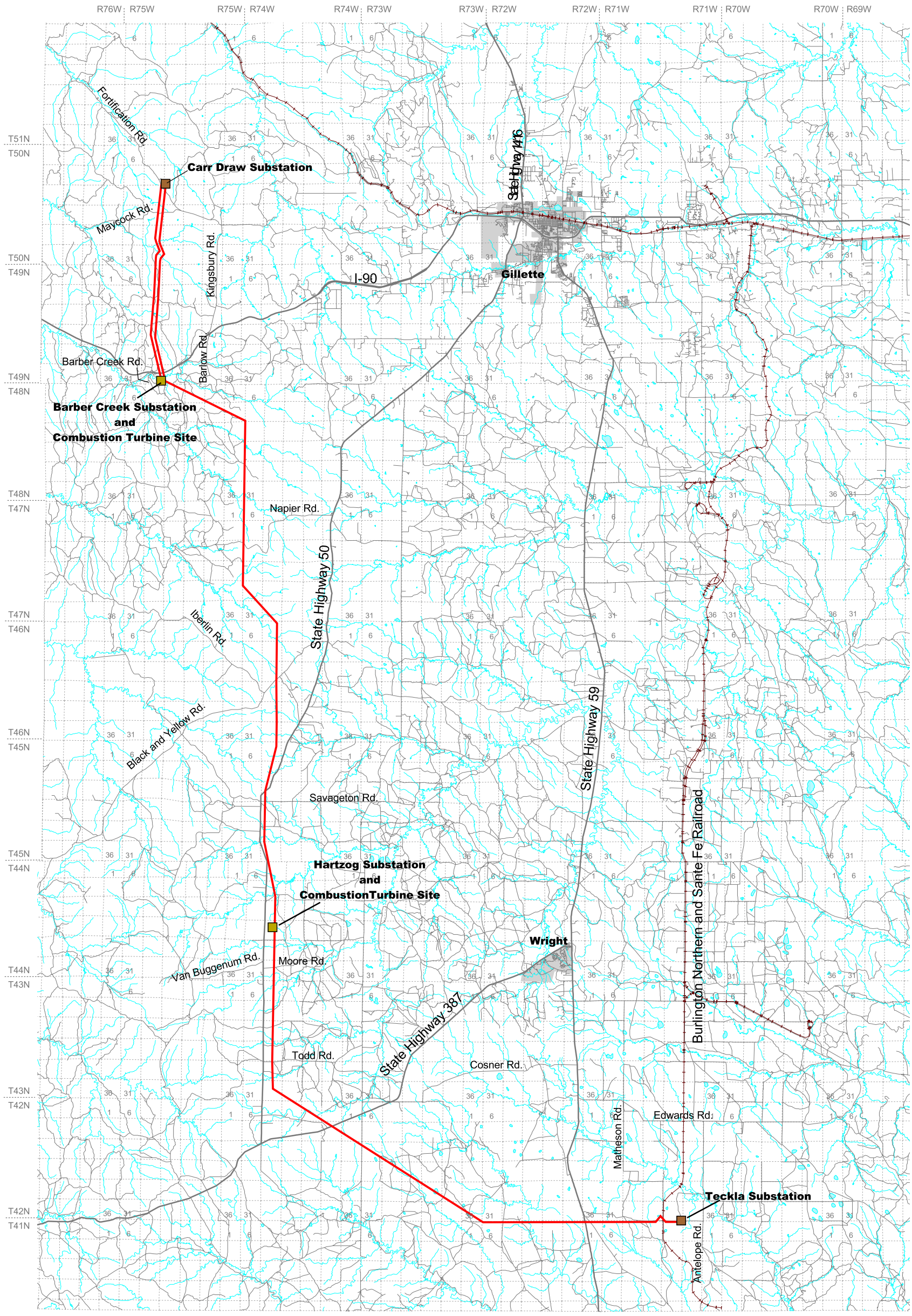

Legend

- Alternative Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Railroad
- Major Roads
- Roads
- Streams
- Water Bodies
- Incorporated Place
- Section Lines

N

5 0 5 Miles

FIGURE 2-2
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
ALTERNATIVE 3

USDA

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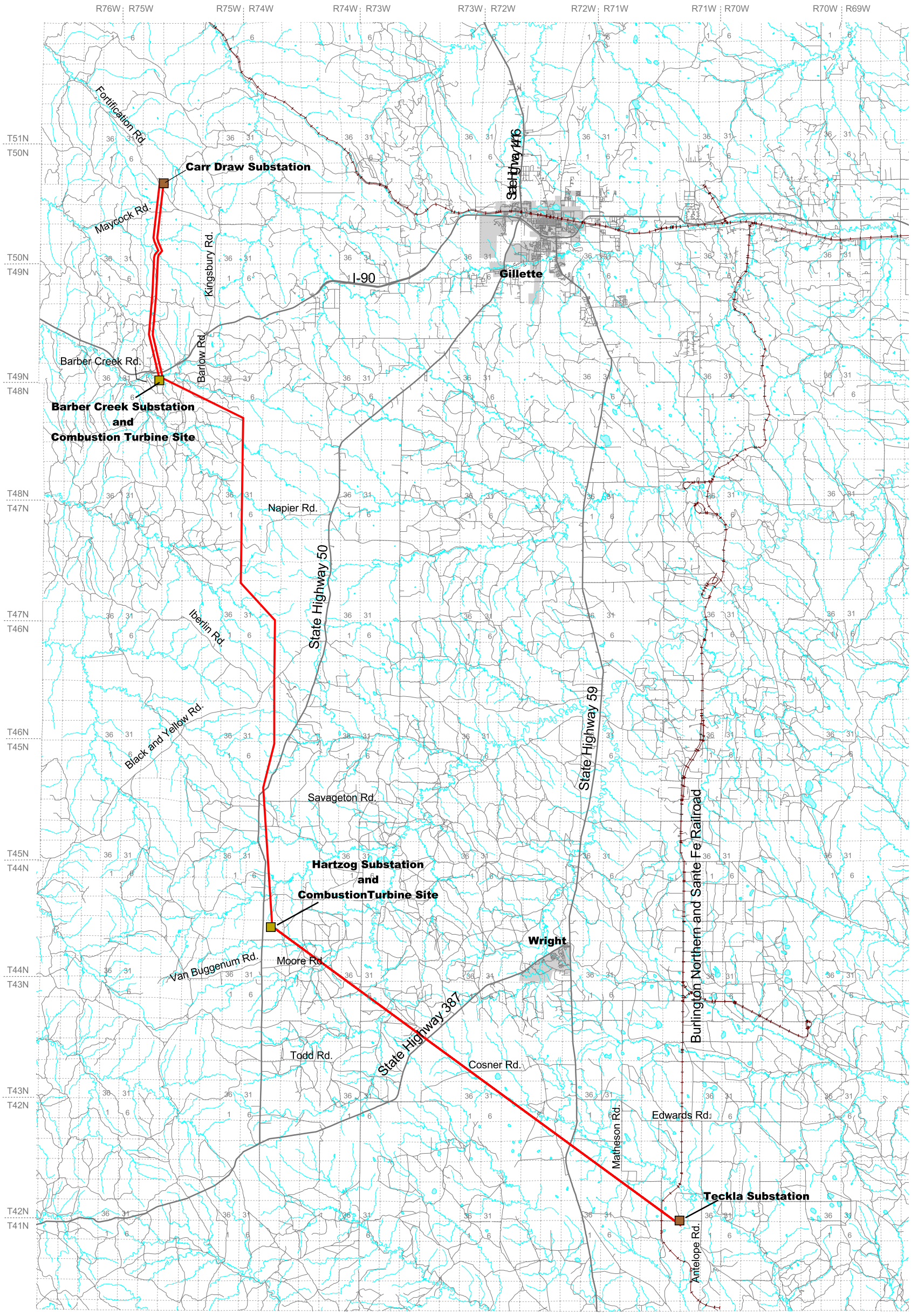

Legend

- Alternative Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Railroad
- Major Roads
- Roads
- Streams
- Water Bodies
- Incorporated Place
- Section Lines

N

5 0 5 Miles

FIGURE 2-3
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
ALTERNATIVE 4
(CONSIDERED BUT ELIMINATED)

USDA

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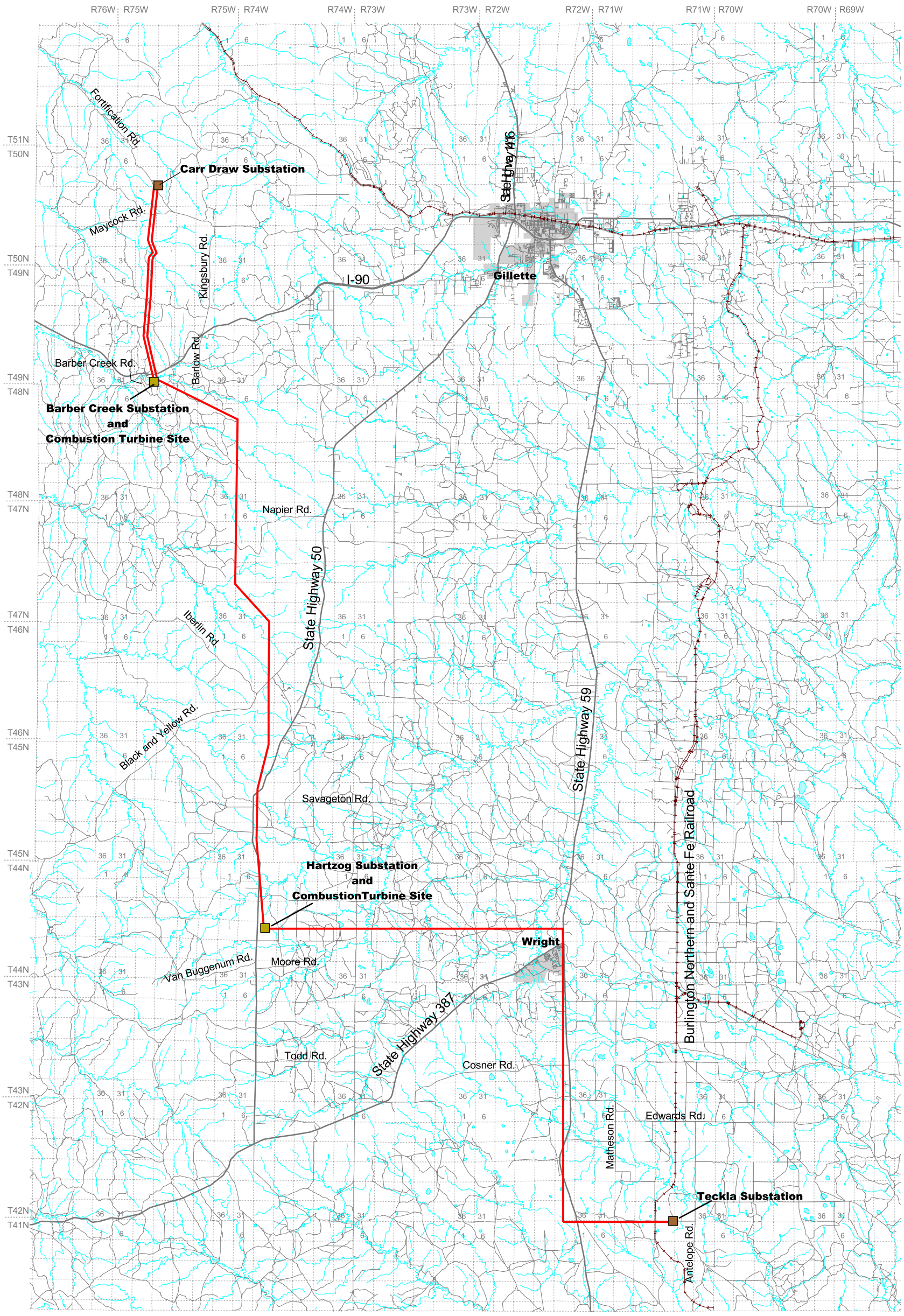

Legend

- Alternative Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Railroad
- Major Roads
- Roads
- Streams
- Water Bodies
- Incorporated Place
- Section Lines

N

5 0 5 Miles

FIGURE 2-4
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
ALTERNATIVE 5
(CONSIDERED BUT ELIMINATED)

USDA

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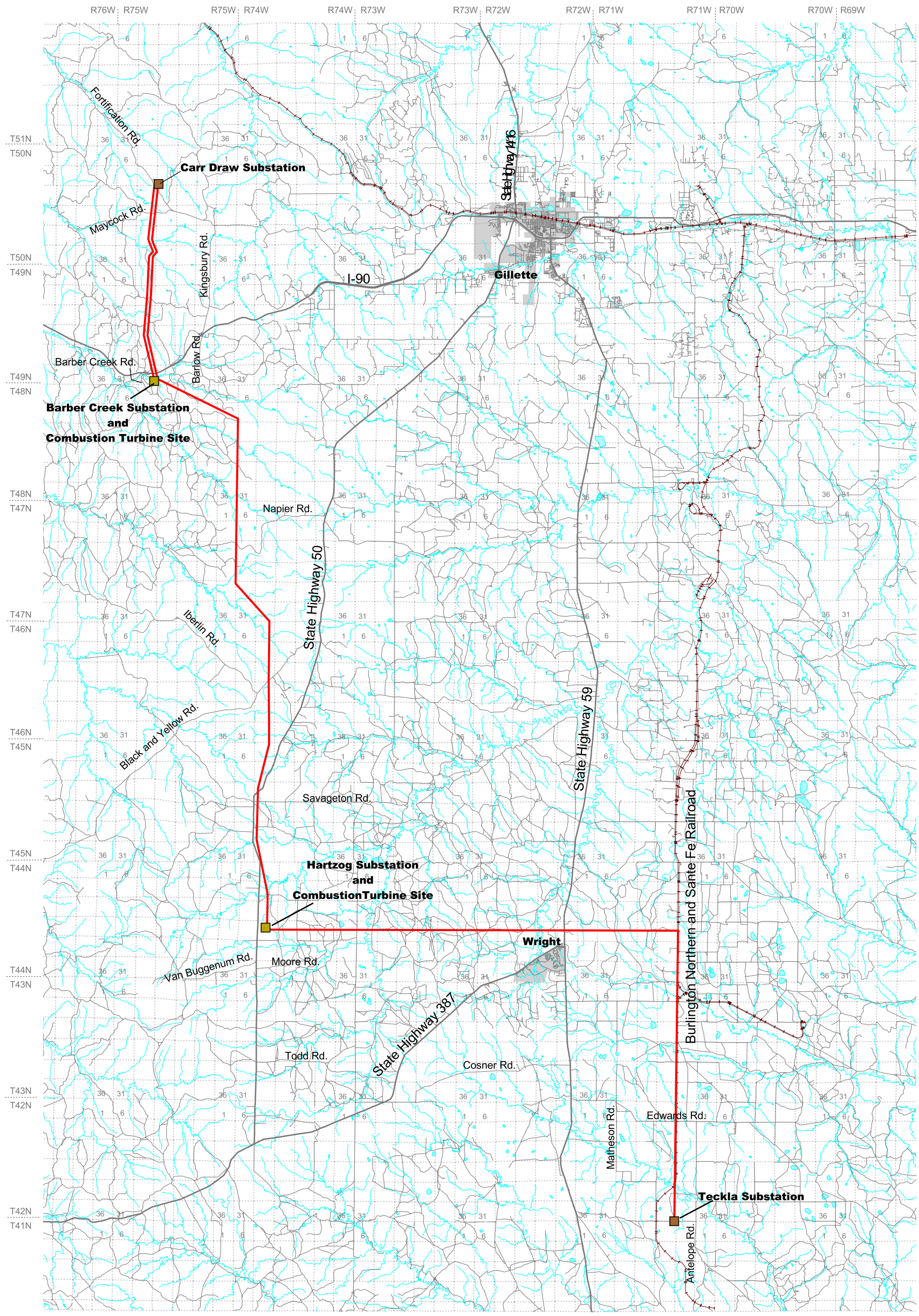

Legend

- Alternative Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Railroad
- Major Roads
- Roads
- Streams
- Water Bodies
- Incorporated Place
- Section Lines

N

4 0 4 Miles

FIGURE 2-5
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
ALTERNATIVE 6
(CONSIDERED BUT ELIMINATED)

USDA

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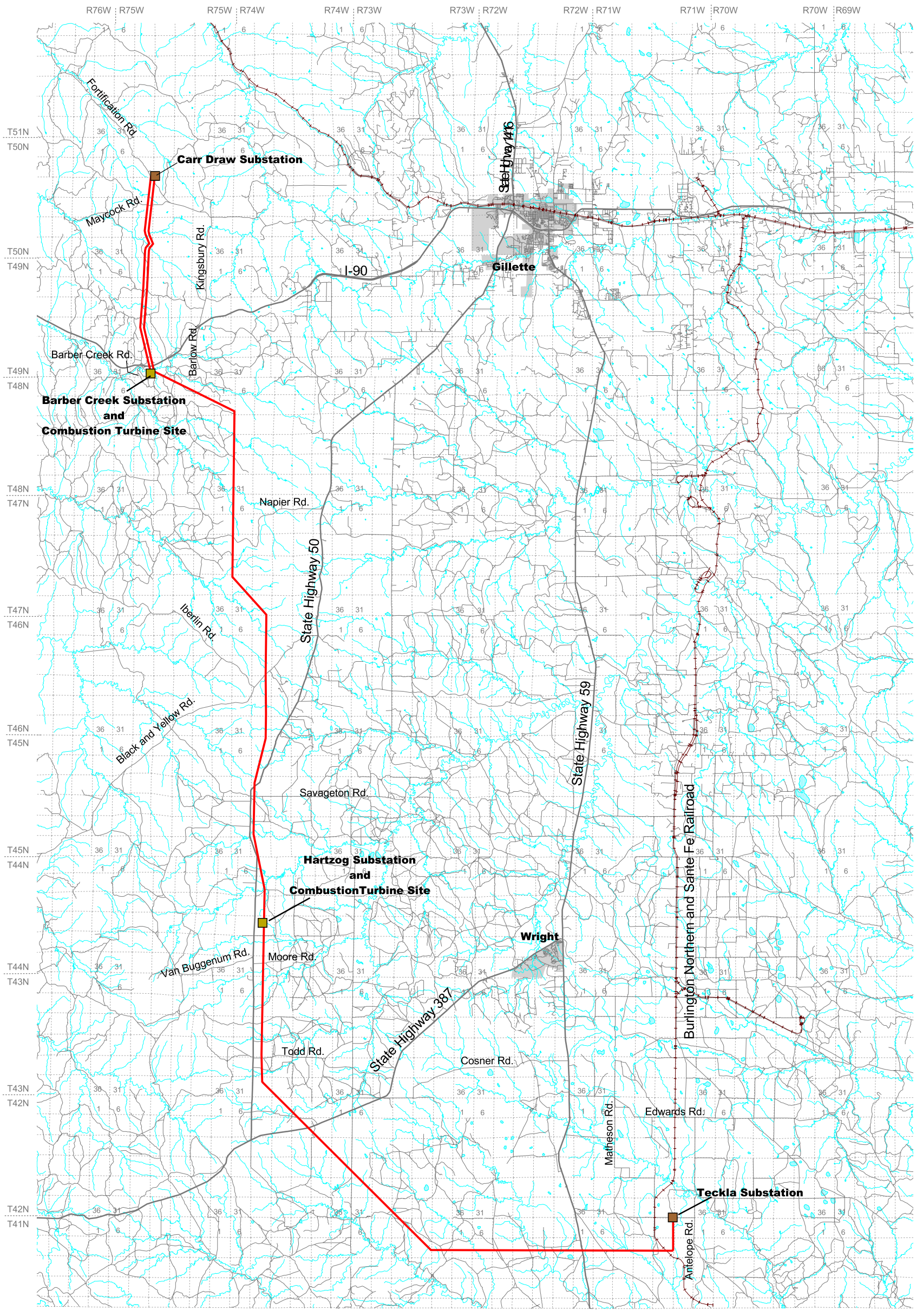

Legend

- Alternative Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Railroad
- Major Roads
- Roads
- Streams
- Water Bodies
- Incorporated Place
- Section Lines

N

5 0 5 Miles

FIGURE 2-6
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
ALTERNATIVE 7
(CONSIDERED BUT ELIMINATED)

USDA

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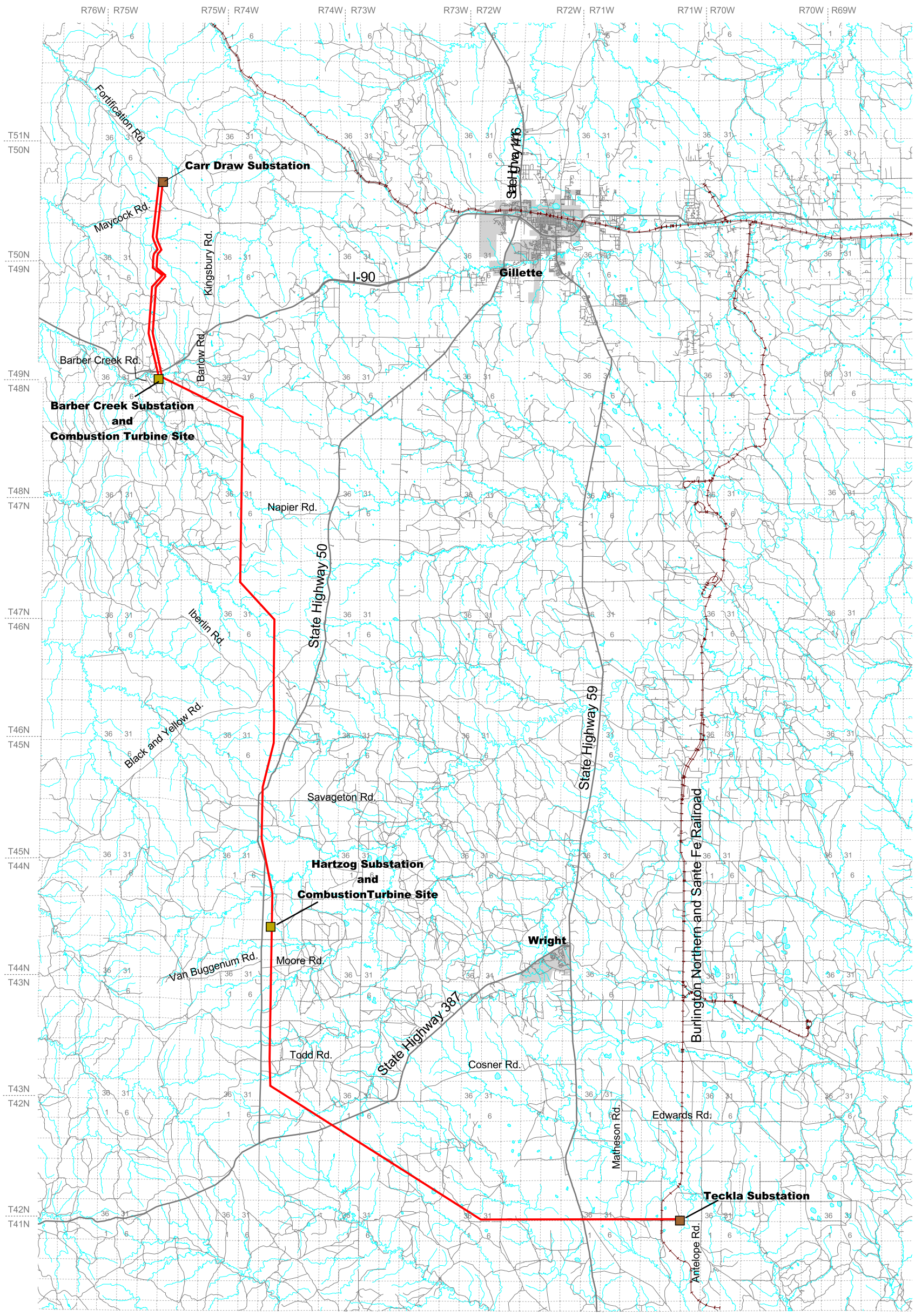

Legend

- Alternative Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Railroad
- Major Roads
- Roads
- Streams
- Water Bodies
- Incorporated Place
- Section Lines

N

5 0 5 Miles

FIGURE 2-7
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
ALTERNATIVE 8
(CONSIDERED BUT ELIMINATED)

USDA

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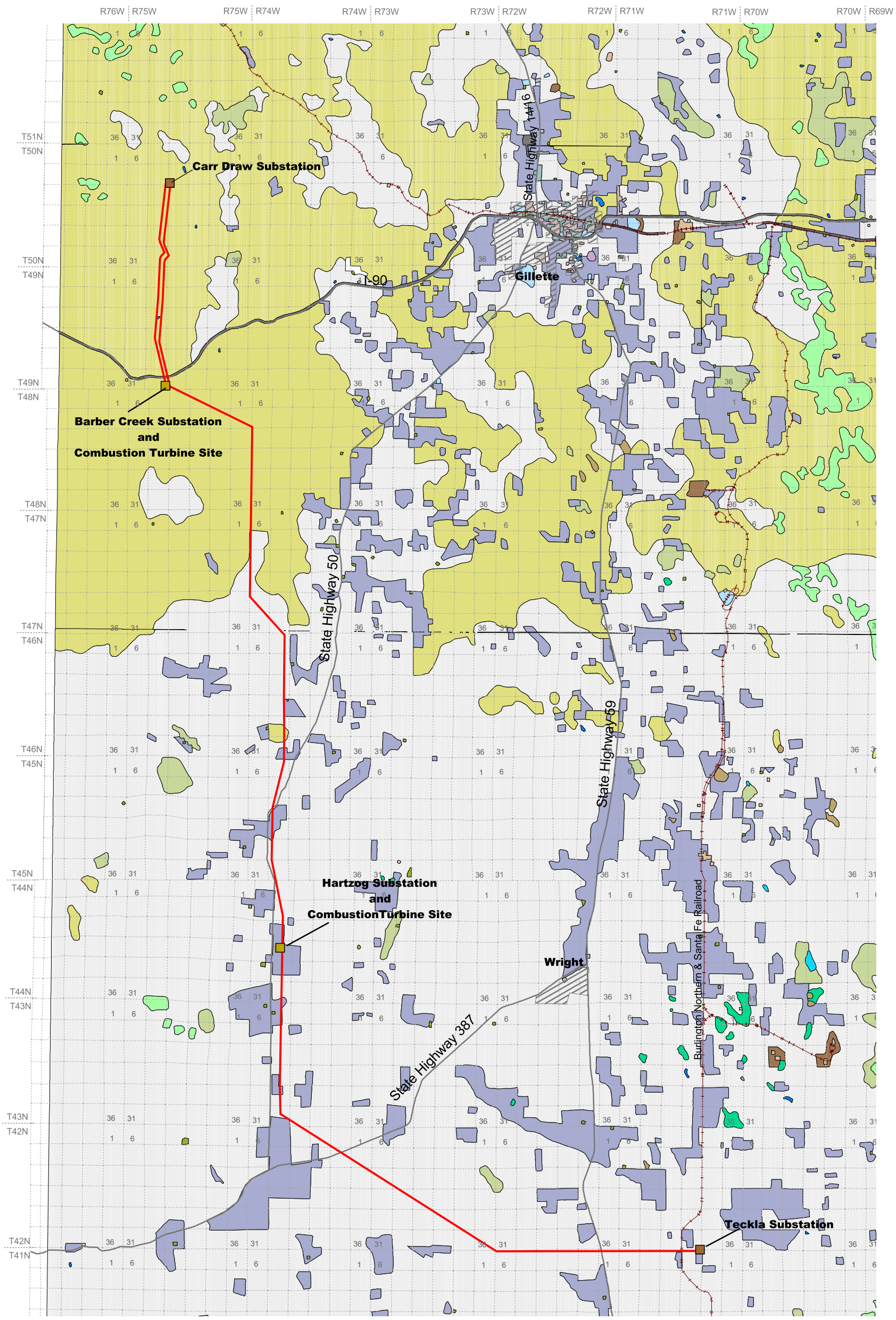

Legend

- Proposed Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Railroad
- Major Roads
- Incorporated Place
- Section Lines
- Residential
- Commercial and Services
- Industrial
- Transportation, Communication, Utilities
- Mixed Urban or Built-Up Land
- Other Urban or Built-Up Land
- Cropland and Pasture
- Herbaceous Rangeland
- Shrub and Brush Rangeland
- Nonforested Rangeland
- Mixed Rangeland
- Other Agricultural Land
- Evergreen Forest Land
- Confined Feeding Operations
- Dry Salt Flats
- Strip Mines, Quarries, Gravel Pits
- Transitional Areas
- Reservoirs
- Lakes

N

5 0 5 Miles

FIGURE 3-1
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
LAND USE

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R75W R74W R74W R73W R73W R72W R72W R71W

T48N T47N T47N T46N T46N T45N T45N T44N T44N T43N T43N T42N T42N T41N

Napier Rd.

State Highway 50

Iberlin Rd.

State Highway 59

Savageton Rd.

Hartzog Substation and CombustionTurbine Site

Wright

Van Buggenum Rd.

Moore Rd.

Burlington Northern and Sante Fe Railroad

State Highway 387

Todd Rd.

Cosner Rd.

Edwards Rd.

Matheson Rd.

Teckla Substation

Antelope Rd.

Legend

- Proposed Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Jurisdictional Wetland (approximate location)
- Man-made Wetland (approximate location)
- Railroad
- Major Roads
- Roads
- Streams
- Water Bodies
- Incorporated Place
- Section Lines

Location Map

B

A

N

3 0 3 Miles

FIGURE 3-2A
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
WETLANDS - SOUTH

USDA

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R76W | R75W
R75W | R74W
R74W | R73W
R73W | R72W

T49N
T48N
T47N
T46N
T45N
T44N
T43N

Fortification Rd.
Carr Draw Substation
Maycock Rd.
Kingsbury Rd.
I-90
Gillette
State Highway 14/16
Barber Creek Rd.
Barlow Rd.
Barber Creek Substation
and
Combustion Turbine Site
Napier Rd.
State Highway 50
Iberlin Rd.
Black and Yellow Rd.
State Highway 59
Savageton Rd.

Legend

- Proposed Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Jurisdictional Wetland (approximate location)
- Man-made Wetland (approximate location)
- Railroad
- Major Roads
- Roads
- Streams
- Water Bodies
- Incorporated Place
- Section Lines

Location Map

B
A

N

3 0 3 Miles

FIGURE 3-2B
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
WETLANDS - NORTH

USDA

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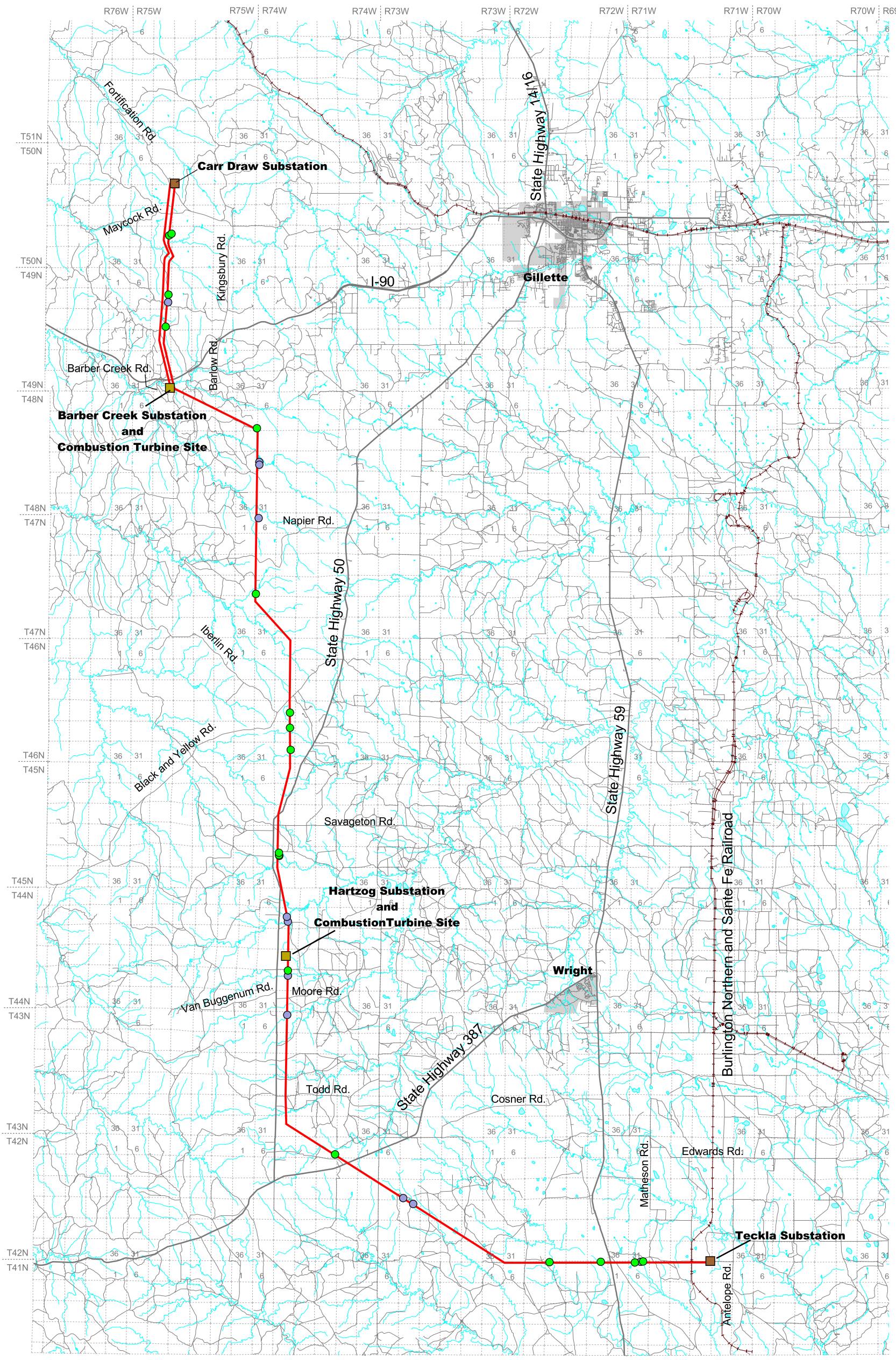

Legend

- Proposed Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Isolated Finds
- Archeological Sites
- Railroad
- Major Roads
- Roads
- Streams
- Water Bodies
- Incorporated Place
- Section Lines

N

5 0 5 Miles

FIGURE 3-3
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
CULTURAL RESOURCES

USDA

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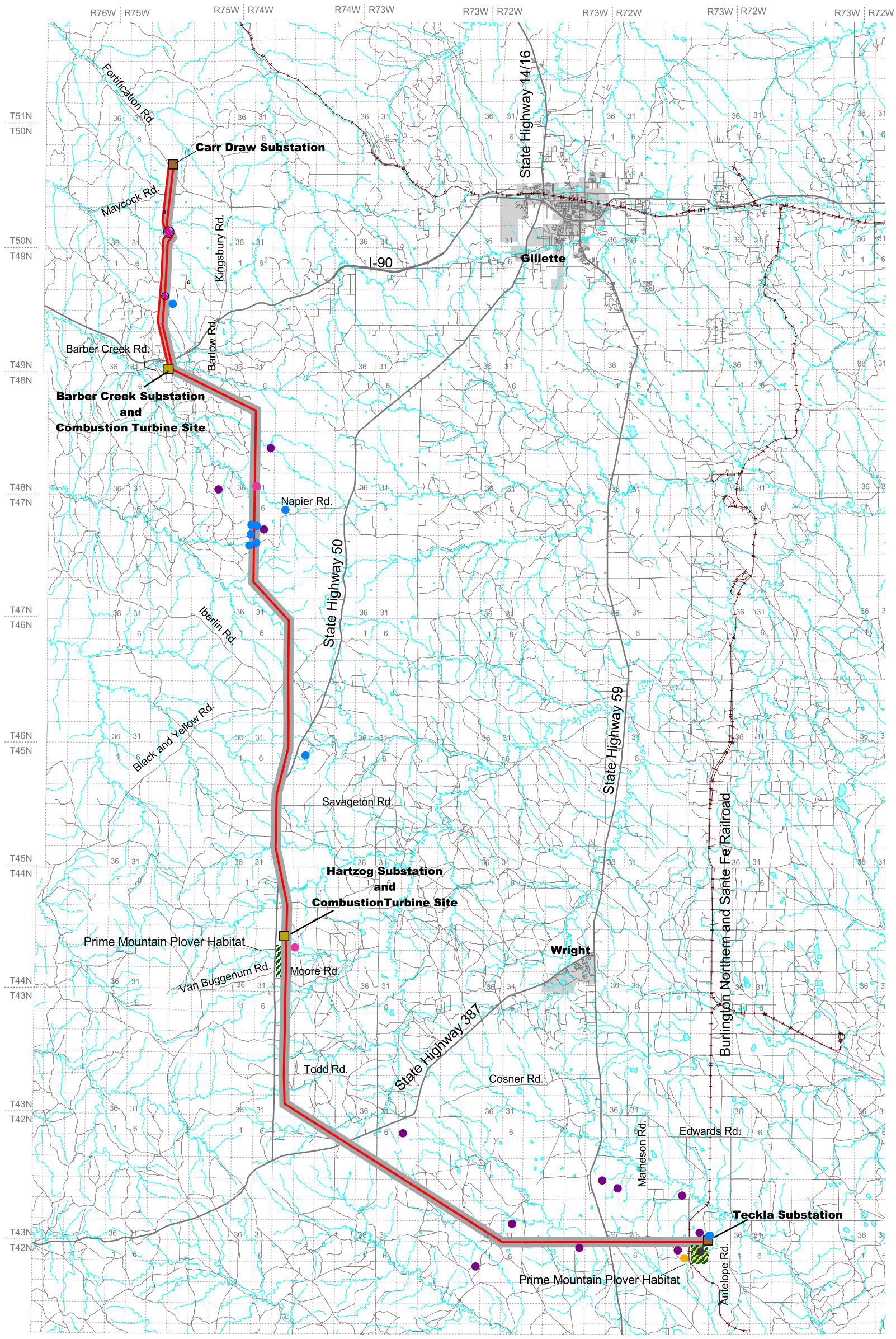

Legend

- Golden Eagle Sighting
- Ferruginous Hawk Sighting
- Bald Eagle Sighting
- Ferruginous Hawk Nest
- Prime Mountain Plover Habitat
- Active Black-Tailed Prairie Dog Colony
- Previous (Poisoned by Landowner) Black-Tailed Prairie Dog Colony
- Proposed Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Major Roads
- Roads
- Streams
- Railroad
- Water Bodies
- Incorporated Place
- Section Lines

N

4 0 4 Miles

FIGURE 3-4
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
ENDANGERED, THREATENED, & SENSITIVE SPECIES

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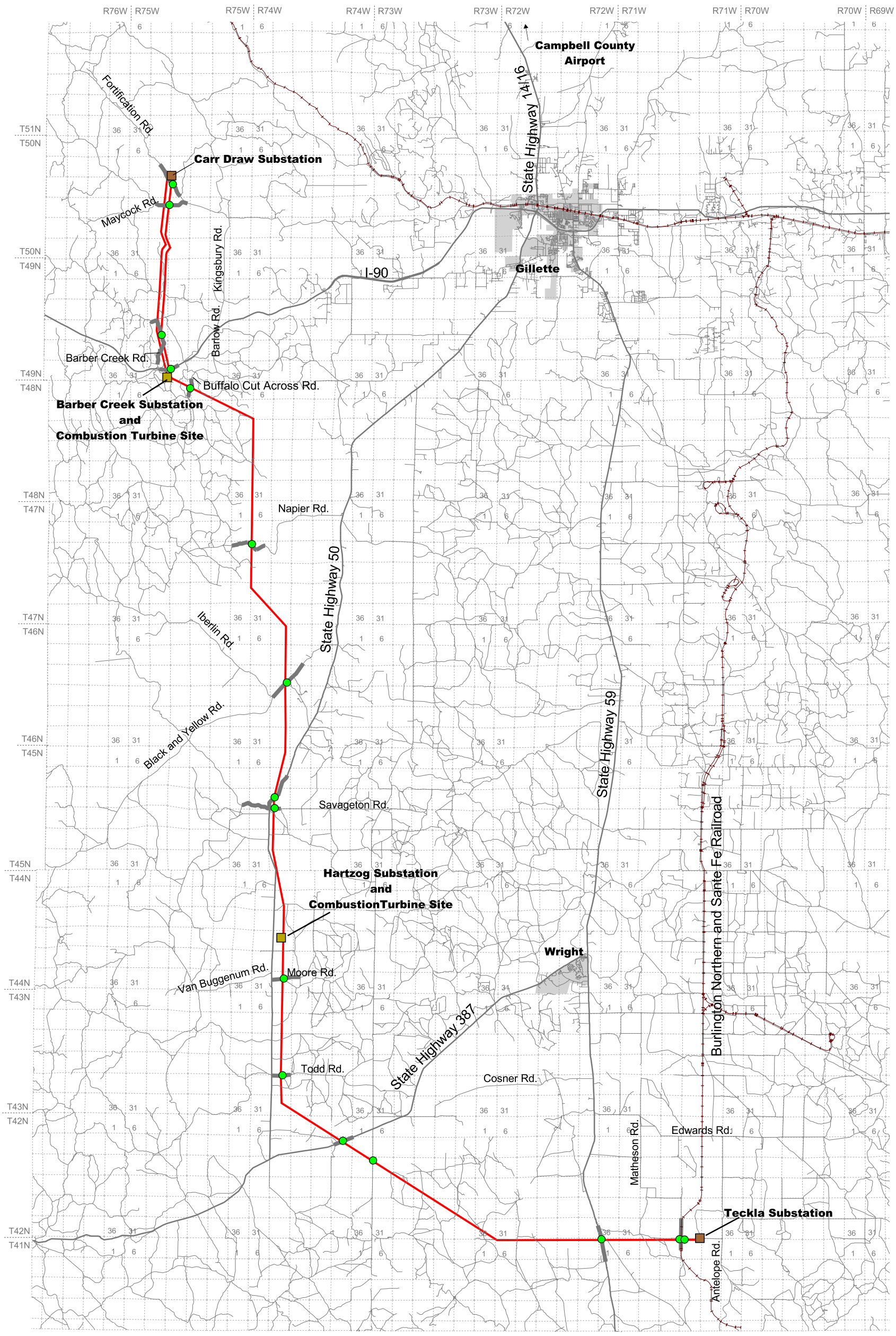

Legend

- Proposed Alignment of Transmission Line
- Proposed Double Circuit Segment
- Transportation Route Intersections
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Railroad
- Roads
- Major Roads
- Roads Crossing Proposed Transmission Line
- Incorporated Place
- Section Lines

N

5 0 5 Miles

FIGURE 3-5
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
TRANSPORTATION

USDA

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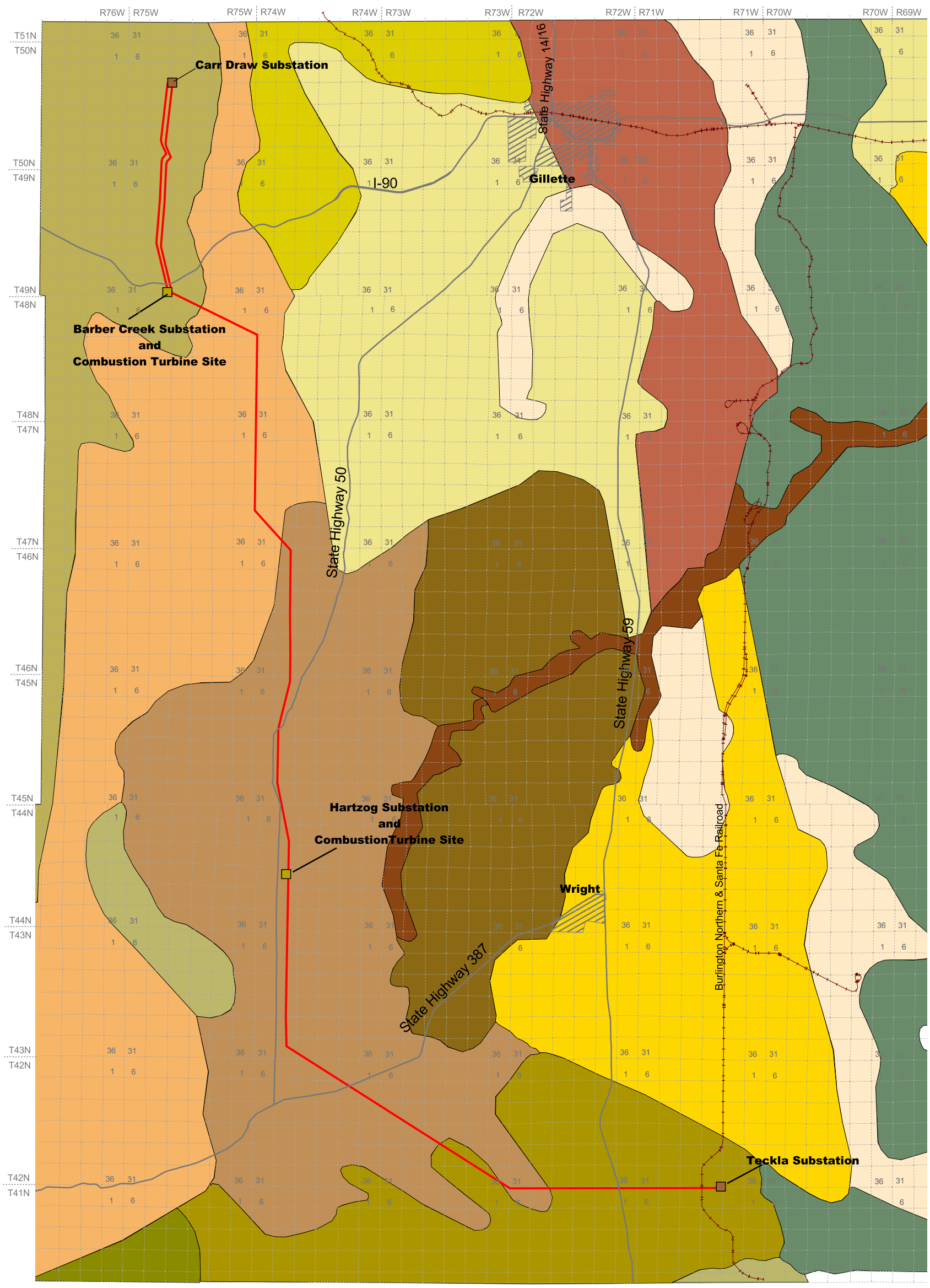

Legend

- Proposed Alignment of Transmission Line
- Proposed Double Circuit Segment
- Existing Substation
- Existing Substation and Combustion Turbine Site
- Railroad
- Roads
- Section Lines
- Incorporated Places
- Arwite-Vonalf-Moorhead
- Bidman-Parmleed-Arvada
- Bowbac-Cushman-Taluce
- Cambria-Theedle-Kishona
- Deekay-Moorhead-Oldwolf
- Forkwood-Ulm-Cushman
- Haverdad-Kishona-Forkwood
- Hiland-Ulm-Shingle
- Hilight-Wags-Wibaux
- Renohill-Cushman-Shingle
- Samday-Shingle-Rock outcrop
- Theedle-Shingle-Samday
- Ucross-Deekay-Shingle
- Wibaux-Bidman-Teckla

N

5 0 5 Miles

FIGURE 3-6
TECKLA TO CARR DRAW 230KV
TRANSMISSION LINE PROJECT
SOILS

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