Amendment to the Application to the North Dakota Public Service Commission for Consolidated Certificate of Corridor Compatibility and Route Permit

Volume I

Case No: PU-11-696

for the

AVS-Neset 345-kV Transmission Project

BASIN ELECTRIC POWER COOPERATIVE

A Touchstone Energy® Cooperative

July 2014

Amendment to the Application to the North Dakota Public Service Commission for Consolidated Certificate of Corridor Compatibility and Route Permit

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AVS-Neset 345-kV Transmission Project

Basin Electric Power Cooperative

July 2014

prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

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1.0 INTRODUCTION

On April 23, 2014, the North Dakota Public Service Commission (Commission) adopted the Findings of Fact, Conclusions of Law and Order granting a waiver of procedures and time schedules in issuing Corridor Certificate No. 152 and Route Permit No. 164 to Basin Electric Power Cooperative (Basin Electric). This Corridor Certificate and Route Permit authorize the construction of approximately 197 miles of 345-kV and 230-kV electric transmission line and associated facilities (Project) by Basin Electric. The Project extends from the Antelope Valley Station (AVS) near Beulah, North Dakota to the Neset Substation near Tioga, North Dakota. Since the July 23, 2013 Amendment and Corridor/Route revisions outlined at the September 4,5, and 12, 2013 public hearings, there have been four changes made to the Corridor/Route. This amendment identifies those changes which are the result of:

- Requests from Landowners
- Requests from Federal and State agencies
- Addressing reliability concerns
- Accommodating potential future system needs

If approved by the Commission, the total length of 345-kV and 230-kV line combined would be 199.4 miles (Corridor/Route). The Corridor/Route revisions do not significantly alter the information presented in the original application. The Corridor/Route revisions are minor and typical of the progression of a linear project of this size. Only siting criteria information that has changed because of the reroutes is presented in this amendment. All other sections of the original application and July 2013 Amendment remain in effect. The general location and reasons for the Corridor/Route changes are summarized in the following table and the changes are illustrated on the Corridor/Route change maps following Table 1.0-1.

Table 1.0-1: Summary of Corridor/Route Changes

Township	Range	Sections	Reason	Route Change Map Sheet #
145N	88W	14, 15, 23	AVS to Broadland/AVS-Charlie Creek double circuit and relocation of AVS to Leland Olds line interconnection to AVS	Sheet 1a-1b
147N	99W	13, 24	United States Forest Service (USFS) Request	Sheet 2
151N	100W	5, 8, 9, 10, 15, 16,22, 26, 27	Addition of the future Patent Gate Substation	Sheet 3
153N	101W	6	U.S. Highway 85 Wildlife Crossing-NDGF Request	Sheet 4

Existing Neset 230-kV Substation

Proposed Tande 345-kV Substation

Renville County

Williams County

Existing Williston 230-kV Substation

Proposed Judson 345-kV Substation

Mountrail County

Ward County

4

3

McKenzie County

McLean County

2

Dunn County

Mercer County

1

Existing Antelope Valley Station
345-kV Substation

Golden Valley County

Billings County

Existing Charlie Creek 345-kV Substation

0 5 10
Miles

NORTH

LEGEND

- Existing Substation
- Proposed Substation
- Revised Route - July 2013
- Revised Route - July 2014
- County Boundary
- Map Sheet Index

Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Route Change Map Index

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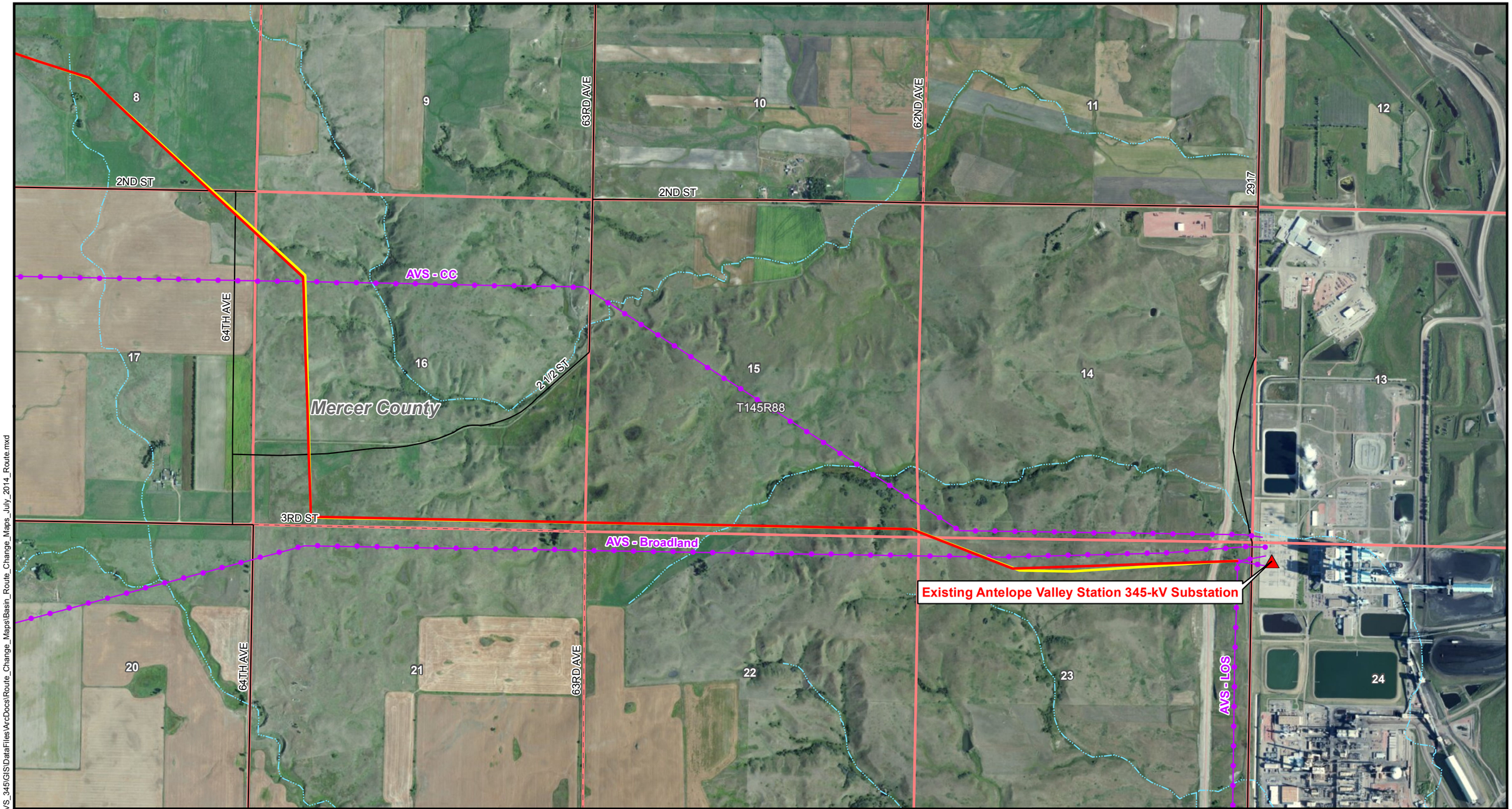
Source: Burns & McDonnell.

Revised July 16, 2014



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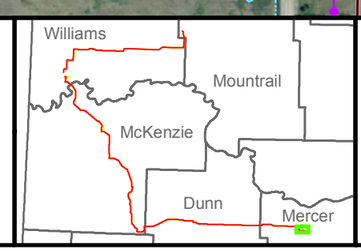
Feet

NORTH

LEGEND

- Existing Substation
- Proposed Substation
- Existing Transmission Line
- County Boundary
- Revised Route - July 2013
- Revised Route - July 2014
- Public Land Survey System Sections
- Public Land Survey System Townships



Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Route Change Maps
Sheet 1a of 4

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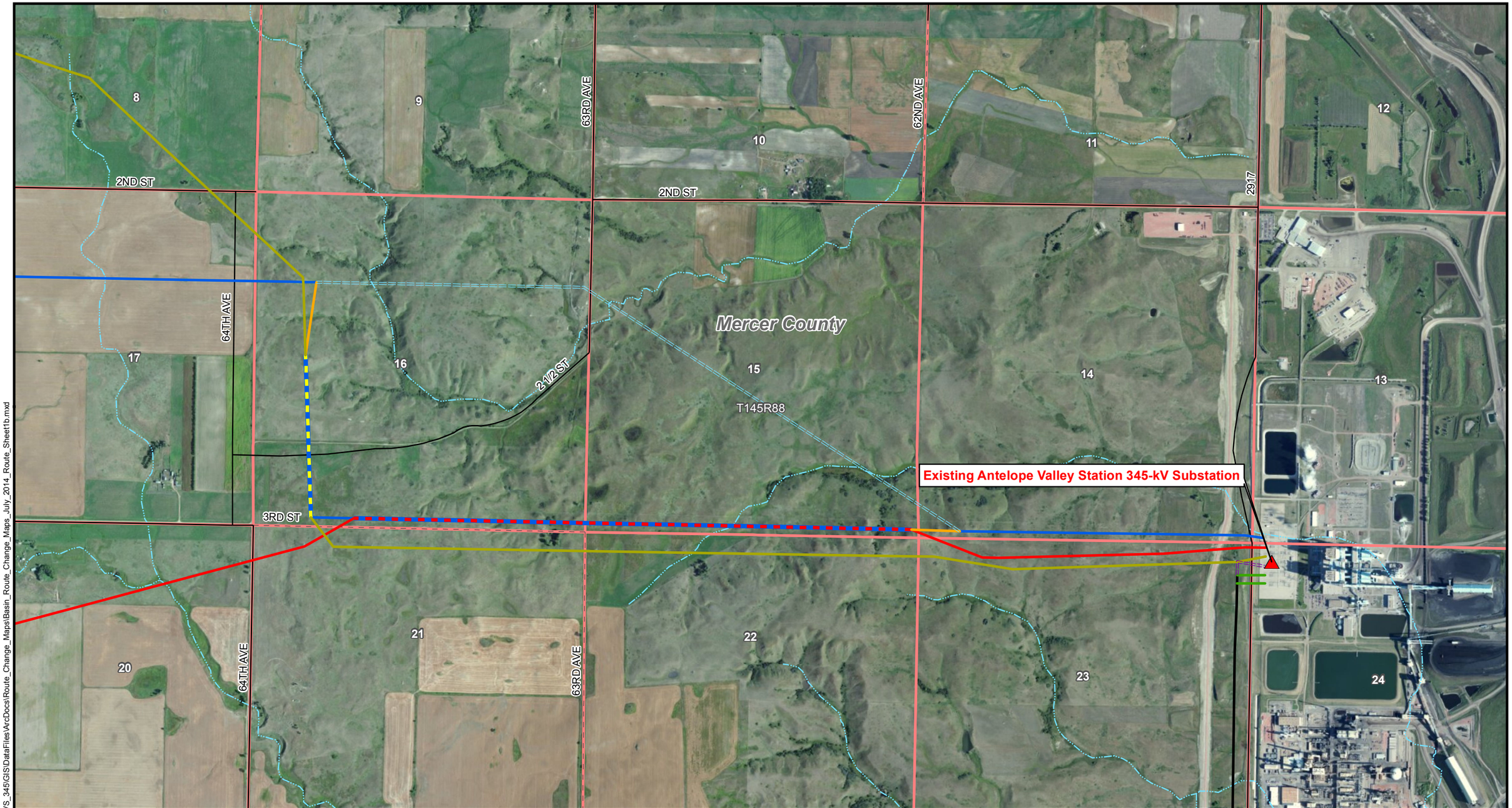
Source: Esri World Imagery; North Dakota GIS; Burns & McDonnell.

Revised July 16, 2014



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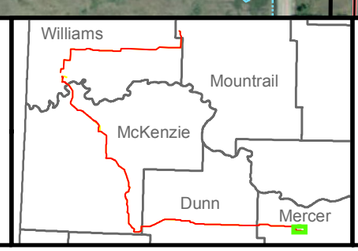
LEGEND

- Existing Substation
- Proposed Substation
- AVS - CC - Proposed
- Existing AVS - CC - To Be Removed
- Existing AVS - LOS - To Be Removed
- AVS - LOS - New
- New-Existing AVS - CC
- Double Circuit
- Double Circuit
- AVS - Broadland - Existing
- AVS - LOS - Existing
- AVS - CC - Existing
- County Boundary
- Public Land Survey System Sections
- Public Land Survey System Townships



Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Route Change Maps
Sheet 1b of 4

Source: Esri World Imagery; North Dakota GIS; Burns & McDonnell.

Revised July 16, 2014

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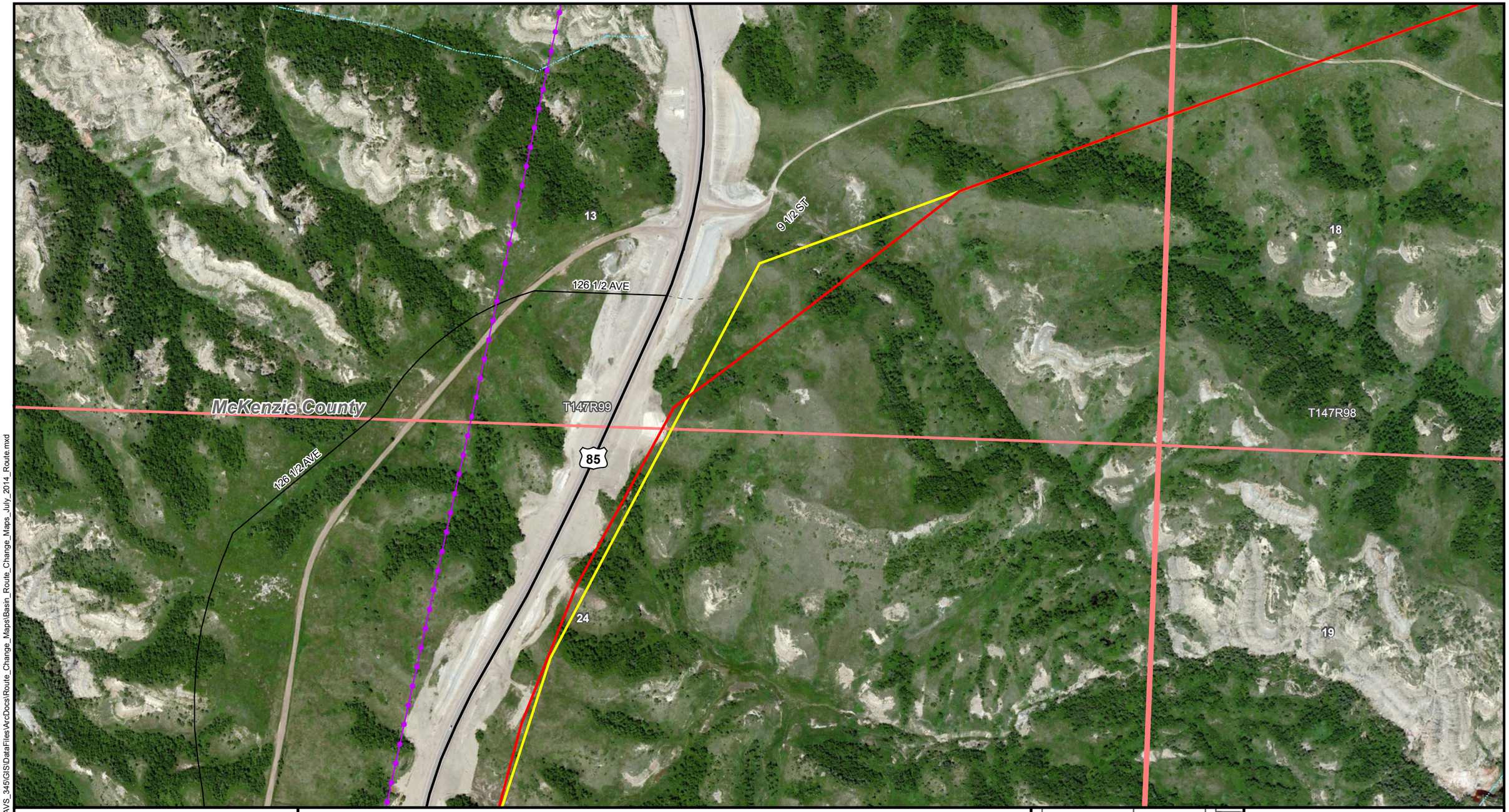

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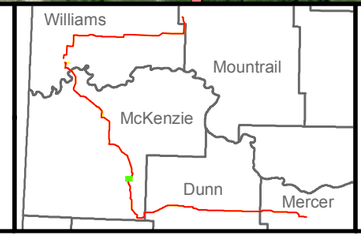
NORTH

LEGEND

- Existing Substation
- Proposed Substation
- Existing Transmission Line
- County Boundary
- Revised Route - July 2013
- Revised Route - July 2014
- Public Land Survey System Sections
- Public Land Survey System Townships



Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Route Change Maps
Sheet 2 of 4

Source: Esri World Imagery; North Dakota GIS; Burns & McDonnell.

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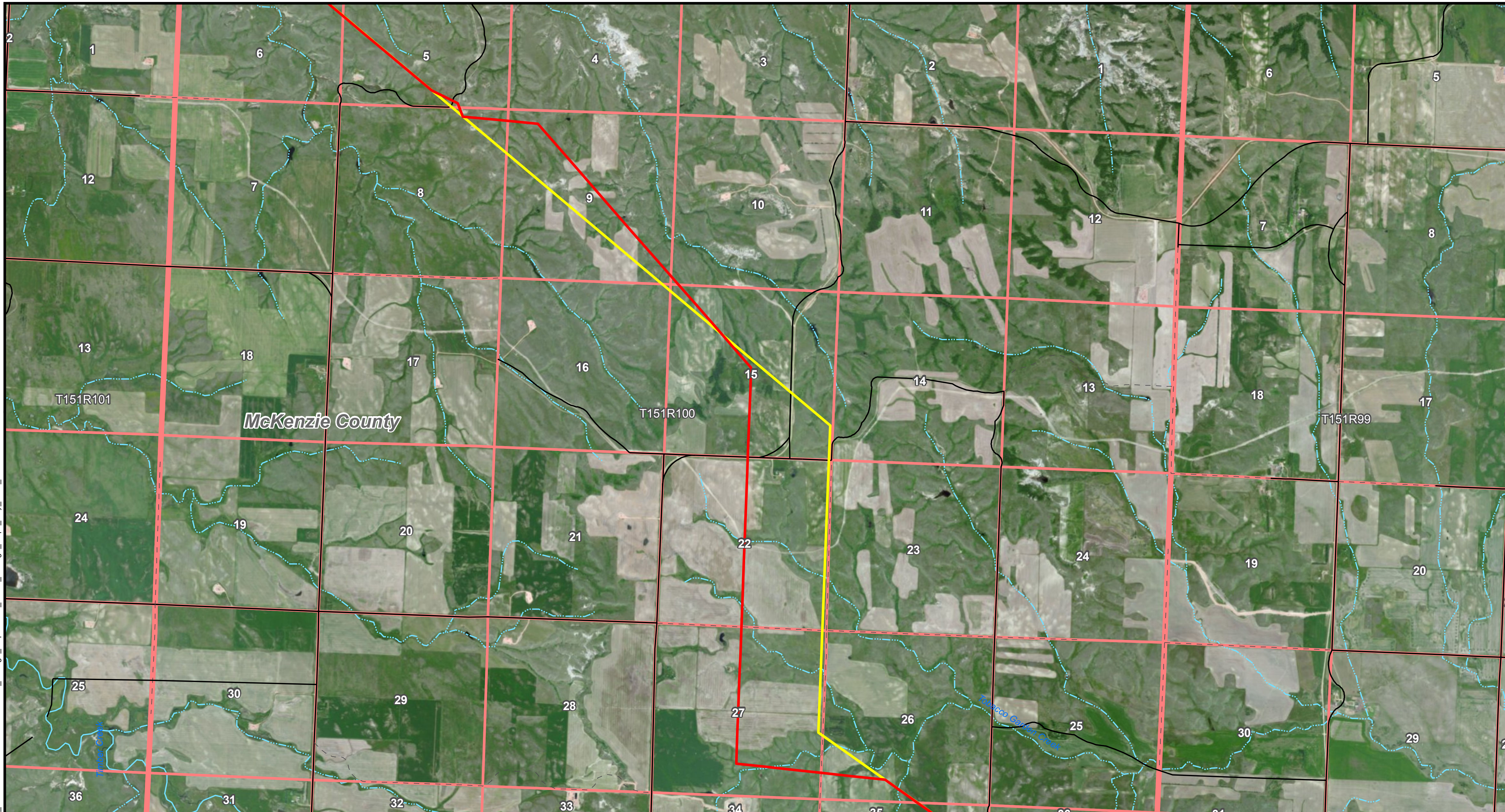

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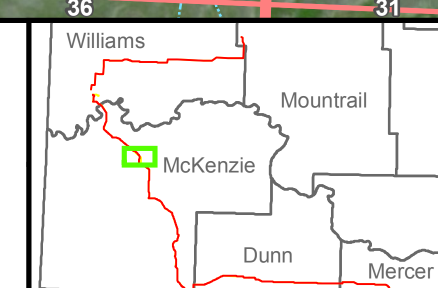
LEGEND

- Existing Substation
- Proposed Substation
- Existing Transmission Line
- County Boundary
- Revised Route - July 2013
- Revised Route - July 2014
- Public Land Survey System Sections
- Public Land Survey System Townships



Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Route Change Maps
Sheet 3 of 4

Source: Esri World Imagery; North Dakota GIS; Burns & McDonnell.

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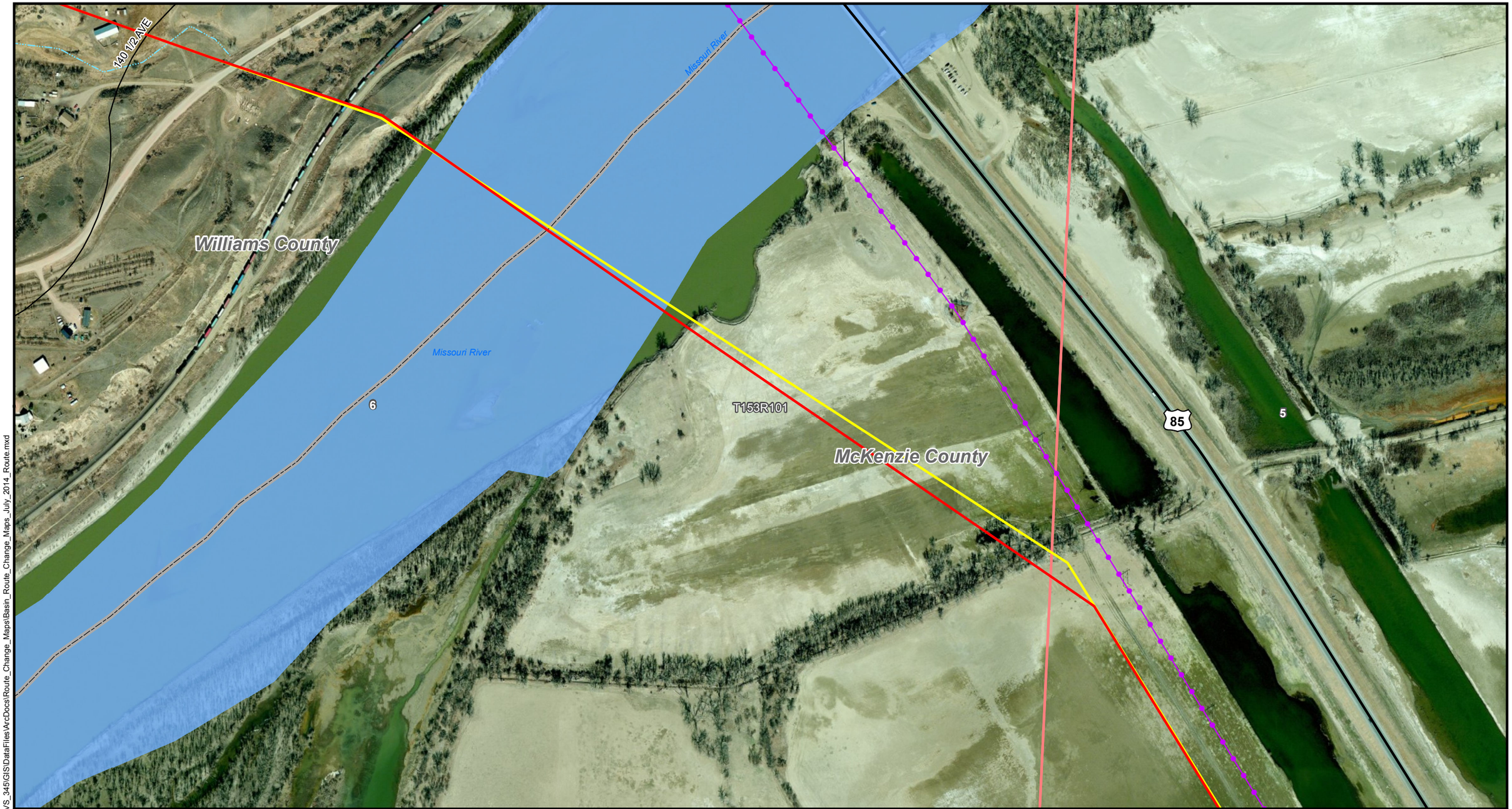

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NORTH

LEGEND

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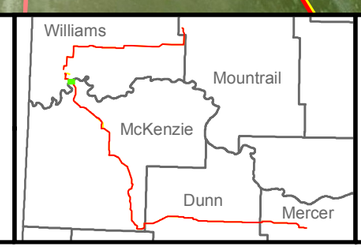

Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Route Change Maps
Sheet 4 of 4

Source: Esri World Imagery; North Dakota GIS; Burns & McDonnell.

Revised July 09, 2014

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Unless otherwise in this amendment, all other text sections and Project descriptions in the original application remain unchanged. The general structure of this amendment remains the same, with similar chapters and sections. Section 1.4 was added to address additional future associated facilities related to the AVS to Neset 345-kV Transmission Project.

The map sheets included with this amendment in Volume II have been updated to indicate the above changes. These sheets replace the same numbered sheets in the original application and July 2013 amendment.

1.1 Compliance with the Energy Conversion and Transmission Facility Siting Act

No changes from Corridor/Route revisions.

1.1.1 Rural Utilities Service and Western Area Power Administration and U.S. Forest Service Planning Documents

No changes from Corridor/Route revisions.

1.1.2 Letter of Intent

No changes from Corridor/Route revisions.

1.1.3 Certificate of Corridor Compatibility

No changes from Corridor/Route revisions. Table 1.1-1 included for convenience.

Table 1.1-1: Certificate of Corridor Compatibility Completion Checklist

State Authority	Description	Section
Chapter 49-22	**Commission Guidelines: Energy Conversion and Transmission Facility Siting**	**1.1**
Section A	**Description**	**1.2, 4.2**
1.	Type: Describe the type of transmission facility addressed in this application. The description shall include the purpose of the facility and the technology to be employed.	1.0, 1.2, 2.1, 4.2.1
2.	Product: Describe the type, source, and final destination of the product to be transmitted by the proposed facility.	1.2.2
3.	Size and Design:	4.0
3.a.	Provide a description of the size and design of the Electrical facility including, but not limited to, the following:	4.2.1, 4.2.2, 4.2.3
3.a.1.	Width of right of way;	4.2.1
3.a.2.	Estimated span lengths;	4.2.1
3.a.3.	Anticipated type of structure;	4.2.1
3.a.4.	Approximate length of facility;	1.0, 1.2, 4.1
3.a.5.	Voltage; and	4.2.1
3.a.6.	The requirement for a general location of any new associated facilities.	4.2.2
3.b.	Provide a description of the size and design of the pipeline facility including, but not limited to, the following:	N/A
4.	Time Schedule: Provide the anticipated time schedule for the accomplishment of the following events:	1.3
4.a.	Certificate of Corridor Compatibility;	1.3
4.b.	Route Application;	1.3
4.c.	Route Permit;	1.3
4.d.	Construction start date;	1.3
4.e.	Construction complete; and	1.3
4.f.	In-service date.	1.3
Section B	**Studies**	

State Authority	Description	Section
	Provide a copy of any evaluative studies or assessments of the environmental impact of the proposed facility submitted to any Federal, regional, state or local agency.	Appendices of original application
Section C	**Need for Facility**	**2.0**
1.	An analysis of the need for the proposed facility based on present and projected demand for the product to be transmitted by the facility, including the most recent system studies supporting the analysis of the need.	2.1
2.	A description of any feasible alternative methods of serving the need.	2.2
3.	A statement justifying any deviations from the most recent Ten-Year Plan which the proposed facility may present.	2.3
Section D	**Location**	**Figures, 4.1**
1.	Select a study area, which includes the proposed corridor, of sufficient width to enable the Commission to evaluate the factors addressed in Section 49-22-09, NDCC.	1.2.1
2.	Identify and map the criteria that led to the proposed corridor location within the study area.	Figures, 1.2.1, 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, Volume II of original application
3.	Discuss the relative value of each criteria and how the proposed corridor location was selected giving consideration to all criteria.	1.2.1, 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6
4.	The criteria to be evaluated shall include at a minimum all of the following which are within the study area:	3.0
4.a.	Exclusion areas;	3.1
4.b.	Avoidance areas;	3.2
4.c.	Selection criteria;	3.3
4.d.	Policy criteria;	3.4
4.e.	Design and construction limitations; and	3.5
4.f.	Economic considerations.	3.6
5.	Discuss the general mitigative measures that will be taken to minimize adverse impacts which result from a route location in the proposed corridor.	5.1.3, 5.2.3, 5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3, 5.8.3, 5.9.3, 5.10.3, 5.11.3, 5.12.3, 5.13.3
6.	List the qualifications of the people in the various disciplines that contributed to the corridor location study.	9.0

State Authority	Description	Section
7.	Maps	Figures and Volume II of original application
7.a.	Map the criteria within the study area showing the proposed corridor. Several different criteria may be shown on each map, depending on the map scale and the density and nature of the criteria. Minimum map scale shall be ½ inch = 1 mile. All maps shall be at the same scale unless otherwise specified.	Volume II of original application
7.b.	Furnish one set of Mylar maps, separate from the application, of the same scale as the criteria maps and showing the same basic features as the criteria maps, including the study area, but not the proposed facility location.	Figures. GIS-based maps are included with this amendment in lieu of Mylar maps.
Chapter 49-22-09	**Factors to be considered in evaluating applications and designation of sites, corridors, and routes.**	**8.0**
1.	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	8.1
2.	The effects of new energy conversion and transmission technologies and systems designated to minimize adverse environmental effects.	8.2
3.	The potential for beneficial uses of waste energy from a proposed energy conversion facility.	8.3
4.	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	8.4
5.	Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.	8.5
6.	Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.	8.6
7.	The direct and indirect economic impacts of the proposed facility.	8.7
8.	Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	8.8

State Authority	Description	Section
9.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	8.9
10.	The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species.	8.10
11.	Problems raised by Federal agencies, other state agencies, and local entities.	8.11

1.1.4 Route Permit

No changes from Corridor/Route revisions. Table 1.1-2 included for convenience.

Table 1.1-2: Route Permit Completion Checklist

State Authority	Description	Section
Chapter 49-22	**Commission Guidelines: Energy Conversion and Transmission Facility Siting**	**1.1**
Section A	**Description**	**1.2, 4.2**
1.	Type: Describe the type of transmission facility proposed.	1.0, 1.2, 4.2
2.	Product: Describe the product or products to be transmitted.	1.2.2
3.	Size and Design: Provide a general description of the proposed size and design, and any alternate size or design, which was considered. Provide one (1) copy of the design data report, separate from the application, for the proposed facility and any associated facilities.	4.0, Appendix E of original application
4.	Time Schedule: Provide the anticipated time schedule for the accomplishment of major events including, at a minimum, the following:	1.3
4.a.	Route Permit;	1.3
4.b.	Right-of-way acquisition complete;	1.3
4.c.	Construction start date;	1.3
4.d.	Construction complete;	1.3
4.e.	Test operations; and	1.3
4.f.	In-service date.	1.3

State Authority	Description	Section
Section B	**Location**	**Figures, 4.0**
1.	Discuss the utility's policies and commitments to limit the environmental impacts of its facilities, including copies of board resolutions and management directives.	3.4
2.	Discuss the factors listed in Section 49-22-09, NDCC to aid the Commission's evaluation of the proposed route.	8.0
2.a.	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	8.1
2.b.	The effects of new energy conversion and transmission technologies and systems designated to minimize adverse environmental effects.	8.2
2.c.	The potential for beneficial uses of waste energy from a proposed energy conversion facility.	8.3
2.d.	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	8.4
2.e.	Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.	8.5
2.f.	Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.	8.6
2.g.	The direct and indirect economic impacts of the proposed facility.	8.7
2.h.	Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	8.8
2.i.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	8.9
2.j.	The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species.	8.10

State Authority	Description	Section
2.k.	Problems raised by Federal agencies, other state agencies, and local entities.	8.11
3.	Identify and map the criteria that led to the proposed route location within the designated corridor.	Figures, 1.2.1, 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, Volume II of original application
4.	Discuss in detail the relative value of each criteria and how the location, construction, and operation of the facility will affect each criteria.	1.2.1, 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6
5.	The criteria to be evaluated shall include at a minimum all of the following which are within the designated corridor:	3.0
5.a.	Exclusion areas;	3.1
5.b.	Avoidance areas;	3.2
5.c.	Selection criteria;	3.3
5.d.	Policy criteria;	3.4
5.e.	Design and construction limitations; and	3.5
5.f.	Economic considerations.	3.6
6.	Discuss the mitigation measures that will be taken to minimize adverse impacts which result from the location, construction, and operation of the facility.	5.1.3, 5.2.3, 5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3, 5.8.3, 5.9.3, 5.10.3, 5.11.3, 5.12.3, 5.13.3
7.	List the qualifications of the people in the various disciplines that contributed to the facility route location study.	9.0
8.	Maps	Figures
8.a.	Map the criteria within the designated corridor showing the proposed route and location of any new associated facilities. Several different criteria may be shown on each map, depending on the map scale and the density and nature of the criteria. Minimum map scale shall be ½ inch = 1 mile. All maps shall be at the same scale unless otherwise specified.	Volume II of original application
8.b.	Furnish one (1) set of Mylar maps, separate from the application, of the same scale as the criteria maps and showing the same basic features as the criteria maps, including the designated corridor, but not the proposed route or location of any new associated facilities.	Figures. GIS-based maps are included with this amendment in lieu of Mylar maps

State Authority	Description	Section
8.c.	Furnish one (1) set of uncontrolled 9x9 inch stereo-pair aerial photographs, separate from the application, with acceptable resolution showing the designated corridor, proposed route and location of any new associated facilities, and Section, Township and Range numbers, at a scale of 1 inch = 2000 feet, together with a flight map at a scale of ½ inch = 1 mile showing each flight line and the beginning and ending photo number of each flight line. Photo mosaic strip maps will also be acceptable. If the applicant can demonstrate that because of the limited size and scope of the Project, aerial photographs will not be practical, this requirement may be waived.	Figures. GIS-based maps are included with this amendment.

1.2 Project Summary

No changes to this section other than the proposed four Corridor/Route revisions.

Corridor/Route revisions at the four locations contributed to the overall increase in project length of 0.5 mile. These realignments are described below, presented in Table 1.0-1, and shown on the Route Change Maps following Table 1.0-1.

Corridor/Route Revision #1 is located in Mercer County to the west of the AVS Substation. It includes approximately 2.5 miles where the proposed Corridor/Route will replace the current AVS to Broadland 345-kV line. The existing AVS to Charlie Creek line will be relocated adjacent to the existing AVS to Broadland circuit on ROW that was originally intended for the proposed new AVS to Charlie Creek line. The AVS to Broadland circuit will then be double circuited with the relocated existing AVS to Charlie Creek line, making room for the proposed AVS to Charlie Creek circuit to occupy the vacated alignment. The existing AVS to Charlie Creek line will be relocated to prevent locating both the existing AVS to Charlie Creek and proposed Corridor/Route on the same double circuit structures, as was previously proposed. This line swap is necessary to avoid future conflict with mining operations and still maintain system reliability. Basin Electric is working with the landowners to obtain necessary easements. No opposition to this revision is expected.

Corridor/Route Revision #2 is located in McKenzie County, east of U.S. Highway 85 opposite the USFS Summit Campground. Corridor/Route Revision #2 includes realignment of approximately 2,100 feet of alignment across the Little Missouri River National Grasslands. The Corridor/Route revision at this location was at the request of the USFS to locate the structure to minimize visibility and impacts to USFS

managed lands. At the present time, the USFS is seeking comments on the granting of a special use permit to Basin Electric. It is expected that the USFS will grant Basin Electric the special use permit shortly.

Corridor/Route Revision #3 is located in McKenzie County approximately 9 miles northwest of Watford City. Corridor/Route Revision #3 includes realignment of approximately 3 miles of the Corridor/Route approximately 0.5 mile west from the previous alignment. This revision was developed to accommodate landowner preferences and to facilitate the future Patent Gate Substation. The Patent Gate Substation will be sited as part of the North Killdeer Loop Project.

Corridor/Route Revision #4 is located in McKenzie County on the south side of the Missouri River. The Revision includes the alignment of the Corridor/Route west of U.S. Highway 85 across lands owned by the U.S. Army Corps of Engineers (USACE) and managed by the North Dakota Game and Fish Department (NDGFD). The realignment includes a slight westward adjustment of approximately 0.75 mile of the centerline at the preference of the USACE to better accommodate development of the wildlife migration associated with the widening of U.S. Highway 85. Presently, the USACE is evaluating Basin Electric's OutGrant Application for occupancy within their managed lands. It is expected the USACE will issue the Project the OutGrant Permit in the fall of 2014.

In addition to these four Corridor/Route revisions, Basin Electric has also identified two additional locations for construction laydown and material yards. These locations are identified as the Patent Gate Yard and the Charlie Creek Yard. The Patent Gate Yard is located in McKenzie County, north of Watford City. The Charlie Creek Yard is located just inside Billings County, south of the Charlie Creek Substation.

1.2.1 Study Area, Project Corridor, and Route Development Summary

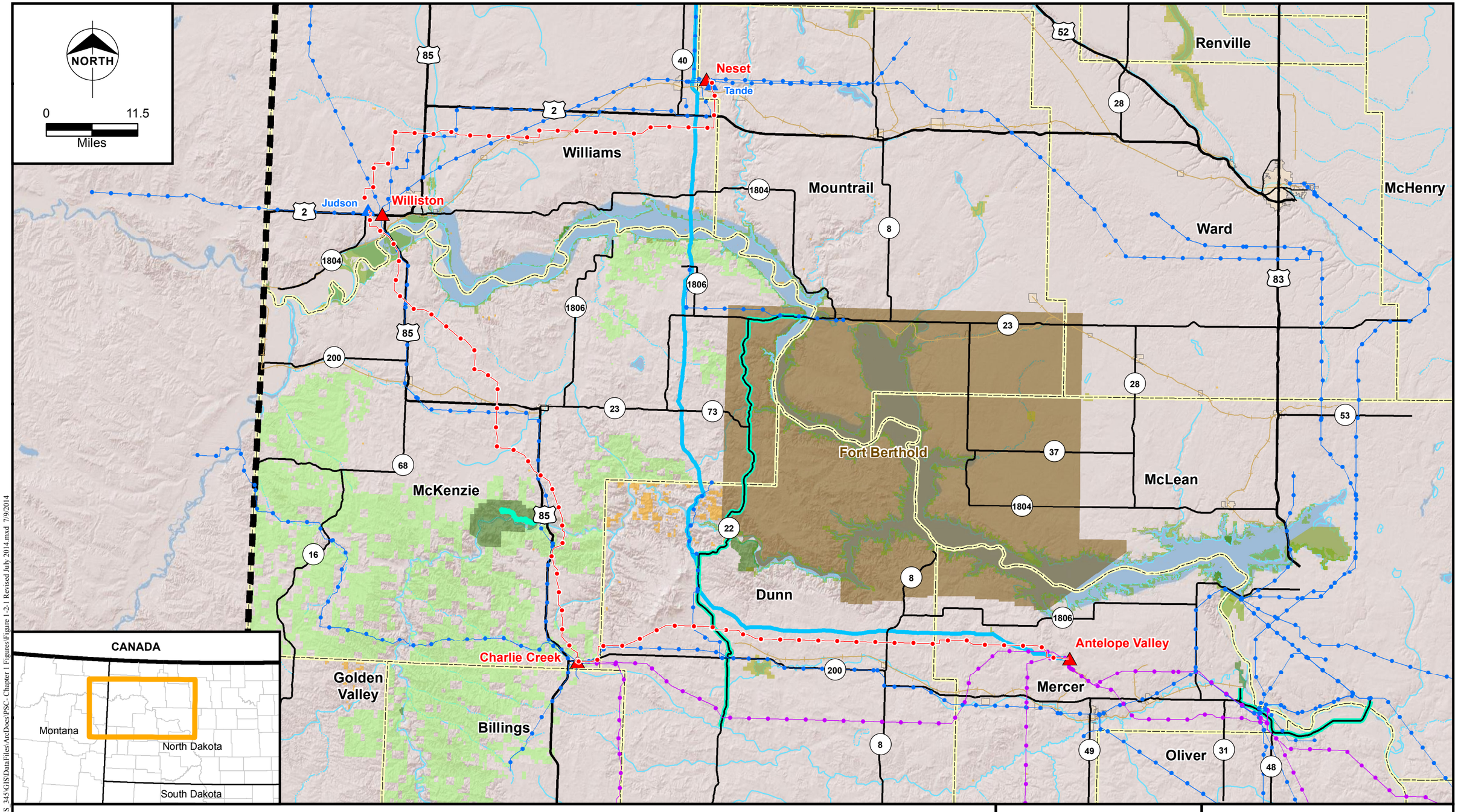
No changes from Corridor/Route revisions. Figure 1.2-1 has been updated to include the revised Corridor/Route.

1.2.2 Product

No changes from Corridor/Route revisions.

1.3 Project Schedule

The Project is expected to start construction in August 2014. A 2-year construction phase is anticipated with in-service expected in 2016. Permitting efforts, including the corridor and route selection processes,



Burns & McDonnell SINCE 1898

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Figure 1.2-1
Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Overall Proposed Project Area and
Proposed Corridor/Route

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Source: North Dakota GIS; Esri; Basin Electric; Burns & McDonnell.

Revised July 09, 2014

are underway. The Project requires various state, Federal, and local permits prior to initiating construction. An overview of the Project schedule is provided in Table 1.3-1.

Table 1.3-1: Project Schedule

Corridor Certificate/Route Permit	April 2014
Corridor Certificate/Route Permit Amendment Application	July 2014
Corridor Certificate/Route Permit Amendment Approved	April 2014
Right-of-Way acquisition complete	2014
Construction start date	August 2014
Construction complete	October 2016
Test operations	November 2016
In-service date	December 2016

1.4 Future Associated Facilities

Construction and operation of the proposed Corridor/Route will facilitate development of additional electricity transmission facilities within the Project area. These facilities were identified subsequent to the filing of the original application in March 2013 and determined necessary to meet the increasing electrical needs of the area. These facilities will include construction of a new North Killdeer Loop 345-kV transmission line, three new 345/115-kV substations (Roundup Substation, Kummer Ridge Substation, and Patent Gate Substation). The currently proposed locations for these facilities are shown in Figure 1.4-1. These facilities will be the subject of a future application by Basin Electric to the Commission for review and approval.

NORTH

0 11.5
Miles

Neset
Tande
Judson
Williston
Future Patent Gate
Future Kummer Ridge
Future Roundup
Charlie Creek
Antelope Valley

Williams
Mountrail
McHenry
Renville
Ward
McKenzie
Fort Berthold
McLean
Dunn
Golden Valley
Billings
Mercer
Oliver

CANADA
Montana
North Dakota
South Dakota

LEGEND

- Project Route July 2014
- Future North Killdeer Loop Route
- Proposed Substation
- Future Substation
- Existing Substation
- Army Corps of Engineers
- National or State Park
- National Wildlife Refuge
- National Grassland
- Tribal Lands
- BLM Lands
- State Boundary
- County Boundary
- Municipal Areas
- Railroad
- DGC Pipeline
- Scenic Byway

Existing Transmission Lines

- 345-kV
- 230-kV and Below

Burns & McDonnell SINCE 1898

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

Figure 1.4-1
Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Future Associated Facilities

\\ESPSRV\Data\Projects\Basin\61495_AVS_345\GIS\DataFiles\ArcDocs\PSC- Chapter 1 Figures\Figure 1-4-1 July 2014.mxd 7/9/2014

Source: North Dakota GIS; Esri; Basin Electric; Burns & McDonnell.

Revised July 09, 2014

2.0 NEED FOR FACILITY

2.1 Needs Analysis

No changes from Corridor/Route revisions.

2.2 Alternatives

Route adjustments have been developed as discussed in Table 1.0-1. These adjustments are a result of efforts to accommodate requests from landowners and agencies, to avoid environmental features, and to maintain system reliability with the AVS to Broadland/AVS-CC double circuiting. The original alternative corridors remain unchanged.

2.2.1 System Upgrades

No changes from Corridor/Route revisions.

2.2.2 Additional 115-kV Lines

No changes from Corridor/Route revisions.

2.2.3 Additional 345-kV Lines

No changes from Corridor/Route revisions.

2.2.4 No Action Alternative

No changes from Corridor/Route revisions.

2.2.5 Recommended System Alternatives

No changes from Corridor/Route revisions..

2.3 New Generation

In order to meet the need for voltage support to areas in northwestern North Dakota, Basin Electric has recently constructed two simple-cycle combustion turbine projects. The need for these projects was identified as areas for concern with the current load demands and the existing transmission infrastructure. The two projects are the Pioneer Generating Station (PGS) and the Lonesome Creek Station (LCS).

PGS Phase I and Phase II projects consisted of three LM 6000 PC SPRINT simple-cycle combustion turbines with a nominal output rating of 45 MW each. PGS Unit 1 incorporated a clutch attached to isolate the combustion turbine from the generator set. With the clutch engaged, the generator acts similar to a synchronous condenser, thus providing much needed voltage support to the local transmission system

during times that generation is not required. Commercial operation of all three PGS units was completed in December 2013.

LCS Phase I and II consist of three LM 6000 PC SPRINT simple-cycle combustion turbine with a nominal output rating of 45 MW each. LCS Unit 1 also incorporated a clutch attached to isolate the combustion turbine from the generator set. With the clutch engaged, the generator acts similar to a synchronous condenser, thus providing much needed voltage support to the local transmission system during times that generation is not required. Construction on the LCS Phase I began on July 3, 2012 and commercial operation began in August 2013. Construction of LCS Phase II began in May of 2014 with commercial operation expected to begin in early 2015.

2.4 Ten-Year Plan

No changes from Corridor/Route revisions.

3.0 TRANSMISSION FACILITY CORRIDOR AND ROUTE CRITERIA

No changes from Corridor/Route revisions.

3.1 Exclusion Areas

Per Section 69-06-08-02(1), the geographical areas listed in Table 3.1-1 shall be excluded in the consideration of a Corridor/Route for a transmission facility, and shall include a buffer zone of reasonable width to protect the integrity of the area. Exclusion areas are mapped for the Project Corridor/Route and revisions in Volume II and in Volume II of this amendment.

Table 3.1-1: Exclusion Areas

Geographic Area	Present within Corridor/Route Revisions	Proposed Buffer	Section Addressed
Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; monuments; and wilderness areas	Not present within the Re-route Corridor/Route	No impacts are anticipated and no buffer is proposed	5.2, 5.8, 5.9
Designated or registered state: parks; historic sites; monuments; historical markers; archaeological sites; and nature preserves	Not present within the Re-route Corridor/Route	No impacts are anticipated and no buffer is proposed	5.2, 5.8, 5.9
County parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions	Not present within the Re-route Corridor/Route	No impacts are anticipated and no buffer is proposed	5.2, 5.9
Areas critical to the life stages of threatened or endangered animal or plant species	Not present within the Re-route Corridor/Route	No impacts are anticipated and no buffer is proposed.	5.13
Areas where animal or plant species that are unique or rare to this state will be irreversibly damaged	Not present within the Re-route Corridor/Route	No impacts are anticipated and no buffer is proposed.	5.13

3.2 Avoidance Areas

Per Section 69-06-08-02(2), the geographical areas listed in Table 3.2-1 shall not be considered in the routing of a transmission facility unless the applicant shows that under the circumstances there is no reasonable alternative. In determining whether an avoidance area should be designated for a facility, the Commission may consider, among other things, the proposed management of adverse impacts; the orderly siting of facilities; system reliability and integrity; the efficient use of resources; and alternative routes. Avoidance areas are mapped for the Project Corridor/Route and revisions in Volume II of the original application and in Volume II of this amendment. Table 3.2-1 presents the changes to avoidance areas resulting from the four Corridor/Route revisions.

Table 3.2-1: Avoidance Areas

Avoidance Area	Present within Project Corridor/Route	Change due to Corridor/Route Revisions	Proposed Buffer	Section Addressed
Designated or registered national: historic districts; wildlife areas; wild, scenic or recreational rivers; wildlife refuges; and grasslands	A total of 152.7 acres of the LMNG within the Corridor/Route.	0.2 fewer acres	The revised Corridor/Route crosses 0.2 fewer acres of Little Missouri National Grassland.	5.2, 5.8, 5.9
Designated or registered state: wild, scenic, or recreational rivers; game refuges; game management areas; management areas; forests; forest management lands; and grasslands	In re-route Area 4 there are approximately 57.9 acres of the Lewis and Clark Wildlife Management Area (LCWMA) within the Corridor/Route. The reroute provide for no change in additional land area within the LCWMA from the original approved route.	No changes from Corridor/Route revisions.	An additional 0.3 acres of woodland, for a total of 6.3 acres of woodland; vegetation removal and replacement will be conducted according to requirements in the Public Service Commission's Woody Species Replacement Plan (Appendix V).	5.2, 5.9

Avoidance Area	Present within Project Corridor/Route	Change due to Corridor/Route Revisions	Proposed Buffer	Section Addressed
Historical resources which are not specifically designated as exclusion or avoidance areas	Based on the Class I and Class III cultural resources investigations conducted for the Project, known sites have been avoided. The revised areas of the Corridor/Route has been surveyed at the Class III level. Four additional sites were identified.	Four additional sites identified.	All resources will be avoided except for Isolated Find 32MZx1298.	5.8
Areas which are geologically unstable	Corridor/Route crosses a total of 5,625.9 feet of terrain where landslides have occurred previously (19.4 acres within the Corridor/Route) Corridor/Route crosses approximately 5,172.0 feet with a slope greater than 10 percent (a total of 16.8 acres within the Corridor/Route).	No distinguishable change from Corridor/Route revisions.	A majority of the identified landslide areas will be spanned by the transmission line, with only one structure being placed within susceptible landslide areas; geotechnical assessments will be conducted at structure locations to minimize the potential development of landslides in susceptible areas during construction.	5.11
Within 500 feet of a residence, school, or place of business	Eight residences are within 500 feet of the Corridor/Route. No schools within 500 feet of the Corridor/Route..	No changes from Corridor/Route revisions.	The transmission line was routed to minimize impacts to residences, and the Project will not result in any displacement of residences. Basin Electric has obtained waivers of the 500-foot setback requirement for the eight residences.	5.1

Avoidance Area	Present within Project Corridor/Route	Change due to Corridor/Route Revisions	Proposed Buffer	Section Addressed
Reservoirs and municipal water supplies	Not present within Corridor/Route.	No change.	No impacts are anticipated and no buffer is proposed.	5.12
Water sources for organized rural water districts	Not present within Corridor/Route.	No change.	No impacts are anticipated and no buffer is proposed.	5.12
Irrigated land	Not present within the Corridor/Route.	No change.	No impacts are anticipated and no buffer is proposed.	5.2, 5.10
Areas of recreational significance which are not designated as exclusion areas	Corridor/Route would not cross any additional Dakota School Trust Land parcels but would incorporate a total of approximately 116.7 acres within the Corridor/Route.	2.2 fewer acres.	Basin Electric has obtained easements from the North Dakota Department of Trust Lands to cross these parcels and has coordinated with the Department to ensure that the Project does not impact the ability to continue to develop the Trust Lands per their planning.	5.2, 5.7, 5.9

3.3 Selection Criteria

Per Section 69-06-08-02(3), a corridor or route shall be designated only when it is demonstrated to the Commission by the applicant that any significant adverse effects resulting from the location, construction, and maintenance of the facility as they relate to the following, will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum (Table 3.3-1). Selection criteria are mapped for the Project Corridor/Route and revisions in Volume II of the original application and in Volume II of this amendment. Table 3.3-1 presents changes to the selection criteria resulting from the four Corridor/Route revisions.

Table 3.3-1: Selection Criteria

Selection Criteria	Potential Adverse Effects	Change due to Corridor/Route Revisions	Section Addressed
Agricultural production	A total of 1,402.9 acres and 154.8 acres, respectively, of cultivated cropland and pasture/hay land within the Corridor/Route for a total of 1,402.9 acres and 154.8 acres, respectively. Current agricultural production will be maintained for most of the Corridor/Route. The only land unavailable for agriculture will be the area occupied by structures for a total of 1.1 acre (0.0009-acre per structure). There will be a total of 1,179 structures for the Corridor/Route.	13.9 additional acres of cultivated cropland. 1.2 additional acres of pasture/hay land. 0.3 fewer acres of land permanently unavailable for agriculture that will be occupied by structures. 9 additional structures.	5.2, 5.10
Family farms and ranches	No family farms will be displaced due to construction of the Corridor/Route. Basin Electric will work with landowners to minimize impacts to their land and agricultural operations.	No change.	5.2, 5.10
Land which the owner can demonstrate has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation	No irrigated land was identified within or adjacent to the Corridor/Route. No owner has expressed concerns related to economically suitable irrigation on their land.	No change.	5.2, 5.10
Surface drainage patterns and ground water flow patterns	The Corridor/Route will cross 13 perennial waterways. No change in overall project effect.	One additional perennial waterway crossing.	5.12

Selection Criteria	Potential Adverse Effects	Change due to Corridor/Route Revisions	Section Addressed
Noise-sensitive land uses	Eight residences will be located within 500 feet of the Corridor/Route. No change in effects to these residences. One residence is located within 850 feet of the proposed Tande Substation (previously estimated to be within 800 feet but is approximately 845 feet away) that could experience an increase in sound levels during operation of the Project; however, HUD site acceptability noise standards will not be exceeded.	No changes from Corridor/Route revisions.	5.6
The visual effect on the adjacent area	Change in the visual characteristics and viewshed for eight residences located within 500 feet).	No changes from Corridor/Route revisions.	5.7
Extractive and storage resources	No oil and gas wells identified within Corridor/Route. revisions	No changes from Corridor/Route revisions.	5.11
Wetlands, woodlands, and wooded areas	The 26.5 acres of wetland within the Corridor/Route will be spanned. A total of 116.0 acres of woodland potentially removed within the Corridor/Route revisions. No change in effect.	0.3 additional acres. 1.2 additional acres of woodland.	5.13
Radio and television reception, and other communication or electronic control facilities	No change as a result of Corridor/Route revisions.	No change.	5.4 and 5.3
Human health and safety	No changes as a result of Corridor/Route revisions.	No change.	5.4

Selection Criteria	Potential Adverse Effects	Change due to Corridor/Route Revisions	Section Addressed
Plant life	A total of 116.0 acres of woodland potentially removed within the Corridor/Route, depending on slope. Approximately one acre of area for vegetation permanently removed within Corridor/Route at structure locations.	1.2 additional acres of woodland. Approximately 0.3 fewer acres of permanent vegetation removal than reported in the July 2013 amendment.	5.13

3.4 Policy Criteria

No changes from Corridor/Route revisions.

3.5 Design and Construction Limitations

No changes from Corridor/Route revisions.

3.6 Economic Considerations

No changes from Corridor/Route revisions.

4.0 ENGINEERING AND OPERATIONAL DESIGN

Engineering design data is presented in Appendix E, and the plan and profiles are provided in Appendix G. A legal description for the Project Corridor/Route is provided in Appendix H.

4.1 General Corridor/Route Description

The general Corridor/Route description remains essentially the same as presented in the original application. The only changes include the four Corridor/Route revisions addressed in this amendment as described below. Figures of these Route Change areas follow Table 1.0-1.

Corridor/Route revision #1 is located in Mercer County to the west of the AVS Substation. The existing major transmission line infrastructure interconnecting into the existing Antelope Valley Station switchyard currently consists of three 345-kV transmission lines. The three lines are:

- AVS to Broadland (depicted in Red on Route Change Maps 1a and 1b),
- AVS to Leland Olds (double circuit, depicted in Black),
- AVS to Charlie Creek (depicted in Blue) transmission lines.

The proposed AVS to Neset Transmission line (depicted in Yellow) also requires interconnection to the AVS Switchyard (See Route Change Maps Sheets 1a and 1b). The existing AVS to Charlie Creek (CC) line requires relocation to facilitate mining operations. In Basin Electric's original proposal, this line was proposed to be double-circuited on the new AVS to Neset Transmission alignment for approximately 2.5 miles extending west from the AVS Substation. Upon further analysis and study of this configuration, a concern was raised that double circuiting both lines extending from AVS to CC would present reliability and National Electrical Reliability Council's compliance issues. Thus, the recommendation from Basin Electric's transmission planning department was to avoid or minimize the amount of double circuiting of the existing and proposed AVS to CC circuits, placing as much of these circuits on different structures as practicable. By incorporating separate structures for each line, transmission delivery between the same geographical areas would not be subject to a single event failure.

All four major transmission lines (five total circuits) connecting to the AVS Substation connect and extend from the west side of the switchyard. The existing connection bays for these lines, from north to south, are arranged AVS to CC, AVS to Broadland, and two AVS to Leland Olds, with two additional bay position available but not yet built-out south of the existing two AVS to Leland Olds positions. As

Route Change Map Sheet 2 indicates, in preparation for future mining operations in 2015, a two-mile segment of the existing AVS to CC line (Sections 15 and 16, Township 145N, Range 88W) would be relocated (depicted Ghost Blue) to parallel the north side of the existing AVS to Broadland alignment. This more northern alignment would be constructed as a 345/345-kV double circuit line. Approximately two miles of the existing AVS to Broadland circuit would be moved from its current structures to be co-located with the existing AVS to CC line for approximately two miles west from the switchyard. Switchyard bay connections would be unchanged for these two circuits.

Two additional switchyard bays would be constructed south of the two existing bays for the existing double circuit Leland Olds line. The connections for these circuits would be shifted to the two new bay positions. The remainder of the Leland Olds circuits would be unchanged except for the structures to connect to the switchyard (depicted in green). The switchyard bay shift would open a bay between the AVS to Broadland and the Leland Olds connections. This open bay would be used to connect the proposed AVS to CC line to the switchyard. Extending west from the switchyard, the proposed AVS to CC line would follow new alignment south of the existing AVS to Broadland line through Section 23, Township 145N, Range 88W, occupying the alignment available in Sections 21 and 22, Township 145N, Range 88W, from the shift of the AVS to Broadland line north to be double circuited with the existing AVS to CC line. As a result, the new AVS to CC line would occupy the current alignment of the AVS to Broadland line for approximately two miles west of the AVS Switchyard. Additionally, the existing AVS to CC and AVS to Broadland lines would be double-circuited for approximately two miles west of the switchyard.

Approximately 2.5 miles west of the AVS Switchyard in Sec 16 T145N-R88W, the AVS to Broadland line would extend to the west as a single 345-kV circuit, following its current alignment. One span west of this location, the existing AVS to CC line would turn north. Similarly, the proposed AVS to CC line would turn north at approximately the same location in Sec 16 T145N-R88W, crossing over the AVS to Broadland line continuing west. North of the AVS to Broadland line, the two AVS to CC circuits would be double circuited for approximately 0.6 mile, at which point the existing AVS to CC line would turn west to follow the existing alignment and the proposed AVS to CC line would extend northwest along the proposed alignment.

Corridor/Route Revision #2 is located in McKenzie County, east of U.S. Highway 85 adjacent to the USFS Summit Campground. The realignment occurs in Township 147N, Range 99W, and Sections 13 and 24. Corridor/Route Revision #2 includes realignment of approximately 2,100 feet of alignment across

Little Missouri River National Grasslands. The Corridor/Route revision at this location was at the request of the USFS.

Corridor/Route Revision #3 is located in McKenzie County approximately 9 miles northwest of Watford City. The realignment occurs in Township 151N, Range 100W, Sections 5, 8, 9, 10, 15, 16, 22, 26, and 27. Corridor/Route revision #3 includes realignment of approximately 3 miles of the Corridor/Route approximately 0.5 mile west from its previous alignment. This revision was developed to accommodate landowner preferences and facilitate future Patent Gate Substation development.

Corridor/Route Revision #4 is located in McKenzie County on the south side of the Missouri River. The Revision is located in Township 153 N, Range 101W, Section 6. It includes the alignment of the Corridor/Route west of U.S. Highway 85 across lands owned by the U.S. Army Corps of Engineers and managed by the NDGFD. The realignment includes a slight westward adjust of approximately 0.75 mile of the centerline to accommodate the preference of the USACE to better accommodate development of a wildlife corridor being developed in association with the widening of U.S. Highway 85.

4.2 Description of Proposed Facilities

In addition to the project as described in the original application, the AVS to Charlie Creek section of line will include a section of 345/345-kV double circuit line.

4.2.1 Transmission Line Characteristics

The proposed Corridor/Route revisions have resulted in the additional project characteristics:

A 2.5 mile section of 345/345-kV transmission line near the AVS Substation to Charlie Creek Substation Further engineering and Corridor/Route develop has resulted in minor changes to the characteristics of the structure types proposed for the project. A summary of all proposed structure characteristics is provided in Table 4.2-1. No changes to structure types would result from the Corridor/Route revisions.

Table 4.2-1: AVS-Neset 345-kV Transmission Project
Typical Structure Design Characteristics

Description of Design Component	345-kV	230/115-kV	345/115-kV	230-kV	345-kV H-Frame	345/345-kV
Conductor Size (inches)	1.8	1.345/1.108	1.8/1.108	1.345	1.8	1.8
ROW Width (feet)	150	100	150	100	150	150
Typical minimum and maximum Span Distance between Structures (feet) *	650-1,100	700-900	650-1,000	650-950	900-1,000	650-1000
Average Span (feet)	900	800	800	800	1,000	900
Minimum and Maximum Structure Height (feet)	100-130	97-127	115-145	70-110	80-100	100-155
Average Height of Structures (feet)	115	112	130	95	90	130
Average Number of Structures per mile	6	6.5	6.5	6.5	5.5	6
Temporary disturbance per Structure (acre) **	0.4	0.4	0.4	0.4	0.4	0.4
Permanent disturbance per Structure (acre) **	0.0003	0.0002	0.0003	0.0002	0.0004	0.0003
Minimum Conductor-to-Ground Clearance to agricultural lands, rural roads and paved highways @ 100 degree C (feet)	30	26	30	26	30	30
Minimum Conductor-to-Ground Clearance to Railroads @ 100 degree C (feet)	As required by specific Railroad					

* Actual span distance will vary depending on topography.

** Angle and dead-end structures (for longitudinal stability) will be constructed with concrete foundations. Guy wires will not typically be required.

*** Single pole tangent structures will be freestanding on concrete foundations or directly embedded. H-frame tangent structures will likely be directly embedded into the ground.

4.2.2 Associated Facilities and Project Components

No changes from Corridor/Route revisions.

4.2.3 Construction Techniques

No changes from Corridor/Route revisions.

4.2.3.1 Pre-Construction Activities

Ongoing activities and preparations for construction identified a previous laydown yard south of the Charlie Creek Substation. The Charlie Creek Material Yard is located in Billings County for use as a vehicle service area, construction trailer location, and material laydown yard. Figure 4.2-5 has been up-dated to show the location of the Charlie Creek Substation and the location of the nearby construction staging and material laydown yard. Basin Electric will obtain the necessary Conditional Use Permit (CUP) from Billings County for the temporary use of this location during construction. Basin Electric will provide the CUP as it becomes available.

An additional material laydown yard will be utilized in the land parcel supporting the future Patent Gate Substation and will be referred to as the Patent Gate Material Yard. Figure 4.2-5 has been up-dated to show the location of the Patent Gate Material laydown yard. This material yard was incorporated into the McKenzie County Conditional Use Permit and has been provided previously filed to this Commission docket.

4.2.3.2 Transmission Structure Site Preparation

No changes from Corridor/Route revisions.

NORTH

0 11.5

Miles

Jackman
Daniel
Neset
Tande
Tioga
White Earth
Ray
Epping
Spring Brook
Spring Lake Park
Williams
Judson
Williston
Lewis and Clark State Park
Mountrail
Ross
Stanley
Palermo
Donnybrook
Renville
Carpio
Berthold
Burlington
Des Lacs
Oak Park
Minot
Ward
Fort Union Trading Post
Four Bears Park
Fort Abraham Lincoln SP
Plaza
Parshall
Makoti
Douglas
Patent Gate
Alexander
Arnegard
Watford City
McKenzie
Theodore Roosevelt National Park
Tarnavsky
Dunn
Little Missouri State Park
McLean
Fort Stevenson State Park
Lake Sakakawea State Park
Riverdale
Jepson
Charlie Creek
Killdeer
Halliday
Dodge
Golden Valley
Zap
Beulah
Hazen
Stanton
Mercer
Antelope Valley
AVS
Gaugler
Knife River Indian Villages National Historic Site
Fort Clark Historic Site
Cross Ranch State Park
Oliver
Billings
Golden Valley

CANADA

Montana

North Dakota

South Dakota

LEGEND

- Project Route July 2014
- Proposed Substation
- Existing Substation
- Material Laydown Yard (Approximately 5 acres)
- State Boundary
- County Boundary

Existing Transmission Lines

- 345-kV
- 230-kV and Below

Burns & McDonnell SINCE 1898

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

Figure 4.2-5
Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Temporary Construction Material
and Equipment Laydown Areas

Source: North Dakota GIS; Esri; Basin Electric; Burns & McDonnell.

Revised July 11, 2014

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4.2.3.3 Structure Assembly and Erection

No changes from Corridor/Route revisions.

4.2.3.4 Stringing and Tensioning of Conductors

No changes from Corridor/Route revisions.

4.2.3.5 Structure Site Access and Traffic

No changes from Corridor/Route revisions.

4.2.3.6 Substation Construction Procedures

No changes from Corridor/Route revisions.

4.2.3.7 Transmission Line Maintenance and Operation

No changes from Corridor/Route revisions.

4.2.3.8 Substation Maintenance

No changes from Corridor/Route revisions.

4.2.3.9 Construction Schedule and Projected Workforce

No changes from Corridor/Route revisions.

4.2.3.10 Procedures for Minimizing Environmental Impact during Construction

No changes from Corridor/Route revisions.

4.2.3.11 ROW and Property Issues

Section 11 contains the status of the land acquisition process for the Project as of July 1, 2014.

5.0 ENVIRONMENTAL ANALYSIS

This amendment addresses four areas where changes have been made to the Corridor/Route. As previously discussed, these changes are generally minor. As a result, the type of resources affected and the amount of each resource affected are similar to those presented in the original application and July 2013 amendment. This section presents information on only those resources for which a material change resulted in the type or quantity of resource as a result of the Corridor/Route revisions. For each of these resources, a general description is provided, followed by a discussion of potential impacts and potential mitigation measures. However, sections have only been updated if there would be a material change as a result of the Corridor/Route revisions. The description of resources subsections describe the resources and environmental settings found in the vicinity of the Project. The Corridor/Route extends through Mercer, Dunn, McKenzie, Williams, and Mountrail Counties in North Dakota.

The impact discussion subsections describe the potential effects on each resource from the Project. Based on a centerline alignment, a 150-foot ROW was established to quantify the nature and extent of the impacts that could be expected for the Corridor/Route. For many of the resources discussed, such as vegetation and soils, impacts will be limited to this 150-foot ROW. For other resources such as wildlife, recreation, and visibility, impacts may extend outside the ROW.

In addition to impacts associated with construction and operation of the proposed Project within a 150-foot ROW, other potential impacts will result from construction-related facilities and activities. These will occur from establishment of laydown and staging yards and the development of access roads to structure locations. As some of these details will not be known until later in the process as field survey and final design are completed and coordination with landowners progresses, impacts from these activities are discussed in general terms.

The mitigation discussion subsections provide potential measures to reduce or eliminate anticipated adverse impacts identified. Standard mitigation measures have been incorporated into the development and construction of the proposed Project. These mitigation measures are designed to reduce or eliminate anticipated impacts resulting from the construction or operation of the proposed Project. They include Best Management Practices (BMPs) such as the spanning of wetlands, use of silt fencing and other erosion-control measures, and using existing corridors where feasible for locating and constructing the transmission line. These standard mitigation measures are included in Appendix I, Standard Mitigation Measures.

5.1 Demographics

5.1.1 Description of Resources

5.1.1.1 Regional Setting

No changes from Corridor/Route revisions.

5.1.1.2 Population

No changes from Corridor/Route revisions.

5.1.1.3 Housing

No changes from Corridor/Route revisions.

5.1.1.4 Income

No changes from Corridor/Route revisions.

5.1.1.5 Employment

No changes from Corridor/Route revisions.

5.1.1.6 Racial and Ethnic Characteristics

No changes from Corridor/Route revisions.

5.1.1.7 Property Valuation and Taxation

No changes from Corridor/Route revisions.

5.1.2 Impacts

No changes from Corridor/Route revisions.

5.1.2.1 Regional Economy

No changes from Corridor/Route revisions.

5.1.2.2 Population

No changes from Corridor/Route revisions.

5.1.2.3 Housing

No changes from Corridor/Route revisions.

5.1.2.4 Employment and Income

No changes from Corridor/Route revisions.

5.1.2.5 Property Values

No changes from Corridor/Route revisions.

5.1.2.6 Property Taxes

Table 5.1-10 summarizes these tax receipts to local governments associated with the 199.4 miles of transmission line. This table reflects an additional $526 in property tax revenue will be generated by the revisions in this amendment (0.5 additional mile of 345-kV transmission line) for a total of $59,850.

Table 5.1-10: Property Tax Revenue Changes to Project Area Counties Associated with the Corridor/Route Revisions

	Corridor/ Route (miles)	Change in Corridor/ Route (miles)	Year 2	Year 2 Change	Year 3	Year 3 Change	Year 4	Year 4 Change	Years 5-45	Years 5-45 Change
Dunn	43.1	43.1	$3,233	$0	$6,465	$0	$9,698	$0	$12,930	$0
McKenzie	72.9	72.3	$5,468	$45	$10,935	$90	$16,403	$135	$21,870	$180
Mercer	18.5	18.5	$1,388	$0	$2,775	$0	$4,163	$0	$5,550	$0
Mountrail	2.8	2.8	$210	$0	$420	$0	$630	$0	$840	$0
Williams	62.2	62.1	$4,665	$7	$9,330	$30	$13,995	$22	$18,660	$30
Project Area Total	199.4	198.9	$14,963	$53	$29,925	$105	$44,888	$158	$59,850	$210

Source: Staff calculations based on North Dakota Title 57, Taxation, n.d.

5.1.2.7 Impacts to Residences

No changes from Corridor/Route revisions.

5.1.3 Mitigation

No changes from Corridor/Route revisions.

5.2 Land Use

5.2.1 Description of Resources

5.2.1.1 Regional Setting

No changes from Corridor/Route revisions.

5.2.1.2 Existing Land Use

No changes due to Corridor/Route revisions.

5.2.1.3 Zoning

The Project requires Conditional Use Permits (CUP) from Billings, Mercer, McKenzie and Williams Counties. The Tande Substation requires zoning changes from agricultural use to industrial use. The Judson Substation received zoning change approval to industrial use from Williams County in 2011 to support the Williston-Tie Project. The proposed Tande Substation received CUP approval in August 2013 and the proposed Judson Substation received CUP approval in October 2013. The McKenzie County CUP was approved in May 2014. The Charlie Creek Laydown Yard was approved by the Billings County Planning and Zoning Board on July 17, 2014. The final approval is expected at the August 5, 2014 Billings County Commission Meeting. Copies of these approvals have been filed to the Commission docket separately.

5.2.1.4 Comprehensive Plans

No changes from Corridor/Route revisions.

5.2.1.5 State and Federal Properties

No changes from Corridor/Route revisions. Figure 5.2-1 has been updated to include the revised Corridor/Route.

5.2.2 Impacts

No changes from Corridor/Route revisions.

NORTH

0 11.5
Miles

Neset
Tande
Judson
Williston
Antelope Valley
Charlie Creek

Williams
Mountrail
Renville
McHenry
Ward
McKenzie
Dunn
McLean
Mercer
Oliver
Golden Valley
Billings

LEGEND

- Project Route July 2014
- Proposed Substation
- Existing Substation
- State Boundary
- County Boundary
- Municipal Areas
- Wildlife Management Areas
- State Park
- Army Corps of Engineers
- National Grassland
- National Park
- National Wildlife Refuge
- BLM Lands
- State School Trust Lands
- Waterfowl Production Area

Burns & McDonnell
SINCE 1898

BASIN ELECTRIC POWER COOPERATIVE
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Figure 5.2-1
Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Federal and State-Owned Lands

Source: North Dakota GIS; Esri; Basin Electric; Burns & McDonnell.

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\\ESPSRV\Data\Projects\Basin\61495_AVS_345\GIS\DataFiles\ArcDocs\PSC - Chapter 5 Figures - Project Route\Figure 5-2-1 Revised July 2014.mxd 7/9/2014

5.2.2.3 Agricultural Land Use Impacts

In total, the Corridor/Route will require approximately 9.4 additional acres of ROW due to Corridor/Route revisions for a total of approximately 3,619.7 acres of ROW. These lands will be restricted from various types of future development but could continue to be used for agricultural uses. Figure 5.2-1 shows the acreages of each land use type within the Corridor/Route.

Only two new substations, the proposed Judson 345-kV Substation and the proposed Tande 345-kV Substation, will be constructed as part of the Project. This will result in the permanent conversion of these areas from agricultural land to utility land use.

Table 5.2-1: Acres of Land Affected within Corridor/Route

Land Use	Project Corridor/Route	Change due to Corridor/Route Revisions
Grassland (acres)	1,653.8	-5.6
Cultivated cropland (acres)	1,402.9	13.9
Pasture/hay (acres)	154.8	1.2
Developed lands (acres)	117.2	-1.4
Other lands(acres)*	290.9	1.3
Total (acres)	**3,619.6**	**9.3**

*Includes woodland, shrub/scrub, wetlands, barren lands, open water
Acres were calculated using available National Land Cover Dataset (NLCD) information

5.2.2.4 Zoning and Land Use Plans

No changes from Corridor/Route revisions.

5.2.2.5 State and Federal Properties

The proposed Corridor/Route crosses lands owned by Federal and state agencies. The following summarizes the federally and state-owned lands crossed by the Corridor/Route and the potential concerns or conflicts between agency management and the proposed Project.

USFS – The Project revisions will incorporate into the Project ROW approximately 0.2 fewer acre of the Little Missouri National Grasslands (LMNG) unit of the Dakota Prairie National Grasslands, for a total of 152.7 acres.

These 152.7 ROW acres consist of 1.5 fewer acres of grassland (total of 99.4 acres), 0.8 additional acre of woodland (total of 40.8 acres), 0.3 additional acre of shrub/scrub (total of 12.5 acres), 0.1 fewer acre of developed land (total of 16.8 acres), 0.2 additional acre of pasture/hay land (total of 3.2 acres), the same

acreage of cultivated crops (total of 0.5 acre), and the same acreage of barren land (total of 0.8 acre). Direct impacts will include the acquisition of ROW and potential clearing of 19.4 acres of woodland area, which is 0.8 fewer acre than was identified in the July 2013 amendment. A Special Use Permit to cross public land will be obtained from the USFS for the Corridor/Route.

USACE and NDGFD - The Corridor/Route will cross approximately 57.9 acres of USACE-owned property, which is within the Lewis and Clark Wildlife Management Area (WMA) managed by the NDGFD. ROW acres impacted include an additional acre of cultivated crops (total of 18.5 acres), approximately 0.2 fewer acre of wetland (total of 15.4 acres), 11.8 acres of grassland, approximately 0.3 additional acre of woodland (total of 6.3 acres), 4.1 acres of pasture/hay, approximately 0.1 fewer acre of open water (total of 1.4 acres), and 0.5 acre of shrub/scrub. Direct impacts will include the acquisition of the ROW and potential clearing of 6.3 acres of woodland that may result in loss of wildlife habitat. Some wildlife habitat may be removed or altered within the Corridor/Route as a result of the proposed Project. An easement or permit to cross public land will be acquired from the USACE for the Project. Based on coordination with USACE, the Corridor/Route was sited along U.S. Highway 85 adjacent to an existing transmission line through the Lewis and Clark WMA. This segment of the Corridor/Route was originally sited further west, but based on the input provide by USACE and their management plans for the land to the west of U.S. Highway 85, USACE preferred to have the Corridor/Route aligned closer to the existing highway and transmission line infrastructure.

North Dakota School Trust Lands – Within the proposed Project area, School Trust Land parcels consist of approximately 1,363 acres. These lands are used to generate for schools revenue from grazing and agricultural uses and the extraction of mineral resources such as aggregate and oil and gas production. The Corridor/Route will cross 19 School Trust Land parcels. Corridor/Route revisions will result in 2.2 fewer acres of School Trust Lands within the ROW (total of 116.7 acres). Of the 116.7 ROW acres, approximately 1.4 fewer acres are grassland (total of 99.7 acres), approximately 0.9 fewer acre is cultivated crops (total of 8.2 acres), 3.9 acres are wetlands, approximately 0.1 additional acre is woodland (total 2.5 acres), 0.9 acre is shrub/scrub, 1.0 acre is developed, and 0.4 acre is barren land.

5.2.3 Mitigation

No changes from Corridor/Route revisions.

5.3 Infrastructure/Transportation

5.3.1 Description of Resources

5.3.1.1 Regional Setting

No changes from Corridor/Route revisions. Figure 5.3-1 has been updated to include the revised Corridor/Route.

5.3.1.2 Utility Infrastructure

5.3.1.2.1 Pipelines

No changes from Corridor/Route revisions.

5.3.1.2.2 Electrical Transmission Lines

No changes from Corridor/Route revisions.

5.3.1.2.3 Electrical Substations

No changes from Corridor/Route revisions.

5.3.1.2.4 Power Supply/Generation

No changes from Corridor/Route revisions.

5.3.1.2.5 Reliability Issues

No changes from Corridor/Route revisions.

5.3.1.2.6 AM and FM Towers

No changes from Corridor/Route revisions.

5.3.1.2.7 Water Supply and Treatment

No changes from Corridor/Route revisions.

5.3.1.3 Transportation Infrastructure

5.3.1.3.1 Roadways

No changes from Corridor/Route revisions.

5.3.1.3.2 Rail

No changes from Corridor/Route revisions.

NORTH

0 11.5

Miles

NICKS LANDING

HOUGHT AIRSTRIP

TIOGA MUNI

Neset

Tande

RING ROCK RANCH

MOEN

Williams

WRIGHT FLD

SLOULIN FLD INTL

Judson

Williston

LINDVIG AIRSTRIP

GAJEWSKI FLD

WATFORD CITY MUNI

CHITWOOD AIRSTRIP

McKenzie

STANLEY MUNI

Mountrail

Renville

SKINNINGSRUD

MINOT AFB

BERG STRIP

PIETSCHTREE AIRSTRIP

MINOT INTL

BEHRENS AIRSTRIP

FLYING S RANCH

Ward

TRULSON FIELD

NEW TOWN MUNI

PARSHALL-HANKINS

McLean

FISCHER PVT

GARRISON MUNI

SEMCHENKO

FREDERICKS RANCH

Dunn

FREI PRIVATE

GARRISON DAM RECREATIONAL AIRPARK

WEYDAHL FIELD

Charlie Creek

PETE'S PORT

Antelope Valley

BRECHT STRIP

Mercer

MERCER COUNTY RGNL

BEULAH

SUNSET STRIP

Golden Valley

Billings

Oliver

CANADA

Montana

North Dakota

South Dakota

LEGEND

- Project Route July 2014
- Proposed Substation
- Existing Substation
- State Boundary
- County Boundary
- Railroad
- Pipeline
- Public Airport
- Private Airport
- Gas Plants
- Scenic Byway

Existing Transmission Lines

- 345-kV
- 230-kV and Below

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BASIN ELECTRIC POWER COOPERATIVE

A Touchstone Energy® Cooperative

Figure 5.3-1
Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Transportation and Utilities

Source: North Dakota GIS; Esri; Basin Electric; Burns & McDonnell.

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5.3.1.3.3 Airports/Airstrips

No changes from Corridor/Route revisions.

5.3.1.3.4 Proposed Roadway Improvements

No changes from Corridor/Route revisions.

5.3.1.3.5 NDDOT District 5

No changes from Corridor/Route revisions.

5.3.1.3.6 NDDOT District 7

No changes from Corridor/Route revisions.

5.3.1.3.7 Scenic Highways

No changes from Corridor/Route revisions.

5.3.2 Impacts

As discussed in Section 1.0, Introduction, northwestern North Dakota is experiencing a rapid increase in development as a result of activities associated with the extraction of oil from the Bakken shale. The level of current and future development will require increases in transmission capacity, pipelines, rail, roads, gas refineries, and other infrastructure needs. This section discusses potential impacts to current utility and transportation infrastructure resulting from construction and operation of the proposed Project.

5.3.2.1 Utility Infrastructure

No changes from Corridor/Route revisions.

5.3.2.2 Transportation Infrastructure

Temporary impacts to local roads and highways may occur during the construction phase of the proposed Project. The Corridor/Route revisions would result in one additional road crossing from the Corridor/Route proposed in the July 2013 amendment, for a total of 106 road crossings.

5.3.2.2.1 Railroads

No changes from Corridor/Route revisions.

5.3.2.2.2 Airports and Airstrips

No changes from Corridor/Route revisions.

5.3.2.3 Substation Impacts

No changes from Corridor/Route revisions.

5.3.3 Mitigation

No changes from Corridor/Route revisions.

5.4 Public Health and Safety

5.4.1 Description of Resources

No changes from Corridor/Route revisions.

5.4.2 Impacts

No changes from Corridor/Route revisions.

5.4.2.1 Construction Impacts

No changes from Corridor/Route revisions.

5.4.2.2 Operation Impacts

No changes from Corridor/Route revisions.

5.4.2.2.1 Electro-Magnetic Fields

No changes from Corridor/Route revisions.

5.4.2.2.2 Radio and Television Interference

No changes from Corridor/Route revisions.

5.4.2.2.3 Implantable Medical Devices

No changes from Corridor/Route revisions.

5.4.2.2.4 Stray voltage

No changes from Corridor/Route revisions.

5.4.2.2.5 Direct Contact with Lines and Structures

No changes from Corridor/Route revisions.

5.4.2.2.6 Fallen lines

No changes from Corridor/Route revisions.

5.4.2.3 Proposed Substations

No changes from Corridor/Route revisions.

5.4.3 Mitigation

No changes from Corridor/Route revisions.

5.5 Air Quality

5.5.1 Description of Resources

5.5.1.1 Regional Setting

No changes from Corridor/Route revisions.

5.5.1.2 NAAQS/Attainment

No changes from Corridor/Route revisions.

5.5.1.3 Greenhouse Gases

No changes from Corridor/Route revisions.

5.5.1.4 Regional Haze

No changes from Corridor/Route revisions.

5.5.2 Impacts

As a result of the Corridor/Route revisions, approximately 1.2 additional acres of forested area may need to be removed (total of 116 acres). Assuming each affected acre contains the average carbon content for the North Central Region, the net carbon footprint associated with the removal of forested area will be an estimated 8,419 metric tons of carbon dioxide equivalent (CO_2e), which is approximately an additional 8.8 metric tons of CO_2e compared to the July 2013 amendment. Given this estimate, the impact of vegetation removal on GHG emissions will be low.

5.5.3 Mitigation

No changes from Corridor/Route revisions.

5.6 Noise

5.6.1 Description of Resources

No changes from Corridor/Route revisions.

5.6.2 Impacts

No changes from Corridor/Route revisions.

5.6.2.1 Proposed Substations

No changes from Corridor/Route revisions.

5.6.3 Mitigation

No changes from Corridor/Route revisions.

5.7 Visual Impacts

5.7.1 Description of Resources

5.7.1.1 Regional Setting

No changes from Corridor/Route revisions.

5.7.1.2 Natural Features

No changes from Corridor/Route revisions.

5.7.1.3 Built Environment

No changes from Corridor/Route revisions.

5.7.2 Impacts

The Corridor/Route revisions will add one additional road crossing, for a total of 106 road crossings along the length of the Corridor/Route. No other changes from Corridor/Route revisions.

5.7.2.1 Proposed Substations

No changes from Corridor/Route revisions.

5.7.3 Mitigation

No changes from Corridor/Route revisions.

5.8 Cultural Resources

5.8.1 Description of Resources

No changes from Corridor/Route revisions.

5.8.1.1 Project Area of Potential Effects

No changes from Corridor/Route revisions.

5.8.1.2 Class I File Search

No changes from Corridor/Route revisions.

5.8.1.3 Class III Inventory

Metcalf Archaeological Consultants, Inc. (MAC) conducted additional Class III inventory in association with the Corridor/Route revisions. Four additional sites were identified. Three of these sites were avoided. The remaining site was an isolated find within the ROW and would not be avoided. *Isolated finds* are defined as " [a] location with five or fewer artifacts and identified by the archeologist(s) as representing an area of very limited past activity." No other changes to this section were identified.

5.8.1.4 Visual Assessment

No changes from Corridor/Route revisions.

5.8.1.5 Traditional Cultural Properties

No changes from Corridor/Route revisions.

5.8.1.6 Programmatic Agreement

The Project consists of a large corridor where, in some cases, access to private property is necessary to identify historic properties. Therefore, Western Area Power Administration (Western), the lead agency for National Historic Preservation Act Section 106 compliance (Section 106), determined it appropriate to phase the identification and evaluation of historic properties, and the application of the criteria of adverse effects in accordance with 36 CFR 800.4(b)(2) and 36 CFR 800.5(a)(3), respectively. Because Section 106 review will be phased, identifying historic properties and assessing the Project's effect to them cannot be completed by Western prior to Project approval. Accordingly, pursuant to 36 CFR 800.14(b)(1)(ii), Western, RUS, and USFS have executed a Programmatic Agreement (PA) with the North Dakota SHPO and Advisory Council on Historic Properties (ACHP). This PA establishes, prior to initiating construction of each Project phase, how affected historic properties will be identified and treated prior to and during construction. In this manner, consultation regarding the identification of historic properties and the mitigation of adverse effects will continue until all Project construction has been completed.

Pursuant to 36 CFR 800.6(a)(1)(i)(C), RUS invited the ACHP to participate in consultation. ACHP provided a formal affirmative response on May 6, 2014, to Western as the lead agency for Section 106

review. The PA, as executed by the required signatories as of July 2, 2014, is identified in Appendix L of this amendment and has been provided to the Commission.

5.8.1.7 Substation Sites

No changes from Corridor/Route revisions.

5.8.2 Impacts

No changes from Corridor/Route revisions.

5.8.3 Mitigation

No changes from Corridor/Route revisions.

5.9 Recreational Resources

5.9.1 Description of Resources

5.9.1.1 Regional Setting

No changes from Corridor/Route revisions.

5.9.1.2 Facilities

No changes from Corridor/Route revisions. Figure 5.9-1 has been updated to include the revised Corridor/Route.

5.9.1.3 Hunting and Fishing

No changes from Corridor/Route revisions.

5.9.2 Impacts

The Corridor/Route will cross approximately 2.4 fewer acres of state- or federally-owned property, which includes USFS land as part of the LMNG, for a total of 327 acres. No other changes to this section were identified.

NORTH

0 11.5
Miles

Neset
Tande
Judson
Williston
Charlie Creek
Antelope Valley

Williams
Mountrail
Renville
McHenry
Ward
McKenzie
Dunn
McLean
Golden Valley
Billings
Mercer
Oliver

85 40 2 52 28 1804 8 83 1806 23 200 73 68 16 22 37 53 49 31 48

LEGEND

- Project Route July 2014
- Proposed Substation
- Existing Substation
- State Boundary
- County Boundary
- Municipal Areas
- Wildlife Management Areas
- Scenic Byway
- State Park
- Army Corps of Engineers
- National Grassland
- National Park
- National Wildlife Refuge
- BLM Lands

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BASIN ELECTRIC POWER COOPERATIVE
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Figure 5.9-1
Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Recreation Areas

Source: North Dakota GIS; Esri; Basin Electric; Burns & McDonnell.

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5.9.2.1 Proposed Substations

No changes from Corridor/Route revisions.

5.9.3 Mitigation

No changes from Corridor/Route revisions.

5.10 Soils and Farmlands

5.10.1 Description of Resources

5.10.1.1 Soils

No changes from Corridor/Route revisions.

5.10.1.2 Farmland

No changes from Corridor/Route revisions.

5.10.1.3 Prime Farmland

No changes from Corridor/Route revisions. Figure 5.10-1 has been updated to include the revised Corridor/Route.

5.10.2 Impacts

No changes from Corridor/Route revisions.

5.10.2.1 Soils

Approximately 9.4 additional acres of surface soil will be incorporated into the Corridor/Route for a total of 3,619.7 acres, although the acreage that will actually be disturbed will be far less. Permanent impacts to soils will include the disturbance of approximately 0.3 fewer acre (1.0 acre total) of soil where transmission structures (1,170 total) will be placed. As much as approximately 116.0 acres of woodland (an additional 1.2 acres) occur within the Corridor/Route, and the clearing of trees will disturb the soil within these acres and expose it to erosional forces. No other changes to this section were identified.

NORTH

0 11.5
Miles

Neset
Tande
Judson
Williston
Antelope Valley
Charlie Creek

Williams
Mountrail
Renville
McHenry
Ward
McKenzie
Dunn
McLean
Mercer
Oliver
Golden Valley
Billings

85 40 52 2 28 1804 8 83 1806 23 200 73 53 37 68 16 22 49 31 48

CANADA
Montana
North Dakota
South Dakota

LEGEND

- Project Route July 2014
- Proposed Substation
- Existing Substation
- State Boundary
- County Boundary
- Prime Farmland
- Farmland of Statewide Importance
- Prime Farmland if Drained
- Prime Farmland if Irrigated

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BASIN ELECTRIC POWER COOPERATIVE
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Figure 5.10-1
Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Prime and Important Farmland

Source: North Dakota GIS; Esri; Basin Electric; Burns & McDonnell.

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5.10.2.4 Farmland

Approximately 13.9 additional acres of cultivated cropland will be incorporated into the Corridor/Route revisions, for a total of project of 1,402.9 acres. It is likely that impacts will not occur across the entire 1,402.9 acres because most impacts will be temporary and occur during construction. Permanent impacts, requiring the removal of cropland from production, will occur only at the structure locations. The remaining acreage within the ROW will be allowed to return to cropland upon completion of construction. Approximately 4.4 fewer combined acres of grassland, pasture, or hay land occur within the Corridor/Route, for a total of 1,808.6 acres. No other changes to this section were identified.

5.10.2.5 Prime Farmland

The Corridor/Route revisions will result in approximately 0.3 fewer acre of permanent loss of prime farmland, for a Project total of approximately 1.0 acre. Table 5.10-4 summarizes the overall Project-related impacts to farmland soils. No other changes to this section were identified.

Table 5.10-4: Acres of Prime Farmland within Corridor/Route

Farmland Classification	Corridor/Route	Change due to Corridor/Route Revisions
Not prime farmland (acres)	2,103.6	13.8
All areas are prime farmland (acres)	81.9	0.4
Farmland of statewide importance (acres)	1,372.1	-4.9
Prime farmland if drained (acres)	4.3	0
Prime farmland if irrigated (acres)	57.8	0
Total (acres)	**3,619.7**	**18.4**

For construction of the proposed Judson Substation, approximately 4.4 fewer acres of farmland of statewide importance will be permanently taken out of production (total of 7.6 acres) than previously estimated. The Tande Substation is not located in prime farmland.

5.10.3 Mitigation

No changes from Corridor/Route revisions.

5.11 Geology and Landforms

5.11.1 Description of Resources

5.11.1.1 Regional Setting

No changes from Corridor/Route revisions.

5.11.1.2 Terrain

No changes from Corridor/Route revisions.

5.11.1.3 General Geology

No changes from Corridor/Route revisions. Figure 5.11-1 has been updated to include the revised Corridor/Route.

5.11.1.4 Oil Shale

No changes from Corridor/Route revisions.

5.11.1.5 Mineral Resources

No changes from Corridor/Route revisions. Figure 5.11-4 has been updated to include the revised Corridor/Route.

5.11.1.6 Landslides

No changes from Corridor/Route revisions. Figure 5.11-5 has been updated to include the revised Corridor/Route.

5.11.2 Impacts

No changes from Corridor/Route revisions.

5.11.3 Mitigation

No changes from Corridor/Route revisions.

5.12 Water Resources

5.12.1 Description of Resources

5.12.1.1 Regional Setting

No changes from Corridor/Route revisions.

NORTH

0 11.5

Miles

Neset

Tande

Judson

Williston

Charlie Creek

Antelope Valley

Glaciated Dark Brown Prairie

Northern Dark Brown Prairie

Northern Missouri Coteau

Glacial Lake Deltas

Glacial Lake Basins

Renville

Northern Black Prairie

Williams

Mountrail

McHenry

River Breaks

Ward

Drift Plains

Collapsed Glacial Outwash

McKenzie

Missouri Plateau

Missouri Coteau

McLean

Collapsed Glacial Outwash

Dunn

Little Missouri Badlands

Golden Valley

Billings

Mercer

Missouri Plateau

Oliver

River Breaks

River Breaks

CANADA

Montana

North Dakota

South Dakota

LEGEND

- Project Route July 2014
- Proposed Substation
- Existing Substation
- State Boundary
- County Boundary
- MissouriRiver/Lake Sakakawea

Ecoregions

- Missouri Coteau
- Collapsed Glacial Outwash
- Northern Missouri Coteau
- Glaciated Dark Brown Prairie
- Missouri Plateau
- Little Missouri Badlands
- River Breaks
- Glacial Lake Basins
- Glacial Lake Deltas
- Northern Black Prairie
- Northern Dark Brown Prairie
- Drift Plains

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BASIN ELECTRIC POWER COOPERATIVE
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Figure 5.11-1
Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Ecoregions within the Study Area

Source: North Dakota GIS; Esri; Basin Electric; Burns & McDonnell.

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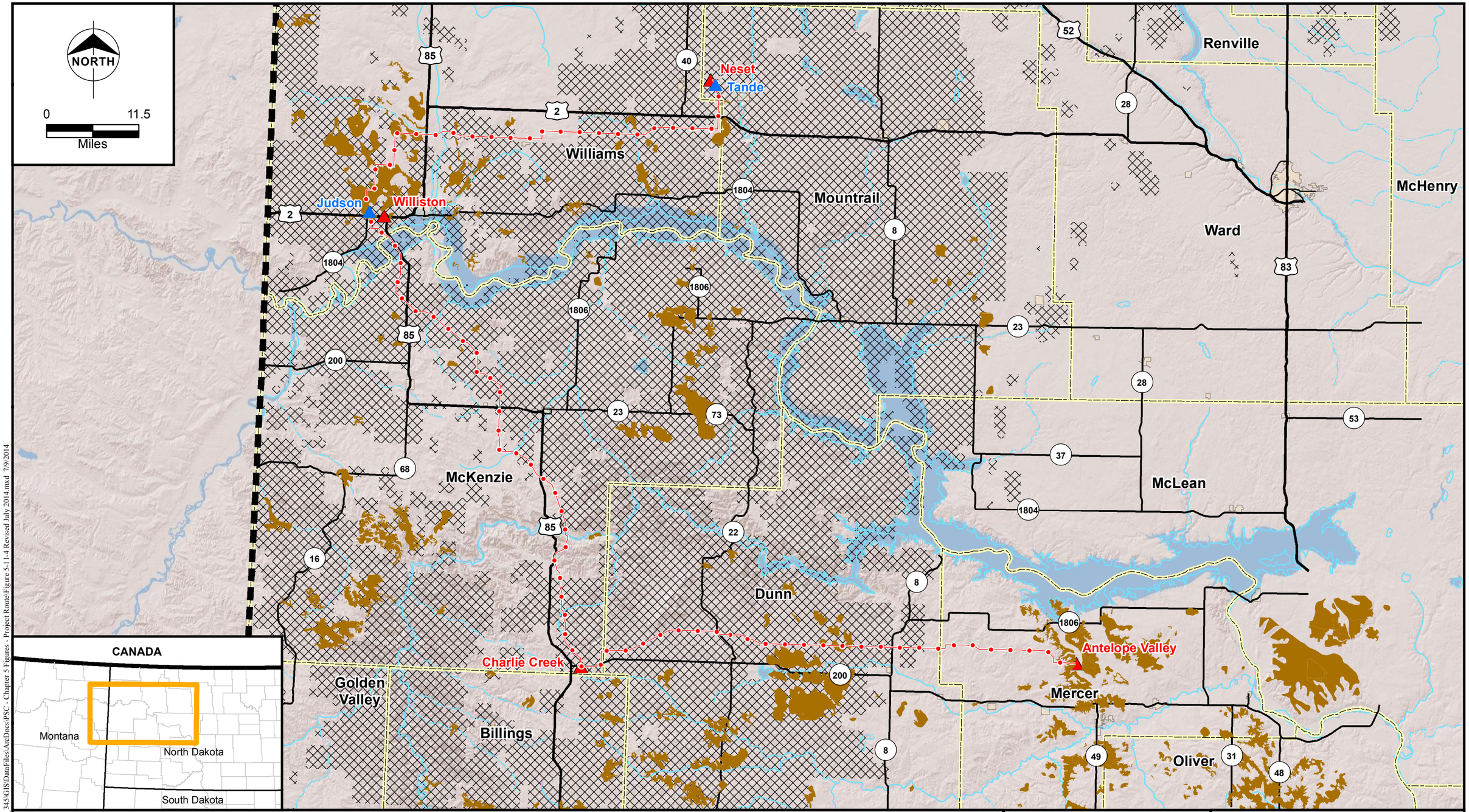

LEGEND

- Project Route July 2014
- Proposed Substation
- Existing Substation
- Coal Fields
- State Boundary
- Oil Fields
- County Boundary

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BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

Figure 5.11-4
Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Oilfields and Coal Deposits

Source: North Dakota GIS; Esri; Basin Electric; Burns & McDonnell.

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NORTH

0 11.5
Miles

Neset
Tande
Judson
Williston
Antelope Valley
Charlie Creek

Williams
Mountrail
Renville
McHenry
Ward
McKenzie
Dunn
McLean
Golden Valley
Billings
Mercer
Oliver

85
40
52
2
28
1804
8
83
1806
23
200
73
53
37
68
22
16
49
31
48

CANADA
Montana
North Dakota
South Dakota

LEGEND

- Project Route July 2014
- Proposed Substation
- Existing Substation
- State Boundary
- County Boundary
- Landslide Deposits

Burns & McDonnell SINCE 1898

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

Figure 5.11-5
Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Landslide Areas

Source: North Dakota GIS; Esri; Basin Electric; Burns & McDonnell.

Revised July 09, 2014

\\ESPSRV\Data\Projects\Basin\61495_AVS_345\GIS\DataFiles\ArcDocs\PSC - Chapter 5 Figures - Project Route\Figure 5-11-5 Revised July 2014.mxd 7/9/2014

5.12.1.2 Surface Water

No changes from Corridor/Route revisions.

5.12.1.3 Floodplains

No changes from Corridor/Route revisions.

5.12.1.4 Groundwater

No changes from Corridor/Route revisions.

5.12.1.5 Hydrogeology

5.12.1.5.1 Formations - General

No changes from Corridor/Route revisions.

5.12.1.6 Missouri River Basin Water Supply and Water Use Information

No changes from Corridor/Route revisions.

5.12.1.7 Water Supply Development Initiatives within the Project Area

No changes from Corridor/Route revisions.

5.12.2 Impacts

The Corridor/Route revisions contain 1.0 additional acre (16.6 acres total) of FEMA-designated floodplain along the length of the Corridor/Route. The Corridor/Route will cross one additional perennial waterway, for a total of 13 perennial waterway crossings (including the Little Missouri River and Missouri River) and numerous intermittent streams. No other changes to this section were identified.

5.12.3 Mitigation

No changes from Corridor/Route revisions.

5.13 Biological Resources

5.13.1 Description of Resources

5.13.1.1 Regional Setting

No changes from Corridor/Route revisions.

5.13.1.2 Vegetation

No changes from Corridor/Route revisions.

5.13.1.3 Wildlife

No changes from Corridor/Route revisions.

5.13.1.3.1 Big Game

No changes from Corridor/Route revisions.

5.13.1.3.2 Mammals

No changes from Corridor/Route revisions.

5.13.1.3.3 Migratory and Resident Birds

No changes from Corridor/Route revisions.

5.13.1.3.4 Raptors

No changes from Corridor/Route revisions.

5.13.1.3.5 Gamebirds, Waterfowl, and Shorebirds

No changes from Corridor/Route revisions.

5.13.1.3.6 Reptiles and Amphibians

No changes from Corridor/Route revisions.

5.13.1.3.7 Native and Introduced Gamefish Species

No changes from Corridor/Route revisions.

5.13.1.4 Wetlands

No changes from Corridor/Route revisions. Figure 5.13-5 has been updated to include the revised Corridor/Route.

5.13.1.5 Special Status Species

5.13.1.5.1 Endangered Species Act Species and Critical Habitat

No changes from Corridor/Route revisions. Figure 5.13-6 has been updated to include the revised Corridor/Route.

5.13.1.5.2 USFS Sensitive and Management Indicator Species

No changes from Corridor/Route revisions.

NORTH

0 11.5

Miles

Neset
Tande
Tioga
White Earth
Ray
Epping
Spring Brook
Williams
Judson
Williston
Williston
Ross
Stanley
Palermo
Donnybrook
Renville
Carpio
Berthold
Des Lacs
Burlington
Minot
McHenry
Mountrail
Ward
New Town
Plaza
Parshall
Makoti
Ryder
Douglas
Max
Alexander
Arnegard
Watford City
McKenzie
McLean
Garrison
Pick City
Riverdale
Dunn
Antelope Valley
Charlie Creek
Killdeer
Dunn Center
Halliday
Golden Valley
Billings
Mercer
Dodge
Golden Valley
Zap
Hazen
Beulah
Stanton
Oliver

LEGEND

- Project Route July 2014
- Proposed Substation
- Existing Substation
- State Boundary
- County Boundary
- Municipal Areas
- NWI Wetlands

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BASIN ELECTRIC POWER COOPERATIVE
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Figure 5.13-5
Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
NWI Wetlands

Source: North Dakota GIS; Esri; Basin Electric; Burns & McDonnell.

Revised July 09, 2014

\\ESPSRV\Data\Projects\Basin\61495_AVS_345\GIS\DataFiles\ArcDocs\PSC - Chapter 5 Figures - Project Route\Figure 5-13-5 Revised July 2014.mxd 7/9/2014

NORTH

0 11

Miles

Neset

Tande

Judson

Williston

Tioga

White Earth

Ray

Epping

Spring Brook

Williams

Ross

Stanley

Palermo

Donnybrook

Renville

Carpio

Berthold

Des Lacs

Burlington

Minot

McHenry

Mountrail

Ward

Lewis and Clark State Park

Fort Union Trading Post

New Town

Plaza

Parshall

Makoti

Ryder

Douglas

Max

Alexander

Arnegard

Watford City

McKenzie

Theodore Roosevelt National Park

Little Missouri State Park

Garrison

Fort Stevenson State Park

Pick City

Riverdale

Dunn

Charlie Creek

Killdeer

Dunn Center

Halliday

Antelope Valley

Mercer

Dodge

Golden Valley Zap

Beulah

Hazen

Knife River Indian Villages NH

Stanton

Golden Valley

Billings

Oliver

McLean

North Dakota

LEGEND

- Project Route July 2014
- Substation
- Proposed Substation
- State Boundary
- County Boundary
- Municipal Areas
- National or State Park
- National Wildlife Refuge
- National Grassland
- Piping Plover Critical Habitat
- Interior Least Tern Habitat
- Pallid Sturgeon Habitat
- 75% (60 mi Whooping Crane Corridor)
- 80% (80 mi Whooping Crane Corridor)
- 85% (100 mi Whooping Crane Corridor)
- 90% (130 mi Whooping Crane Corridor)
- 95% (170 mi Whooping Crane Corridor)

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BASIN ELECTRIC POWER COOPERATIVE
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Figure 5.13-6
Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Important Threatened and Endangered Species Habitat

Source: North Dakota GIS; USFWS Map; Esri; Basin Electric; Burns & McDonnell.

Revised July 09, 2014

\\ESPSRV\Data\Projects\Basin\61495_AVS_345\GIS\DataFiles\ArcDocs\PSC - Chapter 5 Figures - Project Route\Figure 5-13-6 Revised July 2014.mxd 7/9/2014

5.13.1.5.3 North Dakota Species of Conservation Priority

No changes from Corridor/Route revisions.

5.13.2 Impacts

No changes from Corridor/Route revisions.

5.13.2.1 Vegetation

Table 5.13-3 presents the potential number of acres impacted within the Project Corridor/Route for each vegetation type for the entire Corridor/Route length.

Table 5.13-3: Vegetation Types within Corridor/Route

Vegetation Type*	Project Corridor/Route Acres	Change due to Corridor/Route Revisions
Woodland	116.0	1.2
Grassland	1,653.8	-5.6
Pasture/Hay Land	154.8	1.2
Cultivated Cropland	1,402.9	13.9

*Source: National Land Cover Dataset

Permanent vegetative impacts (not including forested areas) associated with the Project will primarily be confined to the removal of vegetation at each structure foundation location, resulting in a permanent loss of vegetation of approximately 0.3 fewer acre (1.0 acre total) over the length of the Corridor/Route. No other changes to this section were identified.

5.13.2.2 Wetlands

Table 5.13-4 displays the changes in potential wetland types and acreages resulting from the Corridor/Route revisions.

Table 5.13-4: NWI Wetland Acres within Corridor/Route

Wetland Type	Wetland Acres in Corridor/Route	Change due to Corridor/Route Revisions
PEM	11.6	0.3
PSS	0.4	0
Lake	11.2	0.1
Pond	0.8	0.1
Riverine	2.5	0
Total	**26.5**	**0.3**

PEM = palustrine emergent, PSS = palustrine scrub/shrub
Source: NWI Geographic Information System (GIS) data layer

No other changes to this section were identified.

5.13.2.3 Wildlife

5.13.2.3.1 Big Game

No changes from Corridor/Route revisions.

5.13.2.3.2 Nongame Species

No changes from Corridor/Route revisions.

5.13.2.3.3 Birds

No changes from Corridor/Route revisions.

5.13.2.3.4 Aquatic Species

No changes from Corridor/Route revisions.

5.13.2.3.5 Proposed Substations

No changes from Corridor/Route revisions.

5.13.2.4 Special Status Species

Preparation of the Biological Assessment (BA) and consultation with the United States Fish and Wildlife Service (USFWS) determined the proposed Corridor/Route would not likely adversely impact piping plover critical habitat. The USFWS determination has been submitted to the Commission under separate cover.

The Project area is within the whooping crane migration corridor. Table 5.13-5 displays the change in length in miles due to Corridor/Route revisions that the Corridor/Route will occur within each whooping crane percent occurrence migration corridor.

Table 5.13-5: Whooping Crane Percent Migration Corridor

	Length Through Whooping Crane Percent Migration Corridors (miles)					
	75%	**80%**	**85%**	**90%**	**95%**	**Total**
Project Corridor/Route	54.4	53.8	57.1	34.1	0	**199.4**
Change due to Corridor/Route Revisions	0	0.5	0	0	0	**0.5**

Source: USFWS Whooping Crane Percent Migration Corridor, as depicted in Figure 5.13-6

The Corridor/Route will be located within 1 mile of 4.4 fewer acres of NWI wetlands for the length of the Corridor/Route, for a total of 3,992.0 acres. Preparation of the BA and consultation with the USFWS determined the proposed Corridor/Route would not likely adversely impact whooping cranes.

Table 5.13-6 presented the Project considerations for all identified special status species. No changes to this table were identified.

5.13.2.4.1 Proposed Substations

No special status species or habitat for these species is known to occur within the site boundaries for any of the substations. Impacts on special status species resulting from construction and operation at these sites will not occur.

5.13.3 Mitigation

No changes from Corridor/Route revisions.

5.14 Summary of Corridor/Route Impacts

The construction and operation of Basin Electric's proposed Project could have a potential impact on environmental and human resources located in northwestern North Dakota. A summary of changes resulting from the Corridor/Route revisions is provided in Table 5.14-1.

Table 5.14-1: Summary of Project Impacts and Mitigation

Resource	Corridor/Route		Substations		Mitigation
	Permanent Impacts	Temporary Impacts	Permanent Impacts	Temporary Impacts	
Socioeconomics	An additional $210 in property tax revenues for a total of $59,850 annually to Project counties.	No change.	No change.	No change.	No change.
Land Use	An additional 9.4 acres of ROW (total of 3,619.7 acres) will be required and will be restricted from some types of future development. Approximately 0.3 fewer acre of soil (1 acre total of 0.0009-acre per structure) will be permanently removed. Corridor/Route will include approximately 0.2 fewer acre of LMNG (152.7 acres total), 57.9 acres of USACE property, and approximately 2.2 fewer acres of school trust lands (116.7 acres total).	No change.	No change.	No change.	No change.
Infrastructure-Transportation	No change.	No change.	On additional road crossing.	No change.	No change.
Public Health and Safety	No change.	No change.	No change.	No change.	No change.
Air Quality	No change.	No change.	No change.	No change.	No change.
Noise	No change.	No change.	No change..	No change.	No change.
Visual	No change.	No change.	No change.	No change.	No change.
Cultural	No change.	No change.	No change.	No change.	No change.
Recreation	Approximately 2.4 fewer acres of state or federal land potentially open to dispersed recreational activities such as hunting will be located within the Corridor/Route (total of approximately 327 acres).	No change.	No change.	No change.	No change.

Soils and Farmland	Approximately 0.3 fewer acre of soil (1 acre total; 0.0009-acre per structure) will be permanently removed. No additional changes.	No change.	No change.	No change.	No change.
Geology and Landforms	No change.	No change.	No change.	No change.	No change.
Water	No effects anticipated. One additional perennial waterway (13 total) and 0.1 additional acre (16.6 acres total) of FEMA floodplain would be crossed, but all would be spanned.	Potential sedimentation and runoff caused by construction.	No change.	No change.	No change.
Biological Resources	Vegetation: Approximately 1.2 additional acres of woodland (total of 116.0 acres) potentially removed within Corridor/Route, depending on slope. Approximately 0.3 fewer acre of vegetation permanently removed within Corridor/Route at structure locations (approximately one acre total). Wildlife: Loss of forested habitat due to removal of additional 1.2 acres (total of 116.0 acres) of woodland within the Corridor/Route. Wetlands: Approximately 0.3 additional acre (total of 26.5 acres) of wetland within Corridor/Route. No other changes.	No change.	No change.	No change.	No change.

6.0 PUBLIC AND AGENCY COORDINATION

No changes from Corridor/Route revisions.

7.0 IDENTIFICATION OF ADDITIONAL REQUIRED PERMITS/APPROVALS

7.1 Permits/Approvals

No changes from Corridor/Route revisions.

8.0 FACTORS CONSIDERED

North Dakota Century Code (NDCC) Section 49-22-09 of the North Dakota Energy Conversion and Transmission Facility Siting Act lists 11 factors to guide the Commission in evaluation of sites, corridors, and routes. The following sections address these factors where applicable to the Project Corridor/Route.

8.1 Available Research and Investigations Relating to the Effects of the Location, Construction, and Operation of the Proposed Facility on Public Health and Welfare, Natural Resources, and the Environment

No changes from Corridor/Route revisions.

8.2 The Effects of New Energy Conversion and Transmission Technologies and Systems Designed to Minimize Adverse Environmental Effects

No changes from Corridor/Route revisions.

8.3 The Potential for Beneficial Uses of Waste Energy From a Proposed Energy Conversion Facility

No changes from Corridor/Route revisions.

8.4 Adverse Direct and Indirect Environmental Effects Which Cannot Be Avoided Should the Proposed Site or Route be Designated

Unavoidable impacts are those that will occur after implementation of mitigation measures. In summary, construction and operation of the proposed Project will convert approximately 12 fewer acres of land from agricultural uses to utility uses than the July 2013 amendment (total of 25 acres). No other changes to this section where identified.

8.5 Alternatives to the Proposed Site, Corridor, or Route Which are Developed During the Hearing Process and Which Minimize Adverse Effects

No changes from Corridor/Route revisions.

8.6 Irreversible and Irretrievable Commitments of Natural Resources Should the Proposed Site, Corridor, or Route Be Designated

No changes from Corridor/Route revisions.

8.7 The Direct and Indirect Economic Impacts of the Proposed Facility

No changes from Corridor/Route revisions.

8.8 Existing Plans of the State, Local Government, and Private Entities for Other Developments at or in the Vicinity of the Proposed Site, Corridor, or Route

No changes from Corridor/Route revisions.

8.9 The Effect of the Proposed Site or Route on Existing Scenic Areas, Historic Sites and Structures, and Paleontological or Archaeological Sites

Section 5.8.2 discusses the potential effects of the Project on cultural resources. One hundred percent coverage Class III surveys will occur on the Corridor/Route. A Class III survey of the proposed Judson and Tande Substation sites did not identify any cultural resources present. Additional coordination with SHPO will be conducted regarding adverse effects to NRHP-eligible cultural resources within the Corridor/Route and the need for additional cultural resources surveys for the Project prior to construction.

8.10 The Effect of the Proposed Site or Route on Areas Which are Unique Because of Biological Wealth or Because They are Habitats for Rare and Endangered Species

Section 5.13.2 discusses the effects of the Project on biological resources, including wetlands, vegetation, wildlife, and special status species. Approximately 1.2 additional acres of woodland will potentially be removed due to the Corridor/Route revisions. Corridor/Route revisions will have no effect on wetlands, as all of the additional 0.3 acres of wetlands within the Corridor/Route will be spanned, and no structures will be placed in wetlands. No other changes identified to this section.

8.11 Problems Raised by Federal Agencies, Other State Agencies, and Local Entities

No changes from Corridor/Route revisions.

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9.0 QUALIFICATIONS OF CONTRIBUTORS

No changes from Corridor/Route revisions.

10.0 REFERENCES

No changes from Corridor/Route revisions.

11.0 LAND ACQUISITION STATUS

Basin Electric is progressing with its land acquisition efforts and has successfully obtained the necessary easements or purchased land from 92 percent of the landowners for a total of 91 percent of the Corridor/Route miles as of July 2014. See Table 11.0-1 below.

Table 11.0-1: Land Acquisition Status by County

County	Total Landowners	Landowners Acquired	Percentage	Total Miles	Miles Acquired	Percentage
Mercer	33	33	100%	18.39	18.39	100%
Dunn	58	56	97%	43.02	41.53	97%
McKenzie	87	74	85%	76.14	63.91	84%
Williams	123	112	91%	63.06	57.68	92%
Mountrail	4	3	75%	2.63	2.44	93%
Totals	**305**	**278**	**92%**	**203.24**	**183.95**	**91%**

Entities included in "Total Landowners" include County/Township Roads (0.10 miles); ND Department of Transportation (1.56 miles); ND Department of Trust Lands (5.98 miles); BNSF Railway (0.12 miles); USACE (3.46 miles); USFS (7.40 miles)

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Applications to the North Dakota Public Service Commission for Waiver of Procedures and Time Schedules and a Consolidated Certificate of Corridor Compatibility and Route Permit

Volume II

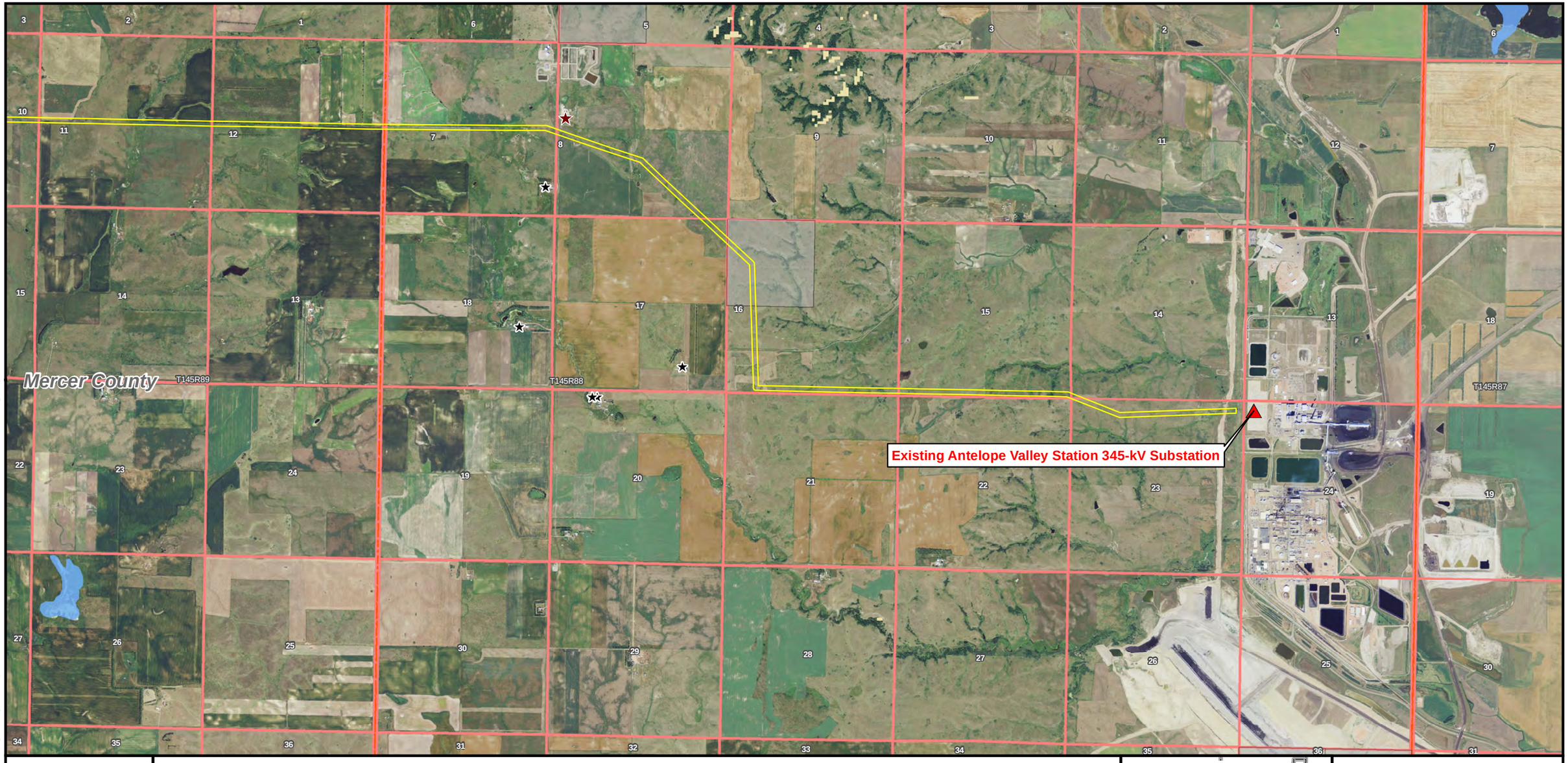
Case No: PU-11-696

for the

AVS-Neset 345-kV Transmission Project

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

July 2014



NORTH

0 3,000
Feet

Corridor/Route 150'
Corridor/Route 100'
Tande Substation Outline
Judson Substation Outline
Residence within 500 Feet
Mobile Home
Man Camp
Residence
County Boundary
Municipal Boundary
Civil Townships
Public Land Survey Sections

Exclusion Areas

State Sensitive Species Habitat/Occurrence
NRHP Structure
Piping Plover Critical Habitat
State Park
National Park

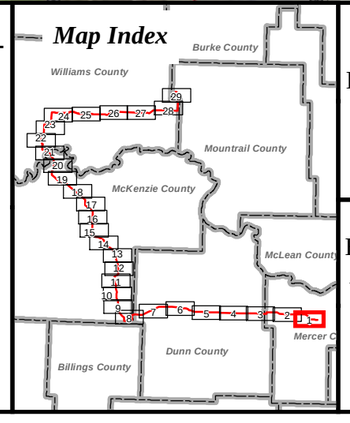
Avoidance Areas

Center Pivot Irrigation
State Historical Site
Scenic River
Scenic River
Landslide Deposit
Waterbody
National Grassland
USACE Land
State-Owned School Lands
State Wildlife Management Area
National Wildlife Refuge

Slope Greater than 10%

10% - 20%
20% - 30%
30% - 44.5%

Map Index



Exclusion and Avoidance Criteria

Updated for replacement mapbook sheets 1, 11, 17, 18, and 21 from July 2013

Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Detailed Project Route Maps
Sheet 1 of 29

Source: USDA NAIP 2012 Aerial Photography; NDNHI, North Dakota GIS; National Park Service; State Historical Society; Burns & McDonnell.

July 21, 2014

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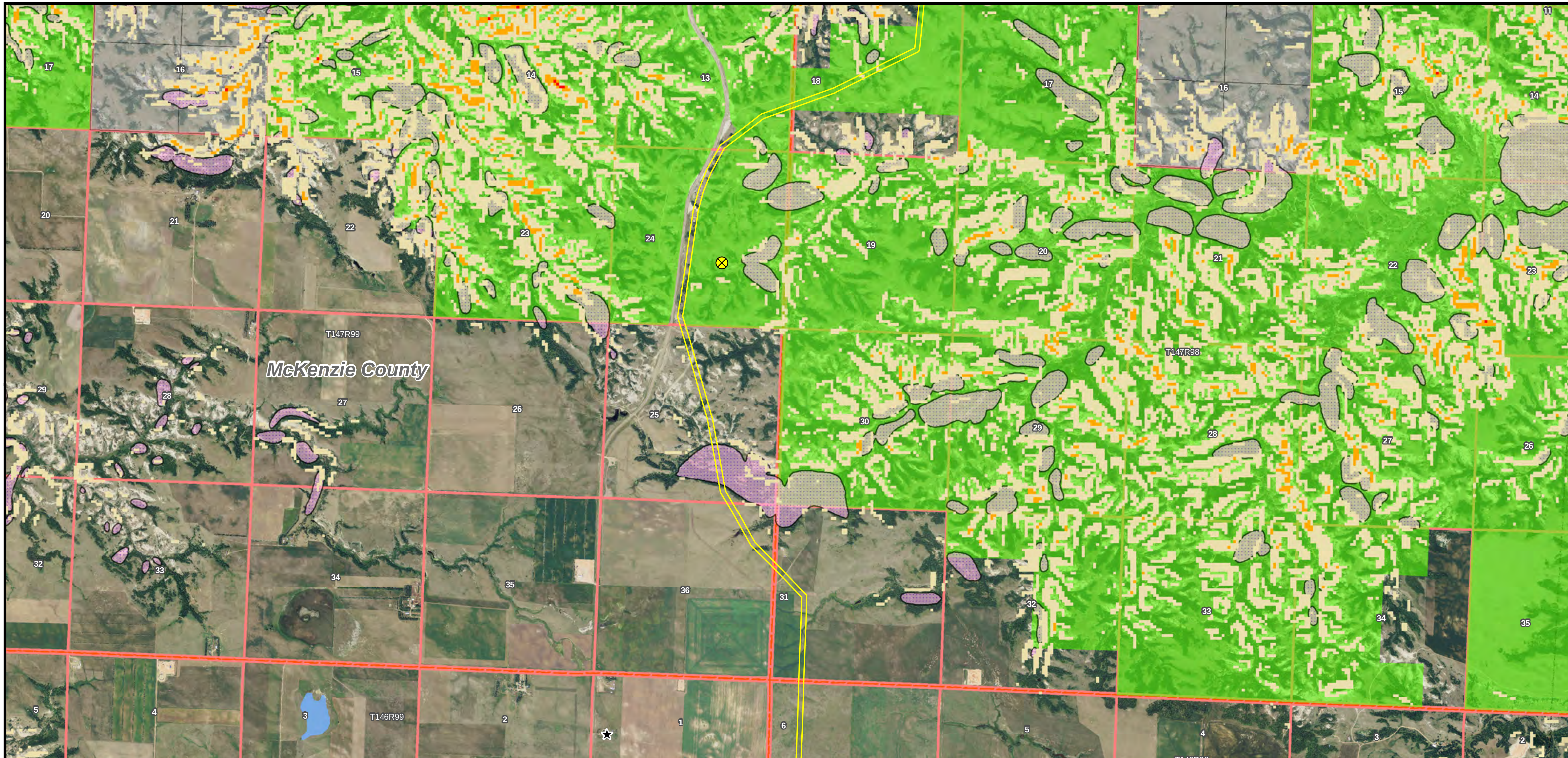


NORTH

0 3,000
Feet

- Corridor/Route 150'
- Corridor/Route 100'
- Tande Substation Outline
- Judson Substation Outline
- Residence within 500 Feet
- Mobile Home
- Man Camp
- Residence
- County Boundary
- Municipal Boundary
- Civil Townships
- Public Land Survey Sections

Exclusion Areas

- State Sensitive Species Habitat/Occurrence
- NRHP Structure
- Piping Plover Critical Habitat
- State Park
- National Park

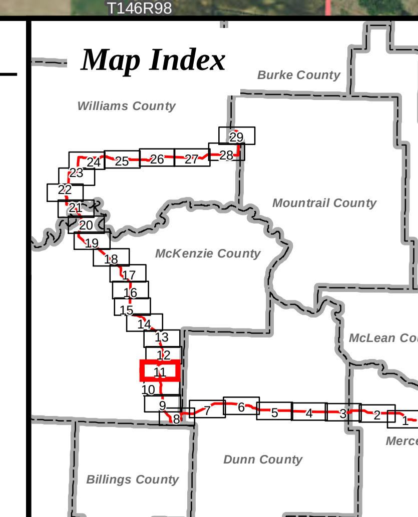
Avoidance Areas

- Center Pivot Irrigation
- State Historical Site
- Scenic River
- Scenic River
- Landslide Deposit
- Waterbody
- National Grassland
- USACE Land
- State-Owned School Lands
- State Wildlife Management Area
- National Wildlife Refuge

Slope Greater than 10%

- 10% - 20%
- 20% - 30%
- 30% - 44.5%

Map Index



Exclusion and Avoidance Criteria

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Basin Electric Power Cooperative
Antelope Valley Station to Neset
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Detailed Project Route Maps
Sheet 11 of 29

Source: USDA NAIP 2012 Aerial Photography; NDNHI, North Dakota GIS; National Park Service; State Historical Society; Burns & McDonnell.

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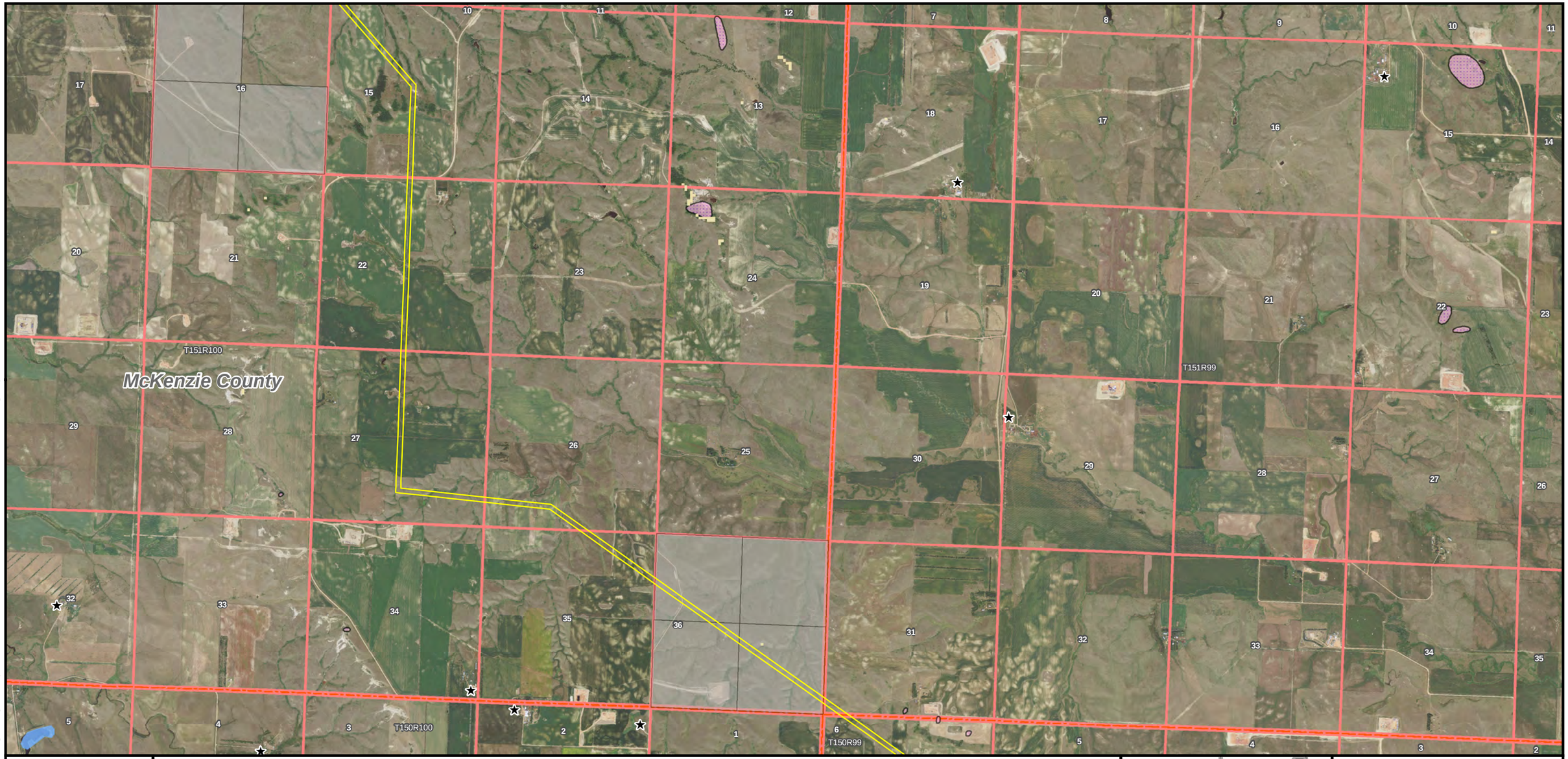

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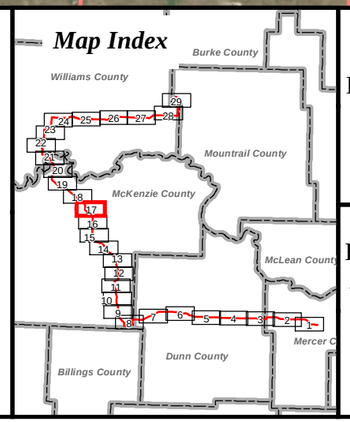

Exclusion and Avoidance Criteria

Updated for replacement mapbook sheets 1, 11, 17, 18, and 21 from July 2013

Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Detailed Project Route Maps
Sheet 17 of 29

Source: USDA NAIP 2012 Aerial Photography; NDNHI, North Dakota GIS; National Park Service; State Historical Society; Burns & McDonnell.

July 21, 2014

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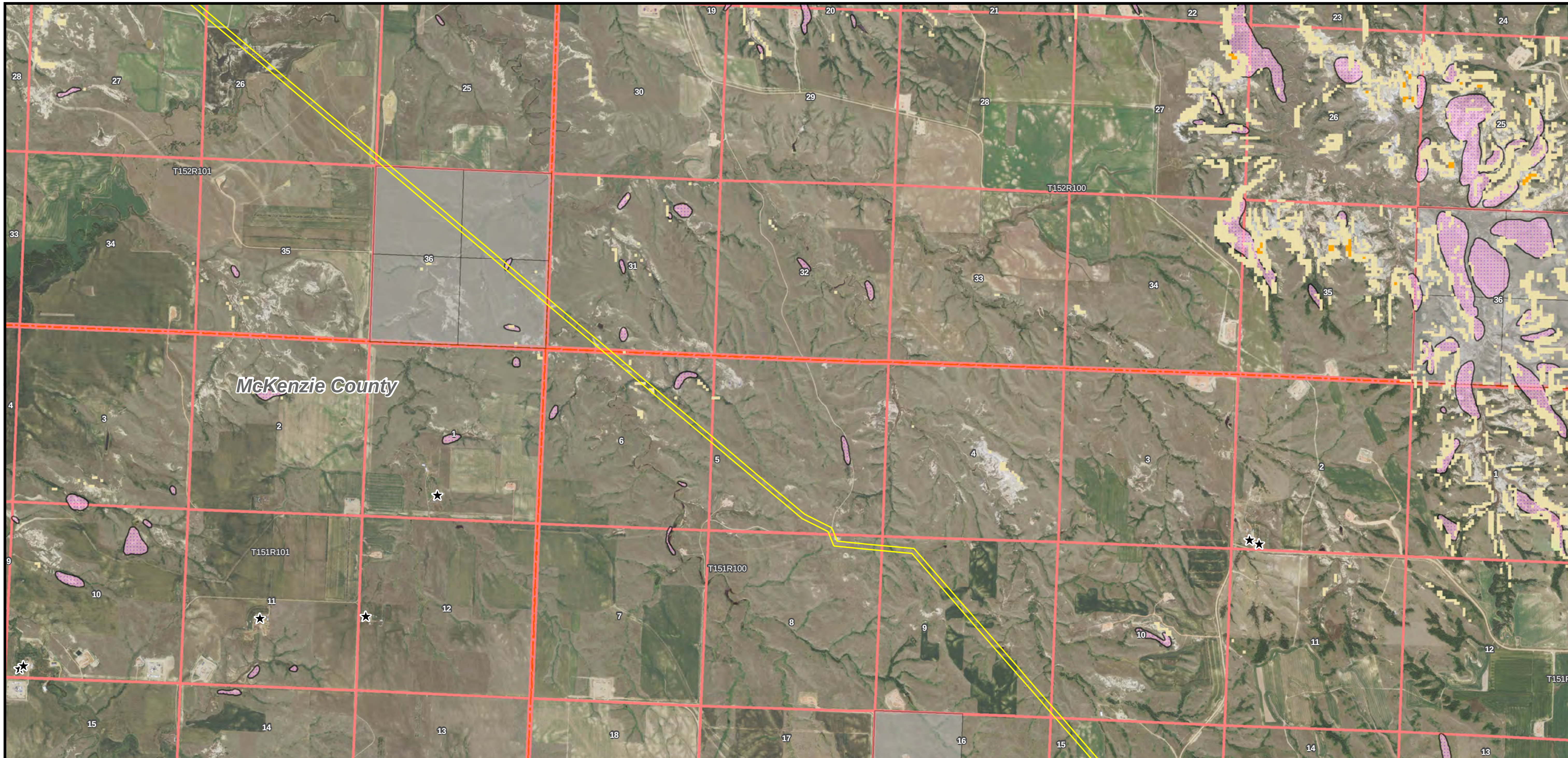

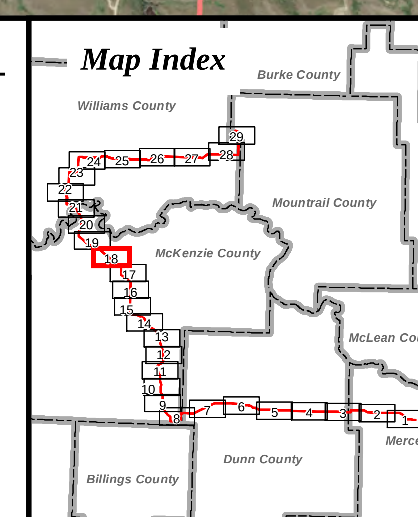

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Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Detailed Project Route Maps
Sheet 18 of 29

Source: USDA NAIP 2012 Aerial Photography; NDNHI, North Dakota GIS; National Park Service; State Historical Society; Burns & McDonnell.

July 21, 2014

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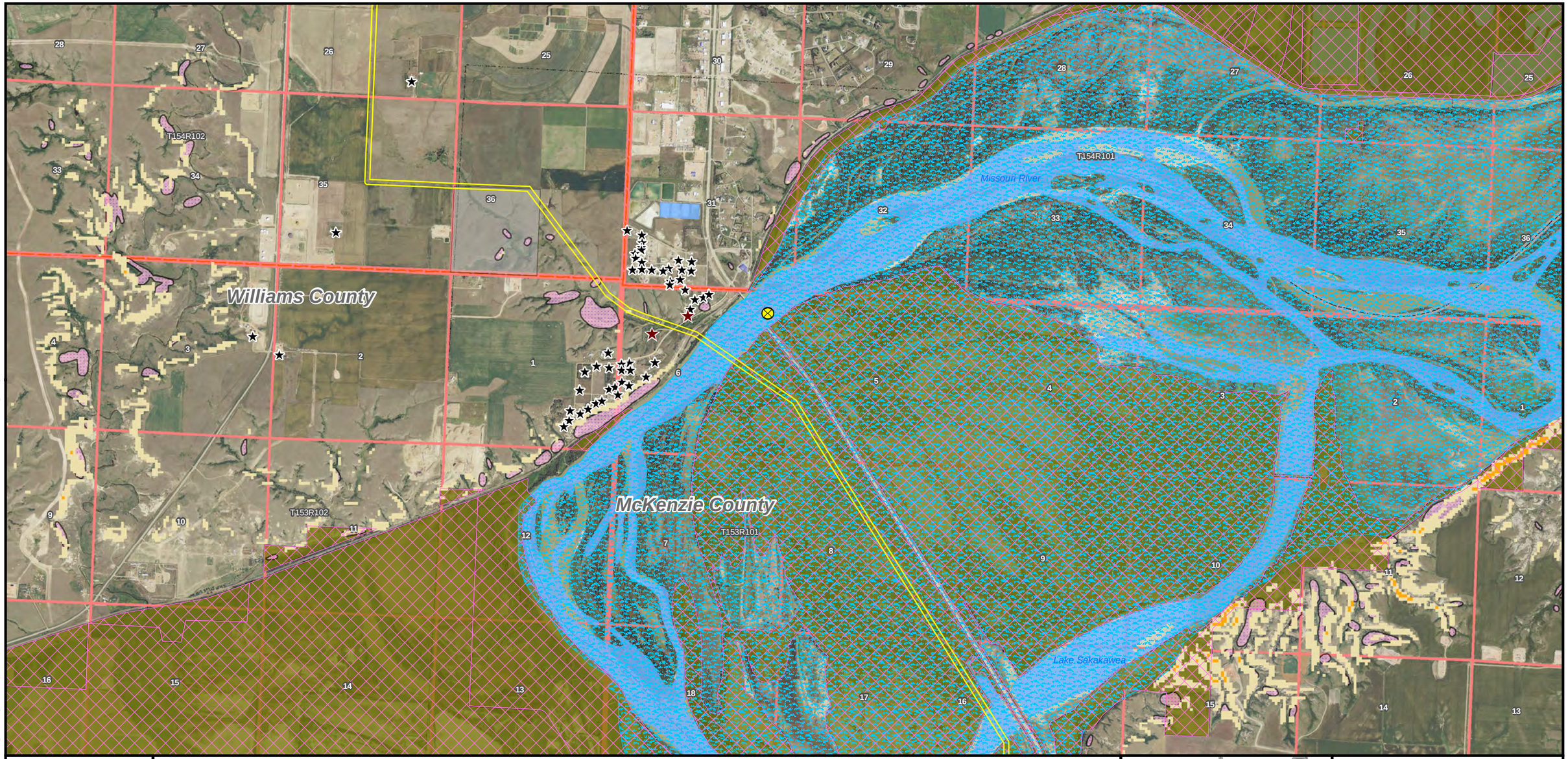

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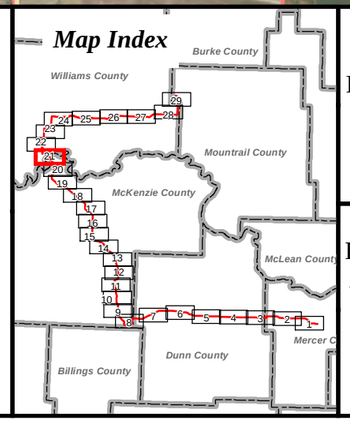
- State Historical Site
- Scenic River
- Scenic River
- Landslide Deposit
- Waterbody
- National Grassland
- USACE Land
- State-Owned School Lands
- State Wildlife Management Area
- National Wildlife Refuge

Slope Greater than 10%

- 10% - 20%
- 20% - 30%
- 30% - 44.5%



Exclusion and Avoidance Criteria

Updated for replacement mapbook sheets 1, 11, 17, 18, and 21 from July 2013

Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Detailed Project Route Maps
Sheet 21 of 29

Source: USDA NAIP 2012 Aerial Photography; NDNHI, North Dakota GIS; National Park Service; State Historical Society; Burns & McDonnell.

July 21, 2014

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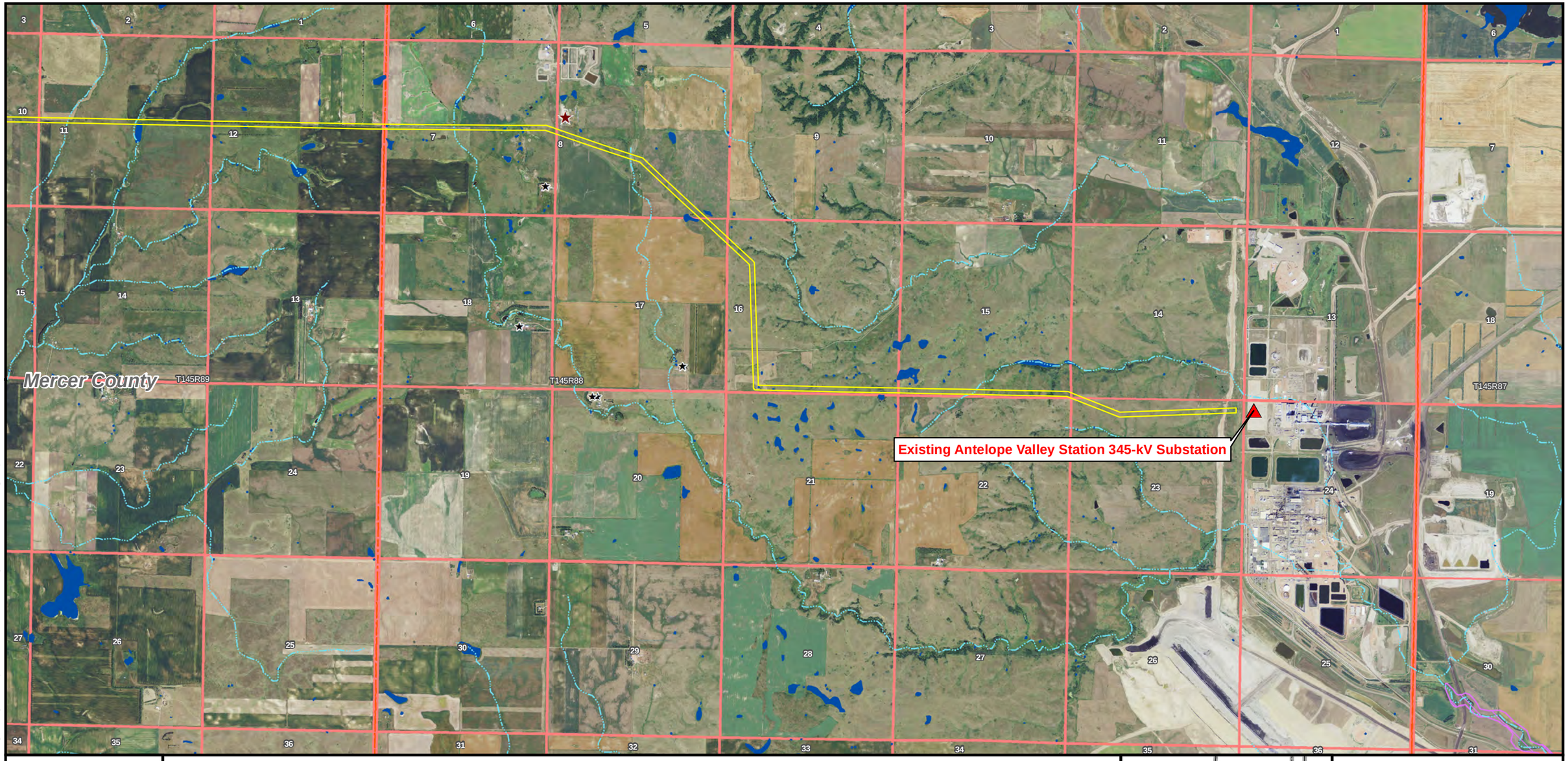


NORTH

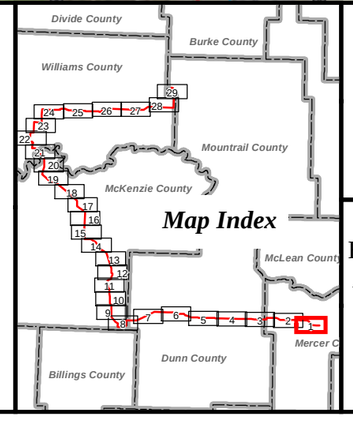
0 3,000

Feet

Corridor/Route 150'
Corridor/Route 100'
Tande Substation Outline
Judson Substation Outline
County Boundary
Municipal Boundary
Public Land Survey Sections
Civil Townships

Selection Criteria

- Residence within 500 Feet
- Mobile Home
- Man Camp
- Residence
- Oil Well
- AM/FM Radio Tower
- Scenic Byway
- Perennial Stream
- Intermittent Stream
- National Grassland
- National Park
- NWI Wetlands
- FEMA Floodplains



Selection Criteria

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Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Detailed Project Route Maps
Sheet 1 of 29

Source: USDA NAIP 2012 Aerial Photography; Federal Communications Commission; North Dakota GIS; National Park Service; State Historical Society; FEMA; Burns & McDonnell.

July 21, 2014

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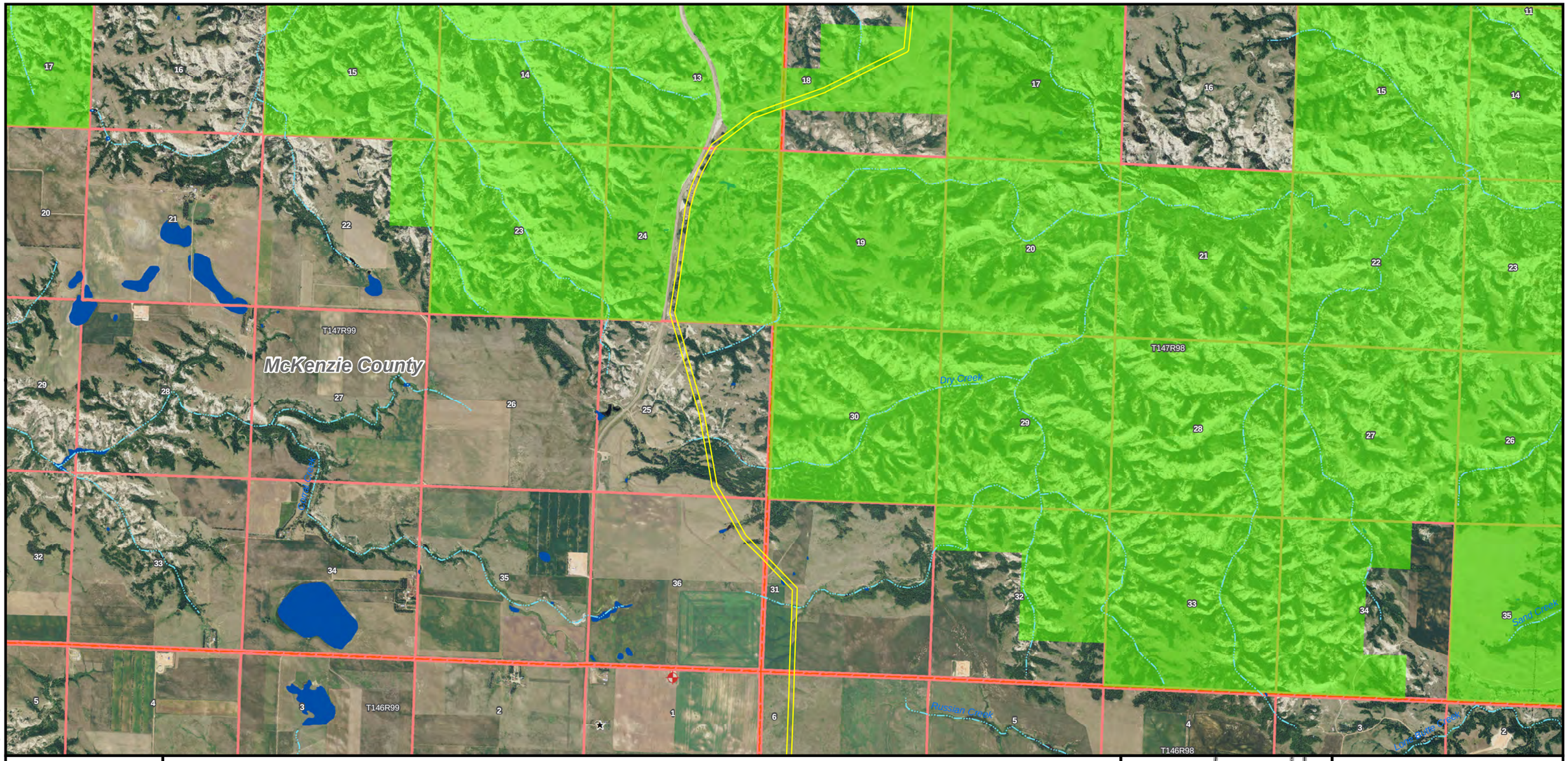

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- Judson Substation Outline
- County Boundary
- Municipal Boundary
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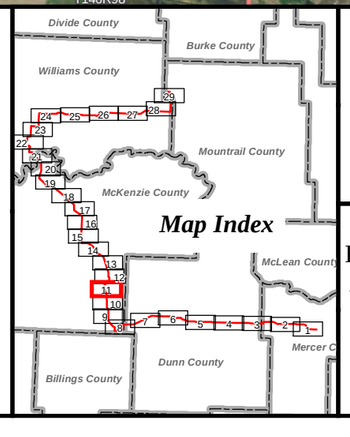

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Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Detailed Project Route Maps
Sheet 11 of 29

Source: USDA NAIP 2012 Aerial Photography; Federal Communications Commission; North Dakota GIS; National Park Service; State Historical Society; FEMA; Burns & McDonnell.

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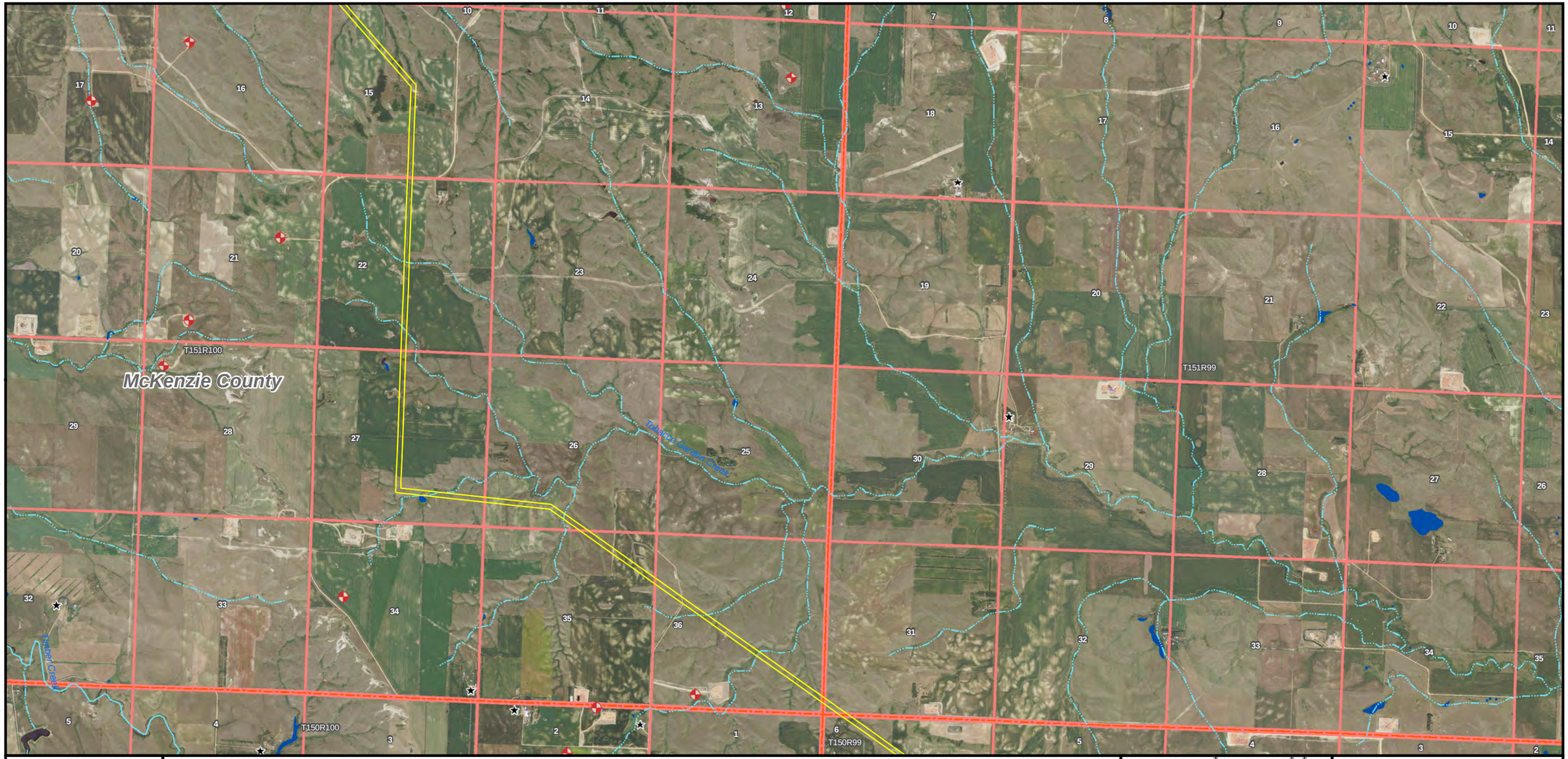

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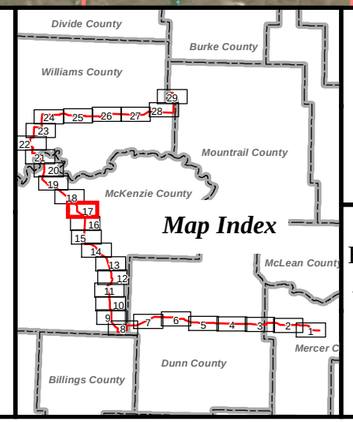

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Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Detailed Project Route Maps
Sheet 17 of 29

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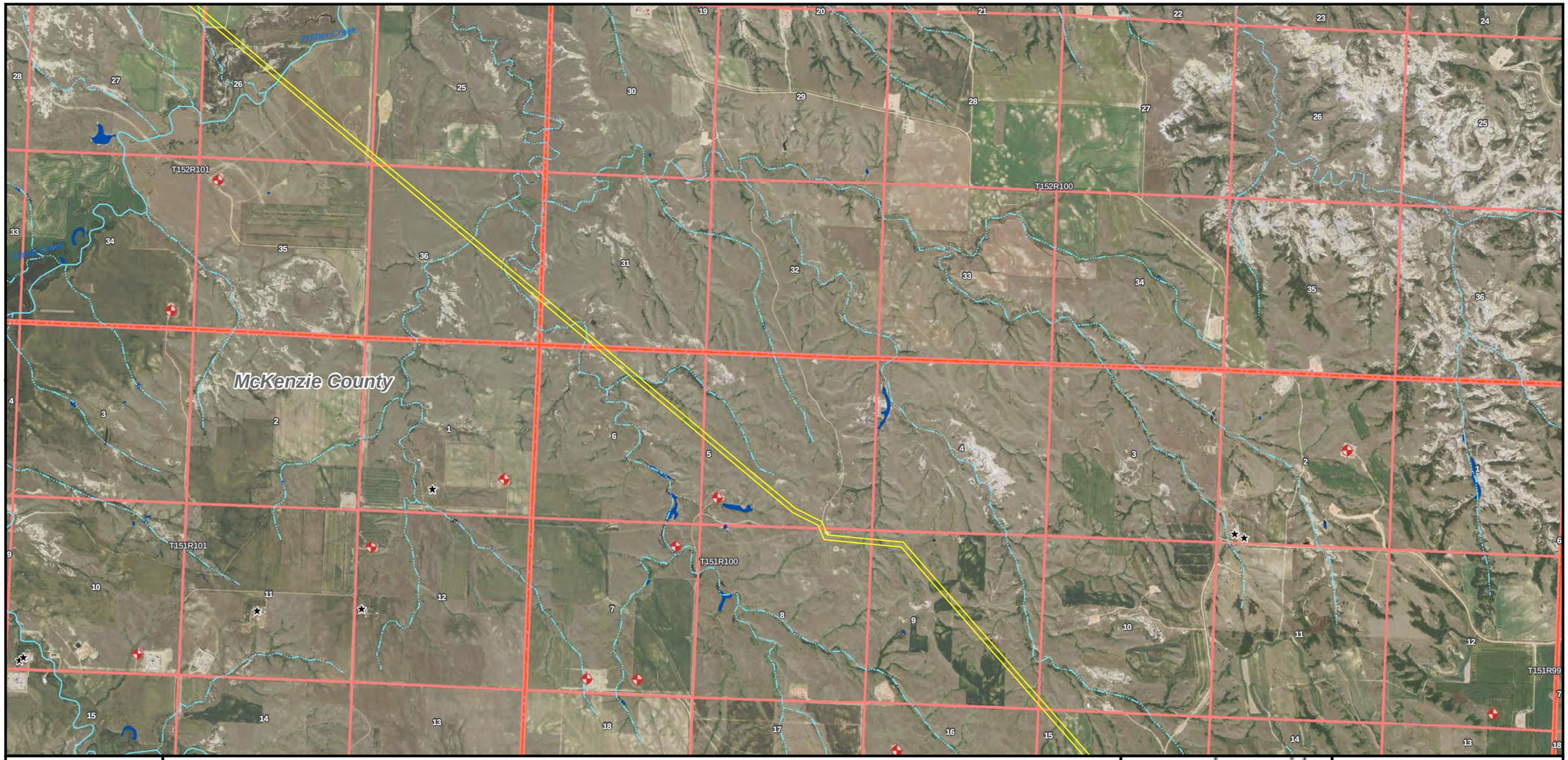

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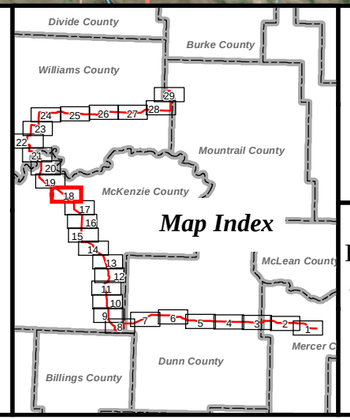

Selection Criteria

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Basin Electric Power Cooperative
Antelope Valley Station to Neset
345-kV Transmission Project
Detailed Project Route Maps
Sheet 18 of 29

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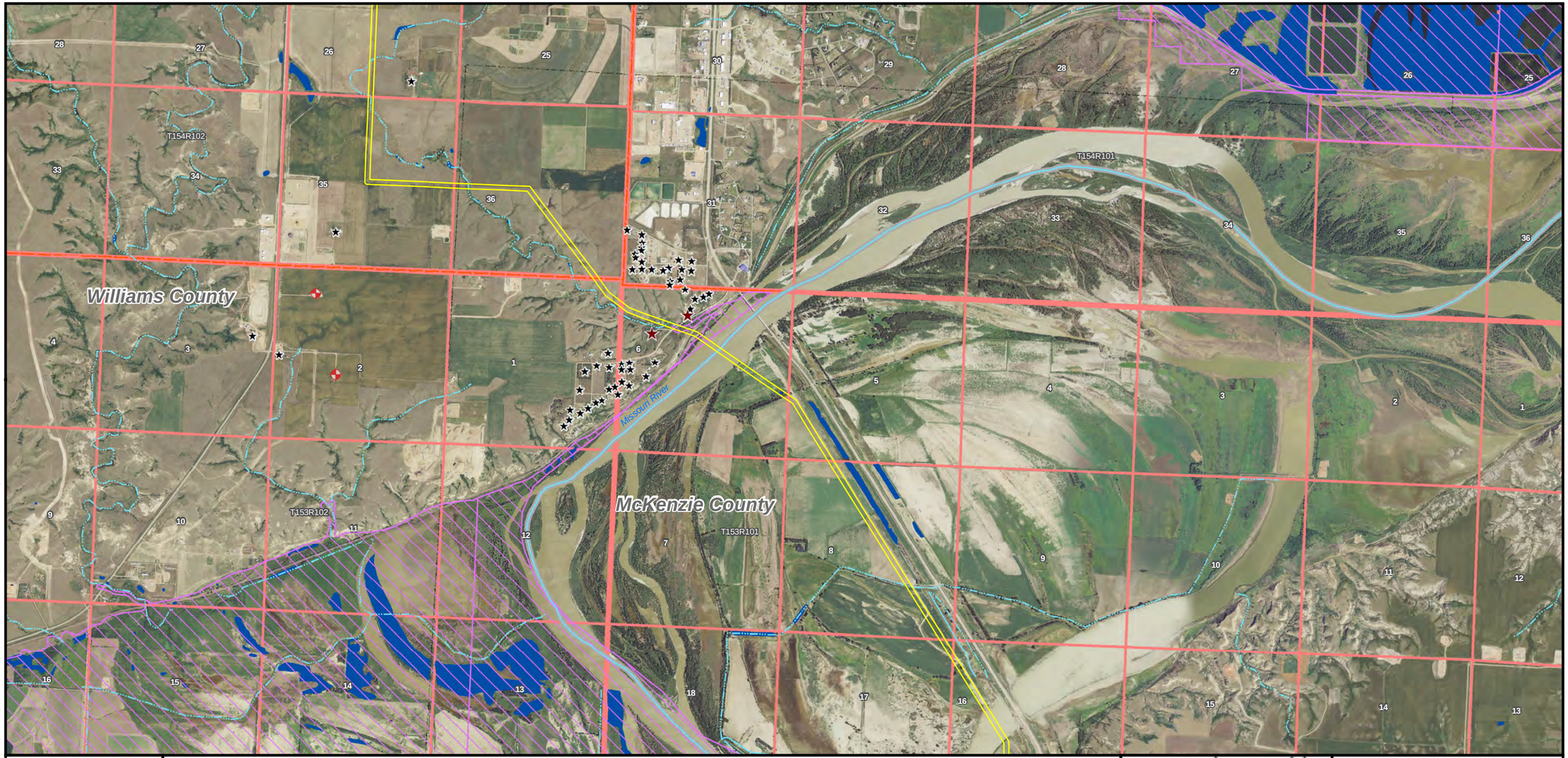

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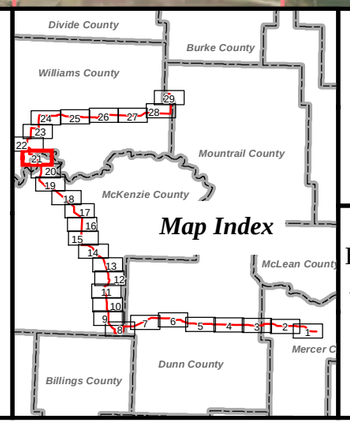

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Amendment to the Application to the North Dakota Public Service Commission for Consolidated Certificate of Corridor Compatibility and Route Permit

Volume III

Case No: PU-11-696

for the

AVS-Neset 345-kV Transmission Project

BASIN ELECTRIC POWER COOPERATIVE

A Touchstone Energy® Cooperative

July 2014

APPENDIX A - MACRO-CORRIDOR AND ALTERNATIVES REPORT

(No change to appendix)

APPENDIX B - SCOPING REPORT AND SCOPING COMMENTS RECEIVED

(No change to appendix)

APPENDIX C – DRAFT ENVIRONMENTAL IMPACT STATEMENT

(No change to appendix)

APPENDIX D - COMMISSION CORRESPONDENCE

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

Basin Electric Power Cooperative **Case No. PU-11-696**
AVS – Neset 345 kV Transmission Line
Siting Application

FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER

April 23, 2014

Appearances

Commissioners Brian P. Kalk, Randy Christmann, Julie Fedorchak

Casey J. Jacobson, Attorney, Basin Electric Power Cooperative, 1717 East Interstate Avenue, Bismarck, North Dakota 58503, on behalf of Basin Electric Power Cooperative.

Mitchell D. Armstrong, Special Assistant Attorney General on behalf of the Public Service Commission.

Bonny M. Fetch, Administrative Law Judge, Office of Administrative Hearings, 1707 North 9th Street, Bismarck, North Dakota 58503, as Procedural Hearing Officer.

Preliminary Statement

On December 6, 2011, Basin Electric submitted a Letter of Intent to the Public Service Commission notifying the Commission of its intent to construct approximately 200 miles of 345 kV Transmission Line originating from the Antelope Valley Station and terminating at the Neset 230 kV Substation located near Tioga, North Dakota.

By a Motion dated December 21, 2011, the Commission acknowledged the Letter of Intent and assessed a filing fee of $100,000.00.

On March 15, 2013, Basin Electric submitted its combined Applications for a Waiver of Procedures and Time Schedules, Certificate of Corridor Compatibility, and a Route Permit for the AVS to Neset 345 kV Transmission Project (Application).

On July 2, 2013, Basin Electric filed an Amendment to the Applications.

On July 30, 2013, the Commission issued a Notice of Filing and Notice of Hearings on Basin Electric's Application and found the Applications to be complete conditioned on Basin Electric filing a map detailing the proposed final transmission line

structure locations one week prior to the hearing. The notice identified the following issues to be considered:

1. Will the location, construction and operation of the proposed facilities produce minimal adverse effects on the environment and upon the welfare of the citizens of North Dakota?

2. Are the proposed facilities compatible with the environmental preservation and the efficient use of resources?

3. Will the proposed facility locations minimize adverse human and environmental impact while ensuring continuing system reliability and integrity and ensuring that energy needs are met and fulfilled in an orderly and timely fashion?

The Notice of Hearings identified the following additional issues to be considered in Basin Electric's Application for Waiver of Procedures and Time Schedules.

1. Are the proposed facilities of such length, design, location or purpose that they will produce minimal adverse effects and that adherence to applicable procedures and time schedules may be waived.

2. Is it appropriate for the Commission to waive any procedures and time schedules as requested in the Application?

On August 22, 2013, Basin Electric filed a map detailing the proposed final transmission line structure locations.

On September 4, 2013 at 10:30 a.m. CST, a public hearing was held as scheduled in Killdeer, North Dakota. Basin Electric presented seven witnesses and members of the public offered comments.

On September 5, 2013 at 10:00 a.m. CST, a public hearing was held as scheduled in Tioga, North Dakota. Basin Electric presented five witnesses and members of the public offered comments.

On September 11, 2013, late filed Exhibits 33 and 34 were filed by Valerie Naylor.

On September 12, 2013 at 10:00 a.m. CST, a public hearing was held as scheduled in Williston, North Dakota. Basin Electric presented five witnesses and members of the public offered comments.

On September 27, 2013, Basin Electric filed the following late filed exhibits:

Exhibit 31 – Agencies and Permit Status Update;
Exhibit 39 – Wisconsin PSC Underground Study; and
Exhibit 40 – Exclusions & Avoidance Areas for the six mile macro corridor near Killdeer, North Dakota.

Having allowed all interested persons an opportunity to be heard and having heard, reviewed, and considered all testimony and evidence presented, the Commission makes the following conclusions:

Findings of Fact

1. Basin Electric is a regional wholesale electric generation and transmission cooperative, organized under the laws of the State of North Dakota, and headquartered in Bismarck, North Dakota. Basin Electric provides power to more than 137 member systems serving more than 2.8 million consumers in nine states, including North Dakota.

2. Basin Electric proposes to construct and operate a 345 kV transmission line known as the AVS to Neset 345 kV Transmission Project. The Project consists of approximately 197 miles of new, high voltage 345 kV and 230 kV alternating current transmission line and associated facilities extending from Basin Electric's existing Antelope Valley Station (AVS) and terminating at the Neset 230 kV Substation located near Tioga.

3. The AVS to Neset 345 kV Transmission Project will be constructed, owned and maintained by Basin Electric with the exception of a 31-mile 115 kV/345 kV double circuit segment between the proposed Judson and Tande Substations. The 115 kV circuit will be owned by Basin Electric Electric's member, Mountrail-Williams Electric Cooperative, but maintained by Basin Electric. The transmission line will be located in Mercer, Dunn, Williams, McKenzie, and Mountrail Counties.

4. The Project is needed to provide Basin Electric members access to baseload generation to serve increasing load in their service areas and to address grid reliability issues in northwestern North Dakota and eastern Montana caused largely by development within the Bakken oil field. Basin Electric reports 55% load growth experienced in this area since 2011 and forecasts continued growth of 6% annually. Analysis indicates that by 2016 the load will have increased beyond the load-serving capacity of the existing system. Basin Electric states that if the Project does not get built as proposed, the existing transmission capacity will curtail future load growth.

5. In addition, several representatives from local electric cooperatives testified regarding the issues they have faced and are anticipating to face as a result of the increasing load growth. For instance, a representative from McKenzie Electric Cooperative testified its load grew 300% since 2005, and 69% alone in 2012. In addition to the load needed to provide electricity to oil wells, he testified numerous

additional load sources occur monthly, including pipeline loads, man camps, and residential developments. He stated the cooperative had been notified by the Western Area Power Administration (WAPA) in the winter of 2012/2013 that the cooperative could be load limited in its delivery to the Watford City area. This does not only include McKenzie Electric's load, but also Montana-Dakota Utility's load serving Watford City. In such a circumstance, if the load is not able to be reduced to the level specified within thirty minutes, WAPA begins opening up breakers, indiscriminately shutting off service to customers. He testified McKenzie Electric's reliability is currently not adequate, yet the load continues to grow and the access to installed generation through transmission infrastructure is the most reliable, low cost approach to address the need in a timely manner.

6. The total cost of the Project is estimated to be $375 million.

Alternatives

7. Basin's Application and testimony described consideration of several alternatives, as well as the ongoing process of evaluating alternatives in conjunction with the National Environmental Policy Act (NEPA) process. The evidence reflects several alternatives were considered, including not constructing this project but upgrading existing infrastructure and constructing several new 115-kV lines. These alternatives did not adequately address the necessary load growth or provide a long-term solution to address the load growth driving this project. Other alternatives considered included crossing Lake Sakakawea further to the east or routing around Lake Sakakawea to the east. However, these alternatives resulted in constructability concerns, increased length of the line resulting in additional impacts and costs, and failure to provide the load to the areas in need. Additional alternatives considered included adding another circuit to double circuit or parallel the Killdeer Loop (described below) and eliminate the proposed western segment along the U.S. Highway 85 corridor. There are reliability concerns with this approach because placing two major transmission lines in the same corridor increases system exposure to weather or other events that might disable both lines. In addition, the proposed project provides transmission service to areas south of Watford City, which would not be served by this alternative.

8. A Draft Environmental Impact Statement (DEIS) was prepared for the U.S. Department of Agriculture, Rural utilities Service's (RUS) in cooperation with the Western Area Power Administration (Western) and the U.S. Department of Agriculture, Forest Service (Forest Service). In addition to a no-action alternative, the DEIS evaluated an Alternative B sometimes referred to as the "Killdeer loop", consisting of a more easterly route. A primary difference between the alternatives was that the preferred alternative A was approximately 15 miles shorter. During the hearing, Basin explained that revised load forecasts had made it necessary to construct both of the alternatives A and B and a supplemental DEIS was being prepared with the preferred alternative being the proposed Alternative A corridor and route plus the previous

Alternative B "Killdeer Loop" 345 kV segment for which Basin Electric intends to seek a separate route permit for in the future.

9. In its evaluation of alternatives, Basin evaluated a network of 46 individual 1,000 foot route corridors within six-mile wide macro-routes. Basin selected the proposed route based on considerations of meeting the project's purpose and need, consistency with planned and anticipated system needs, design and reliability standards, avoiding and minimizing impacts to environmental and sensitive resource, reasonability, engineering guidelines, and what was technically feasible and economically viable.

10. Basin testified it was in the process of preparing a supplemental draft EIS with additional alternatives in conjunction with the NEPA process as a result of the revised load forecasts.

11. Basin Electric states it selected the proposed route based on a number of factors including: input from landowners and federal and state agencies; minimizing environmental impacts through measures such as avoidance of wetlands; cultural sites and environmentally sensitive areas; compliance with Chapter 49-22 of the North Dakota Century Code and the Commissions siting rules; and feasibility from a design, construction and access perspective.

12. Basin Electric submitted information through testimony and a late filed Exhibit that placing the Project or portions of the Project underground is neither feasible nor reasonable. Building transmission lines underground creates significantly more environmental disturbance than overhead construction and significantly adds to overall project costs. Additionally, maintenance and repair work with underground transmission lines would take a significantly longer amount of time and expense. As a result, undergrounding of 345 kV transmission is generally reserved for urban areas where overhead construction is not feasible. The Commission finds undergrounding is not technically suitable in the environmentally sensitive areas of western North Dakota.

13. The Commission finds the proposed overhead routing through the U S Highway 85 corridor is the preferred alternative.

Project Design

14. The proposed transmission line and associated facilities will be designed and constructed to meet or surpass all relevant codes and standards of the Rural Utilities Service, the National Electric Safety Code, the Institute of Electrical and Electronics Engineers, the American Society of Civil Engineers, the American Institute of Steel Construction, the American Concrete Institute, Basin Electric standards, and in accordance with Avian Power Line Interaction Committee suggested practices for raptor-safe transmission line design.

15. The Project will be constructed on self-supporting galvanized steel single-pole structures. The typical structure will be around 115 feet tall. The top of the pole will be about 15 inches in diameter and the bottom will be about 50 inches in diameter. The angle structures will also be single poles and will have concrete foundations and no guy wires. The regular in-line structures will be directly buried in the ground. Some special situations will require H-frame structures or structures requiring two poles.

16. The Project will be 3-phase, meaning it uses three current carrying conductors. The 345 kV conductor will be 1.8 inches in diameter with 76 strands of aluminum and 19 strands of steel. Above the conductors will be an optical ground wire and a steel ground wire both of which are approximately ½ inch in diameter. The line will require approximately six to seven structures per mile, depending on terrain and other design factors. The right-of-way will be 125 feet wide for the 230 kV segments and 150 feet wide for the 345 kV segments.

17. Associated facilities will include upgrades or additions to the AVS Substation, Charlie Creek Substation, Neset Substation and new construction of the Judson and Tande Substations.

18. Construction of the proposed Project from AVS to Judson is expected to begin in the spring of 2014 and is anticipated to be complete by the end of 2015. Construction of the segment from Judson to Tande is expected to be completed no later than the fourth quarter of 2017.

Siting Criteria – Corridor & Route

19. North Dakota Administrative Code, Chapter 69-06-08 sets forth certain criteria to guide the Commission in evaluating the suitability of granting an application for a Certificate of Corridor Compatibility and a Route Permit for a transmission facility. The criteria as set forth in Section 69-06-08-02 are classified as Exclusion Areas, Avoidance Areas, Selection Criteria and Policy Criteria. North Dakota Administrative Code, Chapter 69-06-08 provides that Exclusion and Avoidance Areas may be located within a corridor, but at no given point shall such an area encompass more than 50% of the corridor width, unless there is no reasonable alternative. North Dakota Administrative Code, Section 69-06-08-02 provides that a transmission facility route must not be sited within an Exclusion Area. A transmission facility route must not be sited within an Avoidance Area unless the Applicant shows under the circumstances there are no reasonable alternatives.

20. In accordance with the Commission's Selection Criteria, a corridor or route may be approved if it is demonstrated that any significant adverse impacts that will result from the location, construction and maintenance of the transmission facility will be of an acceptable minimum or managed at an acceptable minimum. In accordance with the Commission's Policy Criteria, preference may be given to an applicant demonstrating certain benefits from the adoption of certain policies and practices.

21. Basin Electric evaluated a Corridor of 150 feet wide for the 345 kV segments of the transmission line and 125 feet wide for the two 230 kV segments, which extend approximately 2 miles from the Judson to Williston substations and approximately 1 mile from the Tande to Neset substations.

22. The proposed Route and Corridor do not include any Exclusion Areas.

23. Avoidance Areas crossed by the Route and Corridor include:
   a. Little Missouri Grasslands Management Area;
   b. Lewis & Clark Wildlife Management Area;
   c. Areas that are geologically unstable;
   d. Areas that have recreational significance;
   e. The route is located within 500 feet of four rural residences; and
   f. The route is located within 500 feet of two businesses.

23. There are no reasonable alternatives other than the proposed route concerning the two businesses located within 500 feet of the project. The businesses are located just north of the U.S. Highway 85, just west of Williston near the Judson Substation. It would be near impossible to route the project into the Judson Substation without being within 500 feet from a place of business due to the growth of commercial development in this area.

24. There are no reasonable route alternatives other than the proposed route and corridor crossing the Little Missouri Grasslands Management Avoidance Area. To achieve the Project's intent to supply additional load capacity and enhance reliability to the region, the Project is required to interconnect to Basin Electric's existing Charlie Creek Substation located southeast of Grassy Butte, North Dakota. The lands immediately surrounding the Charlie Creek Substation are National Grasslands and, thus, an Avoidance Area. The routing alternatives through this region are extremely difficult due to the physical landforms such as the rugged badlands area to the west and also the Killdeer Mountains to the east, which present extreme access issues due to their rough terrain and also additional recreational and aesthetic considerations. The Route and Corridor in this area follows other existing electrical and liquid transmission lines along U.S. Highway 85. Further, a placement of linear projects on United States Forest Service (Forest Service) Lands requires the Forest Service to evaluate the impacts of the project and to ascertain compatibility with the Forest Service Management Plan for those areas crossed. Through the development of the EIS, Basin Electric has coordinated the placement of the Route/Corridor with the Forest Service. The proposed route and corridor avoid the Forest Service lands that are designated "Roadless Areas" where the placement of a transmission project would be incompatible with those land management unit's plans. Both the Lone Butte and Long X Divide land management units have been designated as Roadless Areas by the Forest Service. The Forest Service will grant a Special Use Permit to Basin Electric for use of these

lands only if it determines that the placement of the transmission project is compatible with the land management units it administers.

25. There are no reasonable alternatives other than the proposed corridor and route crossing the Lewis & Clark Wildlife Management Avoidance Area which is located just south of the Missouri River in McKenzie County near U.S. Hwy 85. Similarly, there are no reasonable alternatives to crossing the recreational-significant Lewis and Clark National Historic Trail at the Missouri River. Early coordination efforts with the United States Army Corps of Engineers (USACE) and the North Dakota Game and Fish identified a utility corridor that the agencies preferred. In order to cross either Lake Sakakawea or the Missouri River upstream of the reservoir the opportunities to locate outside of the Lewis and Clark Wildlife Management Area are limited. To the east, Lake Sakakawea presents a constructability constraint. The City of Williston and the recreational aspects to that river segment preclude routing to the east of U.S. Highway 85. To the west of the Lewis and Clark Wildlife Management Area is the community of Trenton, Fort Buford, a National Historic Site and irrigated lands all of which are Avoidance or Exclusion Areas. Both the North Dakota Game and Fish and the USACE encouraged placement of the route within the existing utility corridor located alongside U.S. Highway 85 that already contains an existing 230 kV transmission line and several pipelines. The proposed route reflects the desired location by both agencies.

26. There are no reasonable route alternatives other than the proposed corridor and route crossing certain School Trust Lands, which may be of recreational significance. Most of these lands are leased for grazing, but are open to the public for walk-in recreational uses such as hunting, fishing, hiking and bird watching. School Trust Lands are managed by the North Dakota State Land Department and Basin Electric must obtain easements from the department before routing across these lands.

27. There are no reasonable route alternatives other than the proposed corridor and route crossing geologically unstable Avoidance Areas, which are generally located near the Missouri and Little Missouri Rivers and in the Badlands. The Project crossing these lands is inevitable due to the length of the Little Missouri River and the Badlands areas within the overall Project Area. The majority of the geologically unstable areas will be spanned by the route. Further, geotechnical assessments will be conducted at the structure locations to minimize potential development of landslides during construction.

28. The route is located within 500 feet of four rural residences. Waivers have been obtained from the homeowners in each of the four occurrences.

29. The Project will have minimal adverse effects on eagles and other avian species. Basin Electric will construct the Project in accordance with the Avian Power Line Interaction Committee's Guidelines and its own Avian and Bat Protection Plan. Further surveys for raptor and migratory birds will be done prior to construction of the Project with consultation from the Unites States Fish and Wildlife Services, Western

Area Power Administration, United States Forest Service and the North Dakota Game and Fish Department.

30. To help avoid potential impacts to avian species along the proposed route during operation of the transmission line, bird flight diverters will be installed in high risk areas determined in consultation with the Western Area Power Administration biologist and consultation with the United States Fish and Wildlife Service.

31. Basin Electric submitted information in its Application and through its testimony that any significant adverse effects from the location, construction and maintenance of the transmission facility as they relate to the Selection Criteria listed at Section 69-06-08-1(3) North Dakota Administrative Code, will be at an acceptable minimum or will be managed and maintained at an acceptable minimum.

32. Basin Electric submitted information in its Application and through its testimony to demonstrate its commitment to maximize the benefits of the proposed transmission facility to meet the Policy Criteria set forth in Section 69-06-08-1(4), North Dakota Administrative Code.

33. A Class I file search and Class III cultural resource survey (pedestrian survey) were conducted along the proposed route in accessible areas. The survey area consisted of a 150 ft. wide corridor centered on the proposed 345 kV route centerline and a 125 ft wide corridor centered on the proposed 230 kV segments. Numerous prehistoric and historic sites were identified during the Class III Surveys. Structure locations were adjusted to limit adverse effects on cultural resources. Additionally, it is unlikely that paleontological resources would be affected by the Project. Construction in any area will not begin until the North Dakota State Historical Preservation Office has concurred that no significant sites or historic properties are affected by the construction.

34. In July 2013, the National Park Service, American Battlefield Protection Program awarded two grants to the Center for Heritage Renewal at North Dakota State University to, among other things, study a 36 square-mile area of private land (Study Area) near the existing one acre Killdeer Mountain Battlefield historic site to determine its eligibility for potential inclusion in the National Registry of Historic Places. The Route/Corridor traverses approximately eight miles through the Study Area. Within the Study Area are existing ranches, residences, distribution lines, oil pipelines and numerous oil wells, and associated structures. Presently, the Study Area has not been determined eligible for the National Register of Historic Places. The Route/Corridor is located approximately ¾ of a mile from the existing historic site. The Project will not preclude designation of the Study Area on the National Register of Historic Places. On February 3, 2013, Basin Electric provided the State Historical Society an interim report of the results of the Class III Surveys. Cultural surveys have been done on all of the lands in the Study Area except for ½ mile due to the landowner not granting survey permission. No cultural sites were identified during the surveys that would be impacted by the Project. On September 3, 2013, the State Historical Society filed comments addressing this issue

and Basin Electric committed to following the State Historical Society's recommendations:

a. Move the proposed Gumbo Creek Substation outside of the Killdeer Mountain Battlefield Core Area;
b. Conduct a visual study from the perspective of the existing Killdeer Mountain Battlefield site and Medicine Hole;
c. Conduct additional archaeological investigations at proposed structure locations;
d. Conduct magnetomic surveys through the eight mile length of the Killdeer Mountain Battlefield Study Area.

35. Basin Electric has removed the Gumbo Creek Substation from the Killdeer Mountain Battlefield Core Area and has commenced work on the remaining items. Further, Basin Electric has selected single pole structures which reduce the visual impact of the Project. Also, Basin Electric testified that it has obtained voluntary easements for the majority of the proposed route through this area.

Other Issues

36. The proposed corridor and route passes near five existing public airports. They are the Weydahl Field near Killdeer, the City of Williston's Slouin Airfield, Tioga Municipal Airport, Beulah Airport, and the Watford City Municipal Airport. Screening analysis indicated that an FAA obstruction analysis was required for structures that will be located near the Killdeer and Williston Airports. In December 2012 the FAA issued a Determination of No Hazard to Air Navigation for Weydahl Field. The City of Williston is currently considering four airport relocation alternatives, of which one alternative is remaining at the existing Slouin Airport site. The three other airport relocation alternatives are located northwest of the City of Williston and encompass a large geographical area. To totally avoid the planning area for the airport relocation, Basin Electric would have to increase the route by approximately 20 additional miles. Through communication with Airport Project Staff, Basin Electric elected to propose the route across what it believes to be the least likely relocation alternative. Basin Electric is working through city and project engineering staff to jointly plan and coordinate both projects.

37. A National Wetlands Inventory was conducted along the proposed route. No permanent impacts to the wetlands are anticipated as a result of project construction. Structures will not be placed in wetland areas. Basin Electric will delineate wetlands as necessary to maintain a 100 ft. buffer zone around wetlands, whenever feasible, to prevent impacts. Basin Electric will implement mitigation measures to minimize indirect impacts to surface water and wetland resources, such as erosion and sedimentation control Best Management Practices. Basin Electric will require its contractor to secure required storm water construction permits for the project from the North Dakota Department of Health.

38. Basin Electric will comply with all local land use and planning ordinances.

39. During the route selection process, federal, state and local departments, agencies and entities who were contacted by and provided feedback to Basin Electric regarding the Project include:

a. Federal Agencies – Rural Utilities Service (RUS); Federal Aviation Administration; United States Army Corps of Engineers (USACE) Omaha District, North Dakota Regulatory Office; United States Fish and Wildlife Service (USFWS), United States Forest Service (USFS), North Dakota Ecological Services; United States Department of Agriculture (USDA), Natural Resources Conservation Service; United States Department of the Interior – National Park Service;

b. State Agencies – State Historical Society of North Dakota, State Historic Preservation Office (SHPO); North Dakota Parks and Recreation Department; North Dakota Game and Fish Department; North Dakota Department of Health; North Dakota Department of Transportation; North Dakota State Water Commission; Job Service North Dakota; North Dakota Department of Trust Lands; and

c. Local Entities – County Commissioners, County Zoning Boards and Township Commissioners.

40. Agency consultations and comments were included within the Application (see Section 7.11 and Appendix G), as well as in the exhibits and the testimony presented at the public hearings.

41. The United States Department of Agriculture (USDA) Rural Utilities Service (RUS), the USFS and Western Area Power Administration (Western) as federal agencies are required to complete an Environmental Impact Statement of the Project under the National Environmental Policy Act (NEPA). Basin Electric will file a copy of the final document and any resulting findings with the Commission prior to beginning construction of the Project.

42. Section 49-22-16(3) of the North Dakota Century Code provides that an applicant for a route permit from the Commission shall obtain all permits that may be required to construct and operate the transmission facility. Basin Electric's application and supplemental filings include a listing of permits and approvals that must be obtained for the proposed transmission facility and the status of each of these permits or approvals.

Conclusions of Law

1. The Commission has jurisdiction over this proceeding under Chapter 49-22 of the North Dakota Century Code.

2. The Project proposed by Basin Electric is a transmission facility as defined in Section 49-22-03(12), of the North Dakota Century Code.

3. The location, construction, and operation of the proposed Project will produce only minimal adverse effects on the environment and upon the welfare of the citizens of North Dakota.

4. The Application submitted by Basin Electric meets the Corridor and Route evaluation criteria required by Chapter 49-22 of the North Dakota Century Code.

5. The proposed transmission facility Corridor and Route will minimize adverse human and environmental impact while ensuring continuing system reliability and integrity and ensuring that energy needs are met and fulfilled in an orderly and timely fashion.

6. The proposed Project is compatible with the environmental preservation and the efficient use of resources.

7. The requested waivers of procedures is justified based upon: the minimal impacts on the environment and the welfare of the citizens of North Dakota; the lack of objection to the proposed transmission facility by federal, state and local government bodies and agencies or by the majority of landowners along the route; and the objective to have a reliable integrated transmission system in North Dakota.

8. The proposed transmission facility is of such length, design, location and purpose that it will produce minimal adverse effects.

9. It is appropriate for the Commission to approve a Corridor less than one mile.

From the foregoing Findings of Fact and Conclusions of Law, the Commission now makes its:

Order

The Commission orders:

1. Basin Electric's request for a waiver of procedures and time schedules is granted.

2. Certificate of Corridor Compatibility No. 152 is issued to Basin Electric, designating a 150 foot wide corridor for the 345 kV portion of the project and a 125 foot-wide corridor for the 230 kV portions of the project, as described in Basin Electric's Application and supplemental filings and at the hearing.

3. Route Permit No. 164 is issued to Basin Electric, granting authority to construct, operate and maintain its AVS to Neset transmission project.

4. Basin Electric shall complete cultural resource surveys on all remaining un-surveyed parcels and shall file with the Commission documentation showing SHPO concurrence that no historic properties or sites will be affected prior to beginning construction in areas associated with each report.

5. Basin Electric shall complete SHPO recommendations and obtain SHPO concurrence that no historic properties or sites will be affected prior to beginning construction in the Killdeer Battlefield Study Area.

6. Basin Electric shall file with the Commission a copy of the final federal Environmental Impact Statement and resulting findings prior to beginning construction.

7. Prior to construction on the Judson to Tande segment, Basin Electric shall provide the Commission with a letter from the Williston City Commission on their concurrence that the Project will not interfere with the Soulin Field Airport Project.

8. Basin Electric shall file wetland delineation reports prior to construction in wetland areas,

9. The August 26, 2013, Certification Relating to Order Provisions – Transmission Facility Siting (Certification), with accompanying Tree and Shrub Mitigation Specifications, is incorporated by reference and attached to this Order.

10. To the extent there are any conflicts or inconsistencies between Basin Electric's Applications and the August 26, 2013, Certification, the Certification provisions control.

PUBLIC SERVICE COMMISSION

Randy Christmann **Commissioner**	**Brian P. Kalk** **Chairman**	**Julie Fedorchak** **Commissioner**

PUBLIC SERVICE COMMISSION

STATE OF NORTH DAKOTA

Certificate of Corridor Compatibility Number 152

This is to certify that the Commission has designated a transmission facility corridor for Basin Electric Power Cooperative for approximately 197 miles of new, high voltage 345 kV and 230 kV alternating current transmission line and associated facilities extending from Basin Electric's existing Antelope Valley Station and terminating at the Neset 230 kV Substation located near Tioga, North Dakota

This certificate is issued in accordance with the Findings of Fact, Conclusions of Law and Order Order of this Commission dated April 23, 2014 in Case No. PU-11-696 and is subject to the conditions and limitations noted in the Order.

Bismarck, North Dakota, April 23, 2014.

ATTEST:

Jeannell Nitschke

Executive Secretary

PUBLIC SERVICE COMMISSION

Commissioner

PUBLIC SERVICE COMMISSION

STATE OF NORTH DAKOTA

Route Permit Number 164

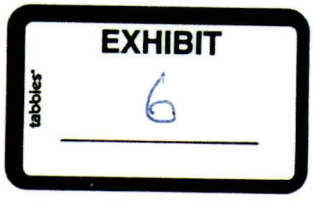
This is to certify that the Commission has designated a transmission facility route for Basin Electric Power Cooperative for approximately 197 miles of new, high voltage 345 kV and 230 kV alternating current transmission line and associated facilities extending from Basin Electric's existing Antelope Valley Station and terminating at the Neset 230 kV Substation located near Tioga, North Dakota

This permit is issued in accordance with the Findings of Fact, Conclusions of Law and Order of this Commission dated April 23, 2014 in Case No. PU-11-696 and is subject to the conditions and limitations noted in the Order.

Bismarck, North Dakota, April 23, 2014.

ATTEST: ***PUBLIC SERVICE COMMISSION***

Executive Secretary ***Commissioner***



STATE OF NORTH DAKOTA

PUBLIC SERVICE COMMISSION

Basin Electric Power Cooperative **Case No. PU-11-696**
345 kV Trans. Line – Mercer, Dunn, McKenzie, Williams
Siting Application

CERTIFICATION RELATING TO ORDER PROVISIONS
TRANSMISSION FACILITY SITING

I am Duey Marthaller, a representative of Basin Electric Power Cooperative ("Company") with authority to bind Company to requirements to be set forth by the Commission in its Order and I certify the following:

1. Company understands and agrees that any Certificate of Corridor Compatibility or Route Permit issued by the Commission will be subject to the conditions and criteria set forth in Chapter 49-22 of the North Dakota Century Code and Chapter 69-06-08 of the North Dakota Administrative Code, and that Company shall be responsible for compliance with this order and conditions and criteria set forth in the applicable laws and rules.

2. Company agrees to hold a preconstruction conference prior to commencement of any construction, which must include a Company representative, its construction supervisor, and a representative of Commission Staff, to ensure that Company fully understands the conditions set forth in the Commission's order.

3. Company agrees to comply with the rules and regulations of all other agencies having jurisdiction over any phase of the transmission facility including all city, township, and county zoning regulations.

4. Company understands and agrees that it shall obtain all other necessary licenses and permits, and shall provide copies of all licenses and permits to the Commission prior to construction activity associated with the transmission facility that requires said license or permit.

5. Company agrees to inform the Commission and the Commission's third-party construction inspector of its intent to start construction on the transmission facility prior to the commencement of construction. Once construction has started, Company shall keep the Commission and the Commission's third-party construction inspector updated on construction activities on a weekly basis.

6. Company understands and agrees that any Certificate of Corridor Compatibility or Route Permit issued by the Commission is subject to suspension or revocation and may, in an appropriate and proper case, be suspended or revoked for failure to

comply with the Commission's order, the conditions and criteria of the certificate or subsequent modification, or failure to comply with the applicable statutes, rules, regulations, standards, and permits of other state or federal agencies.

7. Company agrees to maintain records that will demonstrate that it has complied with the requirements of the Commission's order issuing a Certificate of Corridor Compatibility or Route Permit, and that it will preserve these records for Commission inspection at any reasonable time upon reasonable notice.

8. Company agrees to construct and operate the transmission facility in the manner described in Company's application, in any late filed exhibits, and supplemental materials (Application). To the extent there are any conflicts or inconsistencies between Company's Application and the provisions in this Certification Relating to Order Provisions, the Certification provisions control.

9. Company agrees to report promptly to the Commission the presence in the permit area of any critical habitat or threatened species, endangered species, bald eagles, or golden eagles of which Company becomes aware and which were not previously reported to the Commission.

10. Company understands and agrees that all cultural resource mitigation plans must be submitted to the North Dakota State Historic Preservation Office and approved prior to the start of any fieldwork and construction activity in the affected area.

11. Company understands and agrees that if any cultural resource, paleontological site, archeological site, historical site, or grave site is discovered during construction, it must be marked, preserved and protected from further disturbances until a professional examination can be made and a report of such examination is filed with the Commission and the State Historical Society and clearance to proceed is given by the Commission.

12. Company understands and agrees that all buried facility crossings of graded roads must be bored unless the responsible governing agency specifically permits Company to open cut the road.

13. Company understands and agrees that all pre-existing township and county roads and lanes used during construction must be repaired or restored to a condition that is equal to or better than the condition prior to the construction of the transmission facility and that will accommodate their previous use, and that areas used as temporary roads or working areas during construction must be restored to their original condition.

14. Company understands and agrees that construction must be suspended when weather conditions are such that construction activities will cause irreparable

damage to roads or land, unless adequate protection measures approved by the Commission are taken.

15. Company understands and agrees that all topsoil, up to 12 inches, or topsoil to the depth of cultivation, whichever is greater, over and along trench areas where cuts will be made, must be stripped and segregated from the subsoil. Any area on which excavated subsoil will be placed must also be stripped of topsoil. After backfilling is completed, any excess subsoil must be placed over the excavation area, blending the grade into existing topography. Topsoil must be replaced over areas from which it was stripped only after the subsoil is replaced.

16. Company understands and agrees that reclamation, fertilization, and reseeding is to be done according to the Natural Resources Conservation Service recommendations, unless otherwise specified by the landowner and approved by the Commission.

17. Company understands and agrees that its obligation for reclamation and maintenance of the right-of-way will continue throughout the life of the transmission facility.

18. Company understands and agrees that its obligation for reclamation and maintenance of the transmission facility, associated facilities, and roadways will continue throughout the life of the transmission facility.

19. Company agrees to comply with the Tree and Shrub Mitigation Specifications, attached.

20. Company understands and agrees that it shall work with landowners and residents to mitigate any increase in television and residential radio interference that results from the construction of the transmission facility.

21. Company understands and agrees that it shall repair or replace all fences and gates removed or damaged during all phases of construction and operation of the transmission facility.

22. Company understands and agrees that it shall repair or replace all drainage tile broken or damaged as a result of construction and operation of the transmission facility.

23. Company understands and agrees that staging areas or equipment shall not be located on land owned by a person other than Company unless otherwise negotiated with landowners.

24. Company understands and agrees that it shall remove all waste that is a product of construction and operation, restoration, and maintenance of the site, and properly dispose of it on a regular basis.

25. Company understands and agrees that it shall, as soon as practicable upon the completion of the construction of the transmission facility, restore the area affected by the activities to as near as is practicable to the condition as it existed prior to the beginning of construction.

26. Company understands and agrees that it shall provide any necessary safety measures for traffic control or to restrict public access to the transmission facility.

27. Company understands and agrees that it shall advise the Commission of any extraordinary events which take place at the site of the transmission facility, including injuries to any person, or the death of any threatened or endangered species on the site within five business days of such event.

28. Company understands and agrees that it shall advise the Commission of the discovery of a large number of dead birds or bats on the site within five business days of such event.

29. Company understands and agrees that it shall implement a procedure for how complaints concerning the transmission facility will be handled by Company

30. Upon request, Company agrees to provide the Commission with engineering design drawings of the transmission facility prior to construction.

31. Company understands and agrees that it shall inform the Commission in writing of any plans to modify the transmission facility or of any plans to modify the site plan for the transmission facility. Company understands and agrees to obtain written approval from the Commission prior to any modifications to the site plan or the transmission facility. Approval may be granted after notice and opportunity for hearing.

32. Company agrees to provide the Commission with both an electronic and a paper copy of the corridor approved by the Commission and the facility design specifications for the construction of the transmission facility showing the location of the transmission facility as built, and will provide this information within 3 months of the completion of the construction. Company also agrees to provide an electronic version of the corridor approved by the Commission and the facility design specifications for the construction of the transmission facility showing the location of the transmission facility as built that can be imported into ESRI GIS mapping software within 3 months of the completion of the construction. This electronic map data must be referenced to the North Dakota coordinate system of 1983, North

and/or South zones US Survey feet (NAD 83) UTM Zone 13N or 14N feet (NAD 83), or geographic coordinate system (WGS 84) feet. The vertical data must be in the appropriate vertical datum for the coordinate system used. All submissions must specify the datum in which the data was developed.

33. Company understands and agrees that the authorizations granted by any Certificate of Corridor Compatibility or Route Permit issued by the Commission for the transmission facility are subject to modification by order of the Commission if deemed necessary to protect further the public or the environment.

34. Company understands and agrees that in the event Company desires to construct, within any corridor granted by a Certificate of Corridor Compatibility in this proceeding, a transmission facility or energy conversion facility that was not included in Company's application in this proceeding, Company shall apply to the Commission for a Route Permit or Site Certificate for the facility.

35. Company shall notify the Commission, as soon as reasonably possible, if any damage, as defined by North Dakota Century Code Chapter 49-23, occurs to underground facilities during construction conducted under the certificate or permit issued in this proceeding. In the event of any damage to underground facilities, Company shall suspend construction in the vicinity of the damage until compliance with One-Call Excavation Notice System requirements under North Dakota Century Code Chapter 49-23 has been determined and clearance to proceed has been given by the Commission.

36. Company understands and agrees that the corridor certificate and route permit are subject to suspension or revocation and may, after hearing, be suspended or revoked for failure to comply with the Commission's order, requirements of the One-Call Excavation Notice System under North Dakota Century Code Chapter 49-23, the conditions and criteria of the certificate or permit or subsequent modification, or failure to comply with applicable statutes, or rules, regulations, standards, and permits of other state or federal agencies.

Dated this 26 day of August, 2013.

BASIN ELECTRIC POWER COOPERATIVE

By Duane A Marthaller
Duey Marthaller

Its Manager Civil Engineering

STATE OF NORTH DAKOTA

PUBLIC SERVICE COMMISSION

Basin Electric Power Cooperative
345 kV Trans. Line – Mercer, Dunn, McKenzie, Williams
Siting Application

Case No. PU-11-696

Tree and Shrub Mitigation Specifications

Inventory

1. Trees and shrubs anticipated to be cleared, including those that are considered invasive species or noxious weeds (*e.g., Caragana arborescens, Elaeagnus angustifolia, Rhamnus cathartica, Tamarix chinensis, T. parviflora, T. ramosissima, Ulmus pumila*), must be inventoried before cutting. The inventory must record the location, number, and species of trees and shrubs.

2. In windbreaks, shelterbelts and other planted areas, trees or shrubs anticipated to be cleared, regardless of size, must be inventoried for replacement.

3. In native growth areas, trees anticipated to be cleared that are 1 inch diameter at breast height (dbh) or greater must be inventoried for replacement.

4. In native growth areas, shrubs anticipated to be cleared in the permanent right-of-way must be inventoried for replacement.

5. In native growth areas outside the permanent right-of-way, shrubs must be cut flush with the surface of the ground, taking care to leave the naturally occurring seed bank and root stock intact. If soil disturbance is necessary, the native topsoil must be preserved and replaced after construction. Shrubs must be allowed to regenerate naturally where native topsoil is preserved and replaced. Where native topsoil is not preserved and replaced, shrubs anticipated to be cleared must be inventoried for replacement.

6. In native growth areas, trees and shrubs may be inventoried by actual count or by a sampling method that will properly represent the woody vegetation population. A sampling plan developed by the company, filed with the North Dakota Public Service Commission (Commission) and approved prior to the start of construction must define the sampling method to be used for trees, for tall shrubs and for low shrubs. The data from the sample plots must be extrapolated to the total acreage of the wooded area to be cleared to determine the species and quantity of trees and shrubs to be replaced.

Clearing for Construction

7. Trees and shrubs must be selectively cleared, leaving mature trees and shrubs intact where practical.

8. The maximum width of clear cuts through windbreaks, shelterbelts and all other wooded areas is 50 feet, unless otherwise approved by the Commission.

9. If the area of trees or shrubs actually cleared differs from the area inventoried, the difference in number of trees and shrubs to be replaced must be noted on the inventory.

Replacement

10. Prior to tree and shrub replacement, documentation identifying the number and variety of trees and shrubs removed, as well as the mitigation plan for the proposed number, variety, type, location and date of replacement plantings, must be filed with the Commission for approval.

11. Two 2-year-old saplings must be planted for every one tree removed. Two shrubs (stem cuttings) must be planted for every one shrub removed.

12. Except in the case of invasive or noxious species, trees and shrubs must be replaced by the same species or similar species, suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service.

Invasive or noxious species must be replaced by similar non-invasive or non-noxious species suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service.

13. Landowners must be given the option of having replacement trees and shrubs planted on the landowner's property, either on or off the right-of-way. The landowner must also be given the opportunity to waive those options in writing in order to have replacement trees and shrubs planted off the landowner's property.

14. At the conclusion of the project, documentation identifying the actual number, variety, type, location and date of the replacement plantings must be filed with the Commission.

15. Tree and shrub replacements must be inspected annually, in September, for three years. The first annual inspection must be at least one year from the anniversary date of the original plantings. A report of each annual inspection must be submitted to the Commission by October 1 of each year, documenting the condition of plantings and any woodlands work completed as of September of each year. If after the third annual report the survival rate is less than 75%, the Commission may order additional planting(s).

BASIN ELECTRIC POWER COOPERATIVE

1717 EAST INTERSTATE AVENUE
BISMARCK, NORTH DAKOTA 58503-0564
PHONE: 701-223-0441
FAX: 701-557-5336

December 5, 2011

RECEIVED

DEC 06 2011

PUBLIC SERVICE COMMISSION

Mr. Darrell Nitschke
Executive Secretary
North Dakota Public Service Commission
600 East Boulevard; Dept 408
Bismarck, ND 58505-0480

Dear Mr. Nitschke:

Pursuant to the provisions of Chapter 49-22 of the North Dakota Century Code and implementing rules, Basin Electric Power Cooperative (**Basin Electric**) herby notifies the North Dakota Public Service Commission (**Commission**) of our intent to construct the Antelope Valley Station to Neset 345-kV Transmission Project (**Project**).

In accordance with N.D.A.C. Chapter 69-06-03, the following information is provided to support our Letter of Intent:

1. **Description of Size and Type of Facility and the Area to be Served**

This Project is approximately 200 miles of predominately 345-kV transmission line originating from the Antelope Valley Station, located near Beulah, North Dakota, and terminating at the Neset 230-kV Substation located near Tioga, North Dakota. The 345-kV transmission line will also interconnect with the existing Charlie Creek Substation, located near Grassy Butte and Western Area Power Administration's Williston Substation. Two new substations will be required as a part of this project. The Judson 345-kV Substation will be located near Williston and a 345-kV substation will be located near the current Neset 230-kV Substation. This Project will serve the area in northwest North Dakota.

2. **A Map of the Study Area for the Proposed Site or Corridor**

The attached map depicts the Study area, and the existing: Antelope Valley Station, Charlie Creek Substation, Western's Williston Substation and the Neset 230-kV Substation. Also shown are the two proposed 345-kV substations.

3. **The Anticipated Construction and Operation Schedule**

The Project is expected to start construction in 2014. A two-year construction phase is anticipated with in-service expected in 2016. Permitting efforts including the corridor and route selection processes are underway. The Project requires various state, federal and local permits prior to initiating construction.

4. **An Estimate of the Total Cost of Construction**

The estimated cost for the Project is $300 million.

5. **Additional Information**

Basin Electric is responding to the accelerated growth of power requirements in northwest North Dakota. This transmission project will provide increased load service capacity and system reliability in northwest North Dakota. Basin Electric appreciates the Commission's attention to this matter. Basin Electric looks forward to developing the necessary transmission infrastructure to support our member systems in northwest North Dakota.

Sincerely,

Ronald R. Harper
CEO & General Manager

rrh/cm/gmj

Public Service Commission
State of North Dakota

600 East Boulevard, Dept. 408
Bismarck, North Dakota 58505-0480
Web: www.psc.nd.gov
E-mail: ndpsc@nd.gov
Phone: 701-328-2400
ND Toll Free: 1-877-245-6685
Fax: 701-328-2410
TDD: 800-366-6888 or 711

December 23, 2011

Ronald R. Harper
Basin Electric Power Cooperative
1717 East Interstate Avenue
Bismarck ND 58503

RE:
Case No. PU-11-696
Basin Electric Power Cooperative
345 kV Transmission Line- Mercer, Dunn, McKenzie,
Williams Counties
Siting Application

Dear Mr. Harper:

At its regular meeting on December 21, 2011, the North Dakota Public Service Commission passed a motion acknowledging the Letter of Intent and assessing a filing fee of $100,000 in the above-referenced case. A copy of the Commission motion is enclosed.

Sincerely,

Cara DeSaye

Cara DeSaye
Public Utilities Division

Enclosure

DATE: 12-21-11

MOTION

December 21, 2011

Basin Electric Power Cooperative **Case No. PU-11-696**
345 kV Transmission Line – Mercer,Dunn,McKenzie,Williams
Siting Application

I move the Commission acknowledge the Letter of Intent and assess a filing fee of $100,000 due upon filing of an application in Case No. PU-11-696, Basin Electric Power Cooperative's proposed Antelope Valley Station to Neset 345 kV Transmission Project in Mercer, Dunn, McKenzie and Williams Counties of North Dakota.

JRL

APPENDIX E - DESIGN DATA REPORT

(To be filed to Docket separately)

APPENDIX F - WORK PLAN FOR DISCOVERY OF UNANTICIPATED CULTURAL RESOURCES ARTIFACTS

(To be filed to Docket separately)

APPENDIX G - PLAN AND PROFILE

(To be filed to Docket separately)

APPENDIX H - LEGAL DESCRIPTION FOR THE PROJECT CORRIDOR/ROUTE

(To be filed to Docket separately)

APPENDIX I – STANDARD MITIGATION MEASURES

FINAL EIS

Appendix A—Standard Mitigation/Conservation Measures and Best Management Practices (BMPs) to be Used by Basin Electric for the Proposed AVS to Neset Transmission Project

General	
Gen-1	The requirements of all applicable federal, state, and local environmental laws, executive orders, and regulations will be met during construction and operation of the proposed project.
Gen-2	All permit conditions required by federal, state, and local agencies will be adhered to for construction and operation of the proposed project.
Gen-3	Prior to construction, all construction personnel and heavy equipment operators will be instructed on the protection of cultural, paleontological, and ecological resources, and all applicable permit requirements. Construction contracts will address: • Federal, state, and local laws regarding antiquities, fossils, plants, and wildlife, including collection/removal • The importance and necessity of protecting such resources • All applicable permit requirements
Air Quality	
Air-1	The emission of dust into the atmosphere during construction will be minimized to the extent practical during the excavation and transport of material, site grading, and movement of equipment. Methods and equipment will be used as necessary to suppress or prevent dust during these operations such as use of water trucks, covers on truck beds, attentiveness to dust creation on local gravel roads, or other dust management strategies.
Air-2	All construction equipment and vehicles will be maintained in efficient operating condition and comply with applicable state and federal emission standards. Engine idling time will be limited and equipment will be shut down when not in use. Vehicles and equipment that show excessive emissions or other inefficient conditions will not be operated until repairs or adjustments are made.
Air-3	All waste materials shall be disposed of at permitted waste disposal areas or landfills. Burning or burying waste materials on the right-of-way (ROW) would not be permitted. Tree and grubbing residue may be buried on site or in the ROW with landowner approval.
Air-4	Nuisance to persons, dwellings, or crops resulting from dust originating from construction will be minimized. Oil and other petroleum derivatives will not be used for dust control. Speed limits on local gravel roads will be enforced to reduce dust.

Water Resources	
Water-1	Construction activities will comply with the requirements of North Dakota permits for stormwater discharges for construction activities, which specify appropriate best management practices (BMPs), erosion and sediment control measures, and disposal practices. BMPs will be included in a Stormwater Pollution Prevention Plan. Construction activities adjacent to or encroaching on streams or waterways, including work within ROWs, construction of access roads on hillsides, and dewatering work for structure foundations, or earthwork operations will be conducted to prevent disturbed soils, muddy water, and eroded materials from entering streams or waterways by construction of intercepting ditches, bypass channels, barriers, settling ponds, or by other approved means.
Water-2	Construction activities will be conducted to prevent the accidental spillage of solid matter contaminants, debris, hazardous liquids, or other pollutants into streams, waterways, lakes, land, and underground aquifers. Such pollutants and waste include, but are not restricted to, refuse, garbage, cement, concrete, sanitary waste, industrial waste, oil, and other petroleum products, aggregate processing tailing, and mineral salts. A hazardous materials management and spill prevention plan will be developed for construction that addresses storage, use, transportation, and disposal of hazardous materials, and an emergency response plan will be in place in the event of an accidental spill.
Water-3	Excavated material or construction materials will not be stockpiled or deposited near or on stream banks, lake shorelines, or other waterway perimeters unless protected from high water or storm runoff or encroachment upon the actual waterway itself.
Water-4	Wastewater discharge from any construction operations will not enter streams, waterways, or other surface waters without the appropriate permit(s).
Water-5	Equipment washing, storage of petroleum products, lubricants, solvents and hazardous materials, structure sites, and other disturbed areas will be located at least 100 feet, where practical, from rivers, streams (including ephemeral streams), ponds, lakes, and reservoirs. This includes construction vehicles and heavy equipment when parked overnight or longer.
Water-6	ROW access roads will be located at least 100 feet, where practical, from rivers, ponds, lakes, and reservoirs.

Water-7	All stream crossings considered jurisdictional by the U.S. Army Corps of Engineers (USACE) will be crossed by permit only. Where required, culverts of adequate size to accommodate the estimated peak flow of the stream will be installed. Disturbance of the stream banks and beds during construction will be minimized and temporary during the construction period. Disturbed areas will be revegetated in accordance with mitigation measures listed for soil/vegetation resources and USACE policy regarding the removal of vegetation.
Water-8	If the banks of ephemeral stream crossings are sufficiently high and steep that breaking them down for a crossing will cause excessive disturbance, culverts will be installed using the same measures as for culverts on perennial streams.
Water-9	Heavy equipment movement near streams and other surface waters will be minimized, to the extent practical.
Water-10	Narrow flood-prone areas will be spanned.
Geology and Minerals, Paleontology, and Soils	
Geo-1	Removed topsoil will be used as engineered fill, as appropriate, or stockpiled and re-spread subsequent to construction where allowed.
Geo-2	Access roads will generally follow the contour of the land to the greatest extent practical rather than a straight line along the ROW where steep features will result in a higher erosion potential.
Geo-3	To the extent practical, excavated areas will be re-contoured so that large volumes of water will not collect and stand therein. Before being abandoned, the sides of excavations will be brought to stable slopes, giving a natural appearance, and revegetated. Waste soil piles will be shaped to provide a natural appearance.
Biological Resources	
Bio-1	Prior to construction, potentially-impacted wetland areas will be identified and marked. Wetland and riparian areas will be avoided to the extent practical by spanning of the wetlands and the placement of structures outside of wetland areas. If wetland or riparian areas are unavoidable, impacts will be minimized or mitigated. Jurisdictional waters that are impacted as a result of implementing the proposed project will be mitigated in accordance with USACE requirements.
Bio-2	Care will be used in preserving the natural landscape and vegetation. Construction operations will be conducted to prevent, to the extent practical, any unnecessary destruction, scarring, or defacing of the natural surroundings, vegetation, trees, and native shrubbery in the vicinity of the work. Vegetation will be replaced at landowner's request, provided mitigation complies with North American Electric Reliability Council (NERC) requirements.

Bio-3	Basin Electric Power Cooperative (Basin Electric) will implement BMPs to address the potential spread of noxious weeds during construction activities. Example measures will include the washing of construction vehicles prior to use at construction work sites, revegetation with a native seed mix, and control of noxious weeds during ROW maintenance activities.
Bio-4	Upon completion of work, all non-agricultural disturbed areas and construction staging areas not needed for maintenance access will be re-graded so that all surfaces drain naturally, blend with the natural terrain, and are reseeded to blend with native vegetation with a seed mixture certified as free of noxious or invasive weeds. All destruction, scarring, damage, or defacing of the landscape resulting from construction will be repaired as appropriate.
Bio-5	Construction staging areas will be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent. Unless otherwise agreed upon by the landowner, all storage and construction materials and debris will be removed from the construction staging areas once construction is complete, and the areas returned to original use or re-graded and seeded as for nonagricultural disturbed areas.
Bio-6	Native shrubs that will not interfere with access or the safe operation of the transmission line will be allowed to reestablish in the ROW. Areas with native shrubs that are disturbed will be replanted with regionally-native species following the disturbance.
Bio-7	Trees and shrubs anticipated to be cleared, including those that are considered invasive species or noxious weeds, will be inventoried before cutting. The inventory will record the location, number, and species of trees and shrubs. In windbreaks, shelterbelts, and other planted areas, trees or shrubs anticipated to be cleared, regardless of size, will be inventoried for replacement. In native growth areas, trees anticipated to be cleared that are 1-inch diameter at breast height (dbh) or greater will be inventoried for replacement, as well as all shrubs in the permanent ROW.
Bio-8	In native growth areas outside the permanent ROW, shrubs will be cut flush with the surface of the ground, taking care to leave the naturally occurring seed bank and root stock intact. If soil disturbance is necessary, the native topsoil will be preserved and replaced after construction is completed. Shrubs will be allowed to regenerate naturally where native topsoil is preserved and replaced. Where native topsoil is not preserved and replaced, shrubs anticipated to be cleared will be inventoried for replacement.
Bio-9	In native growth areas, trees and shrubs will be replaced according to Basin Electric's Tree Management Plan. This plan, filed and approved with the North Dakota Public Service Commission (NDPSC), provides for the identification and re-establishment of appropriate numbers and types of trees and shrubs removed as part of ROW clearing and maintenance.

Bio-10	Trees and shrubs will be selectively cleared, leaving mature trees and shrubs intact where practical. The width of clear cuts through windbreaks, shelterbelts and all other wooded areas will be limited to 50 feet or less unless otherwise approved by NDPSC. If the area of trees or shrubs actually cleared differs from the area inventoried, the difference in number of trees and shrubs to be replaced will be noted on the inventory.
Bio-11	Prior to replacement, documentation identifying the number and variety of trees removed as well as the mitigation plan for the proposed number, variety, type, location and date of replacement plantings will be filed with NDPSC for approval. Replanting will use native tree species for the local area, and planting replacement trees in existing areas of native prairie will be avoided. Tree replacement will be on a 2 to 1 basis with 2-year-old saplings. Shrub replacement will be on a 2 to 1 basis with stem cuttings. Trees and shrubs will be replaced by the same species or similar species, except in the case of invasive species or noxious weeds, suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service.
Bio-12	Landowners will be given the option of having replacement trees or shrubs planted off the ROW on the landowner's property or waiving that requirement in writing and allowing those replacement trees or shrubs to be planted at alternative locations.
Bio-13	At the conclusion of the project, documentation identifying the actual number, variety, type, location, and date of the replacement plantings will be filed with NDPSC. Tree and shrub replacements will be inspected once a year for three years, on or about the anniversary of the plantings, and, on or shortly before October 1 of each year, a report will be submitted to the Commission documenting the condition of replacement planting and any woodlands work completed. If after 3 years from the anniversary of the plantings the survival rate is less than 75 percent, NDPSC may order additional planting(s).
Bio-14	Basin Electric's system-wide Avian Protection Plan will be implemented to minimize impacts on nesting birds, as well as to minimize the electrocution and collision of migratory and resident bird species. The Avian Protection Plan includes design provisions for adequate distance between conductors and distances between conductors and grounded surfaces to minimize electrocution risk. It also includes methods for minimizing bird collisions, such as line marking techniques, developed in accordance with recommendations contained in the most recent Avian Power Line Interaction Committee publication "Reducing Avian Collisions with Power Lines, State of Art in 2012". The Avian Protection Plan follows guidelines described at www.aplic.org.
Bio-15	Holes drilled or excavated for pole placement or foundation construction and left unattended overnight will be marked and secured with temporary fencing to reduce the potential for livestock and wildlife to enter the holes, and for public safety.

Cultural Resources	
CR-1	In accordance with 36 CFR Section 800.14(6)(1), the Agencies will execute a Programmatic Agreement that establishes procedures for the identification of historic properties and the assessment and mitigation of adverse effects. Thus, mitigation of impacts of the AVS to Neset Transmission Project on historic properties will be governed by the Programmatic Agreement.
CR-2	To prevent damage to cultural resources, a professional archeologist will flag and monitor areas of potential disturbance to cultural resources during construction of the AVS-Neset Transmission Project components. In addition, all sites identified during construction will be marked as a sensitive location on operation and maintenance maps.
CR-3	During construction, if any paleontological resources are discovered on federal lands, work will cease within a 50-foot radius of the discovery. Any fossils discovered will not be disturbed, and U.S. Department of Agriculture (USDA), Rural Utilities Service, USDA Western Area Power Administration, the U.S. Forest Service, and NDSHPO will be notified of the discovery immediately. Appropriate action to avoid or minimize any impact to the discovery will be identified and implemented.
Land Use	
Land-1	The minimum area necessary will be used for access roads during project construction.
Land-2	When practical, transmission structures will be located and designed to conform to the terrain. Leveling and benching of the structure sites will be the minimum necessary to allow structure assembly and erection.
Land-3	Transmission structures will be located, where practical, to span sensitive land uses. Where practical, construction access roads will be located to avoid sensitive conditions.
Land-4	The precise location of all structure sites, ROW, and other disturbed areas will be determined with landowners' or land management agencies' input.
Land-5	The movement of crews and equipment will be limited to the ROW and areas surveyed for cultural, historical, and biological resources, including access routes. To the extent practicable, the contractor will limit movement on the ROW to minimize damage to grazing land, crops, or property and will avoid marring the land.
Land-6	Where practical, construction activities will be scheduled during periods when agricultural activities will be minimally affected or the landowner will be compensated accordingly.

Land-7	Fences, gates, and similar improvements that are removed or damaged will be promptly repaired or replaced.
Land-8	Transmission structure design and placement will be selected to reduce potential conflicts with agricultural practices and to reduce the amount of land required for transmission lines.
Land-9	ROW will be purchased through negotiations with each landowner affected by the proposed project. Payment will be made of full value for crop damages or other property damage during construction or maintenance.
Land-10	Any ruts will be leveled, filled, and graded, or otherwise eliminated in an approved manner. Ruts, scars, and compacted soils from construction activities in productive hay or crop lands will be loosened and leveled by scarifying, harrowing, disking, or other appropriate methods. Damage to ditches, tile drains, terraces, roads, and other land features will be corrected. Land contours and facilities will be restored as nearly as practical to their original conditions.
Public Health and Safety	
PH-1	When appropriate, pilot vehicles will accompany the movement of heavy equipment. Traffic control barriers and warning devices will be used when appropriate.
PH-2	All necessary provisions will be made to conform to safety requirements for maintaining the flow of public traffic and avoiding congestion at critical locations. Construction operations will be conducted to offer the least possible obstruction and inconvenience to public traffic, such as by the use of pilot cars to accompany trucks with oversized loads and slow-moving vehicles, scheduling heavy equipment transport to avoid high traffic periods, and where feasible, use of existing rail facilities. Construction workers will be encouraged to carpool to the construction site.
PH-3	Design will include reasonable mitigation measures to reduce problems of induced currents into conductive objects within the ROW. Problems of induced currents during construction and operation will be resolved, to the mutual satisfaction of the parties involved.
PH-4	Complaints of radio or television interference generated by the transmission line will be investigated and appropriate mitigation measures will be implemented.
PH-5	Audible noise from construction and operation of the proposed project will be addressed as necessary on a case-by-case basis.
PH-6	Transmission line materials will be designed to minimize corona. Tension will be maintained on all insulator assemblies to assure positive contact between insulators, thereby avoiding sparking. Caution will be exercised during construction to avoid nicking the conductor surface, which may provide points for corona to occur.

PH-7	The construction contractor will establish a health and safety program that incorporates Occupational Safety and Health Administration standards such as requirements for hearing protection, personal protective equipment, site access, chemical exposure limits, safe work practices, training program, and emergency procedures. The program will be reviewed with fire department personnel and emergency services personnel to reduce risk of construction and operation activities interfering with emergency response or evacuation plans and procedures.
PH-8	At the end of every work day, contractors will secure all construction areas to protect equipment and materials and discourage public access. Fueling of vehicles will be conducted in compliance with established procedures designed to minimize fire risks and fuel spills.
Visual Resources	
Vis-1	Structure types (designs) will be uniform, to the extent practical.
Vis-2	Structures will be setback from roadways an appropriate distance to reduce potential visual impacts at highway and trail crossings while still enabling over-road clearances to be maintained.
Vis-3	Construction areas will be maintained in a neat and orderly manner, free of trash and debris.
Noise	
Noise-1	An adequate buffer will be maintained around the proposed substation sites to minimize construction and operational noise impacts on area residents.
Noise-2	Power lines will be designed to minimize noise from energized conductors.
Noise-3	To avoid nuisance noise conditions, transmission line construction within 1,000 feet of a residence will be limited to daytime hours whenever practical.
Noise-4	To avoid nuisance conditions due to construction noise, all internal combustion engines used in connection with construction activity will be fitted with an approved muffler and spark arrester.

In addition to the mitigation/conservation measures discussed above, other more specific measures are being implemented for the AVS to Nest Transmission Project. These measures are designed to minimize impacts of the project as identified in the Final Environmental Impact Statement (FEIS). Further measures may be identified after publication of this this document.

Biological Resources	
	Prohibit construction in designated critical habitat for piping plover during the nesting season (mid-April to mid-August).
	Conduct a presence survey for piping plover prior to initiating construction activities in areas identified as habitat for the species, if construction occurs during nesting season (April 1 through August 31).
	Conduct an occupancy survey for Sprague's pipit prior to construction activities in areas identified as habitat for the species if construction is proposed to occur between April 15 and August 1.
	Coordinate with USFS and North Dakota Game and Fish Department (NDGFD) to avoid construction during bighorn sheep lambing season (April 1 through July 1) in the Little Missouri Badlands area and Little Missouri National Grasslands.
	Selectively clear trees and shrubs leaving mature trees and shrubs less than 8 feet tall intact where practical, in areas where the ROW crosses lands managed by USACE near the Missouri River. This action will support the wildlife migration corridor in this area.
	Generally do not place structures within 0.25 mile of active greater sage-grouse and plains sharp-tailed grouse lek sites. In addition, Basin Electric will consult with the agencies prior to construction within a 1-mile radius of an active lek during the period of March 1 through June 15. If construction will occur within 1 mile of any historic lek during this time period, surveys will be done prior to construction to determine use of the lek.
	Avoid construction activities within 1,000 feet of suitable hibernacula during the winter hibernation period (roughly late fall to early spring), to decrease direct impacts on the long-eared bat during construction. In addition to avoiding hibernacula during construction, all mature, dead, or dying trees will be left intact, where they do not pose a safety concern for line reliability.

	Prepare a complete habitat assessment according to the *Guidelines for Biological Survey Reports – U.S. Army Corps of Engineers, Garrison Project, June 2010*. This assessment will fully discuss the biological resources found within the project ROW located across USACE lands. Surveys for this report will be conducted in spring 2014. Reports will be submitted and approved by USACE prior to commencement of construction activities on USACE lands.
	Survey the selected alternative for eagle and other raptor nests in 2014 prior to construction. Following surveys, 1-mile buffers will be established between February 1 and July 31, and construction activity (including helicopter flights) will be prohibited within this area during this time period.
Land Use	
	Restrict cattle from grazing within the ROW after construction is completed until grass is re-established within the ROW.
	The North Dakota Natural Heritage Inventory database indicates that a significant ecological community of western little bluestem prairie is located within 1,000 feet of the centerline for the Red to Charlie Creek segment for of the preferred alternative. It is anticipated that the construction and operation of line will avoid this sensitive area, since it is not within the ROW. However, if this area will be affected based on the final route alignment Basin Electric will coordinate closely with the Natural Heritage Inventory and NDGFD to avoid, minimize, or mitigate any adverse impacts to this area.
Transportation and Infrastructure	
	Follow the American Railway Engineering and Maintenance-of-Way Association specifications for steady and rail-to-ground and equipment-to-ground voltage levels to avoid electrical interference from capacitive, electric and magnetic, and conductive effects.
	Provide appropriate as-built drawings to USACE, following completion of construction.
Visual Resources	
	Construct structures of weathering steel (compared to galvanized steel construction) to reduce visual contrast to the surrounding landscape in the areas at the Little Missouri and Missouri River crossings.
Construction Plans	

	Submit a construction work plan to USACE prior to the commencement of construction activities on portions of the ROW managed by USACE. Following completion of construction, Basin Electric will provide appropriate as-built drawings to USACE.

APPENDIX J - NIEHS REPORT

(No change to appendix)

APPENDIX K - EMF ANALYSIS

(No change to appendix)

APPENDIX L - NOISE ANALYSIS

(No change to appendix)

APPENDIX M - VISUAL SIMULATIONS

(No change to appendix)

APPENDIX N - CLASS I SURVEY RECORDED CULTURAL RESOURCES AND INVENTORIES

(To be filed to Docket separately)

APPENDIX O - REPRESENTATIVE LIST OF WILDLIFE AND FISH SPECIES IN PROJECT AREA

(No change to appendix)

APPENDIX P - U.S. FOREST SERVICE SENSITIVE WILDLIFE SPECIES

(No change to appendix)

APPENDIX Q - SPECIAL STATUS VEGETATION AND SURVEY REQUIREMENTS

(No change to appendix)

APPENDIX R - 100 SPECIES OF CONSERVATION PRIORITY FOR NORTH DAKOTA

(No change to appendix)

APPENDIX S - BIOLOGICAL ASSESSMENT

(To be filed to Docket separately)

APPENDIX T - BIOLOGICAL EVALUATION

(To be filed to Docket separately)

APPENDIX U - LOAD PROJECTIONS STUDY

(To be filed to Docket separately)

APPENDIX V - TREE AND SHRUB REPLACEMENT PLAN

(No change to appendix)

APPENDIX W – FINAL EIS

(To be filed to Docket separately)

APPENDIX X – BIOLOGICAL OPINION

(To be filed to Docket separately)

APPENDIX Y – PERMITS

(To be filed to Docket separately)

APPENDIX Z – PROGRAMMATIC AGREEMENT FOR CULTURAL RESOURCES

(To be filed to Docket separately)

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