DRAFT ENVIRONMENTAL ASSESSMENT

OF

TRANSMISSION FACILITIES ON USFWS GRASSLAND AND WETLAND EASEMENTS

Big Stone South to Ellendale
345 kV Transmission Line Project

November 2015

U.S. Fish and Wildlife Service

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List of Acronyms and Abbreviations

Abbreviation	Definition
ac	acres
AC	Alternating Current
ACSR	Aluminum conductor steel reinforced
APLIC	Avian Power Line Interaction Committee
Applicants	Montana-Dakota Utilities Co. and Otter Tail Power Company
BMP	Best Management Practice
CEQ	Council on Environmental Quality
dBA	A-weighted decibel
EHS	Extra High Strength
EMF	Electric and Magnetic Fields
EA	Environmental Assessment
ESA	Endangered Species Act of 1973, as amended
ft^2	square feet
HVDC	high voltage direct-current
kV	kilovolt
kcmil	thousand circular mils
MBTA	Migratory Bird Treaty Act
mi	mile
MISO	Midcontinent Independent System Operator, Inc.
MVP	Multi-Value Project
MW	Megawatt
ND	North Dakota
NESC	National Electricity Safety Council
NEPA	National Environmental Policy Act
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
OPGW	Optical Ground Wire
Project	Big Stone South to Ellendale Transmission Line Project
PSC	North Dakota Public Service Commission
PUC	Public Utilities Commission
ROW	Right-of-Way
SCN	soybean cyst nematode

Abbreviation	Definition
SD	South Dakota
SHPO	State Historic Preservation Officer
SWPPP	Stormwater Pollution Prevention Plan
TCP	Traditional Cultural Property
THPO	Tribal Historic Preservation Officer
TW	Trapezoidal wire
USACE	United States Army Corps of Engineers
USGS	U.S. Geological Survey
USFWS	U.S. Fish and Wildlife Service
WMD	Wetland Management District

1 Introduction

1.1 Background

This Environmental Assessment (EA) has been prepared by the U.S. Fish and Wildlife Service (USFWS) to assess the impacts of issuing a Letter of Non-Objection for the establishment of Right-of-Way (ROW), and construction, operation, and maintenance activities, associated with the proposed Big Stone South to Ellendale Project across USFWS grassland and wetland easement lands.

The USFWS is the only federal agency for this EA and is responsible for review of the Applicants' proposal in accordance with the National Environmental Policy Act (NEPA). The joint Applicants are Montana-Dakota Utilities Co., a Division of MDU Resources Group, Inc., (Montana-Dakota), and Otter Tail Power Company, (Otter Tail Power). The Applicants propose to construct the Big Stone South to Ellendale Project (Project). The proposed Project will consist of both a 345-kilovolt (kV) transmission line that is about 162 miles long traversing through North Dakota and South Dakota, and the Ellendale 345-kV Substation located near Ellendale, North Dakota.

The proposed Project is a Multi-Value Project (MVP). The purpose of these MVPs is to reduce the wholesale cost of energy delivery for the consumers across the Midcontinent Independent System Operator, Inc. (MISO, formerly Midwest Independent Transmission System Operator [Midwest ISO]) region by enabling the delivery of low-cost generation to load, reducing congestion costs, and increasing system reliability. The proposed Project is one of seventeen MVPs approved that met this need in the MISO footprint.

The South Dakota Public Utilities Commission (PUC) issued a Final Decision and Order on August 22, 2014 (Case No. EL13-028), and the North Dakota Public Service Commission issued a Findings of Fact, Conclusions of Law and Order for a Certificate of Corridor Compatibility for a Transmission Facility Corridor and a Route Permit on July 10, 2014 (Case No. PU-13-840).

The Applicants will share an equal percentage of ownership of the transmission line. Montana-Dakota is headquartered in Bismarck, North Dakota, and provides natural gas and/or electric service to parts of Montana, North Dakota, South Dakota, and Wyoming and will be the sole owner of the Ellendale Substation. Its service area covers about 168,000 square miles and includes approximately 312,000 customers.

Otter Tail Power is headquartered in Fergus Falls, Minnesota, and provides electric service to parts of Minnesota, North Dakota, and South Dakota. Its service area covers about 70,000 square miles and includes approximately 129,400 customers in 422 communities.

1.2 Project Location

The proposed Project will consist of approximately 162 miles of single-circuit 345-kV transmission line and a new 345-kV substation located near Ellendale, North Dakota. The proposed Project connects the new Ellendale 345-kV Substation in North Dakota and the Big Stone South Substation near Big Stone City, South Dakota (see Figure 1).

1.2.1 Project Route Description

The proposed Project route consists of about 162 miles of single-circuit 345-kV transmission line.

The North Dakota portion of the proposed Project route consists of about 9 miles of transmission line and the new Ellendale 345-kV Substation, all located in Dickey County, North Dakota. The South Dakota portion of the proposed Project route consists of 153 miles of transmission line in Brown, Day, and Grant counties, South Dakota.

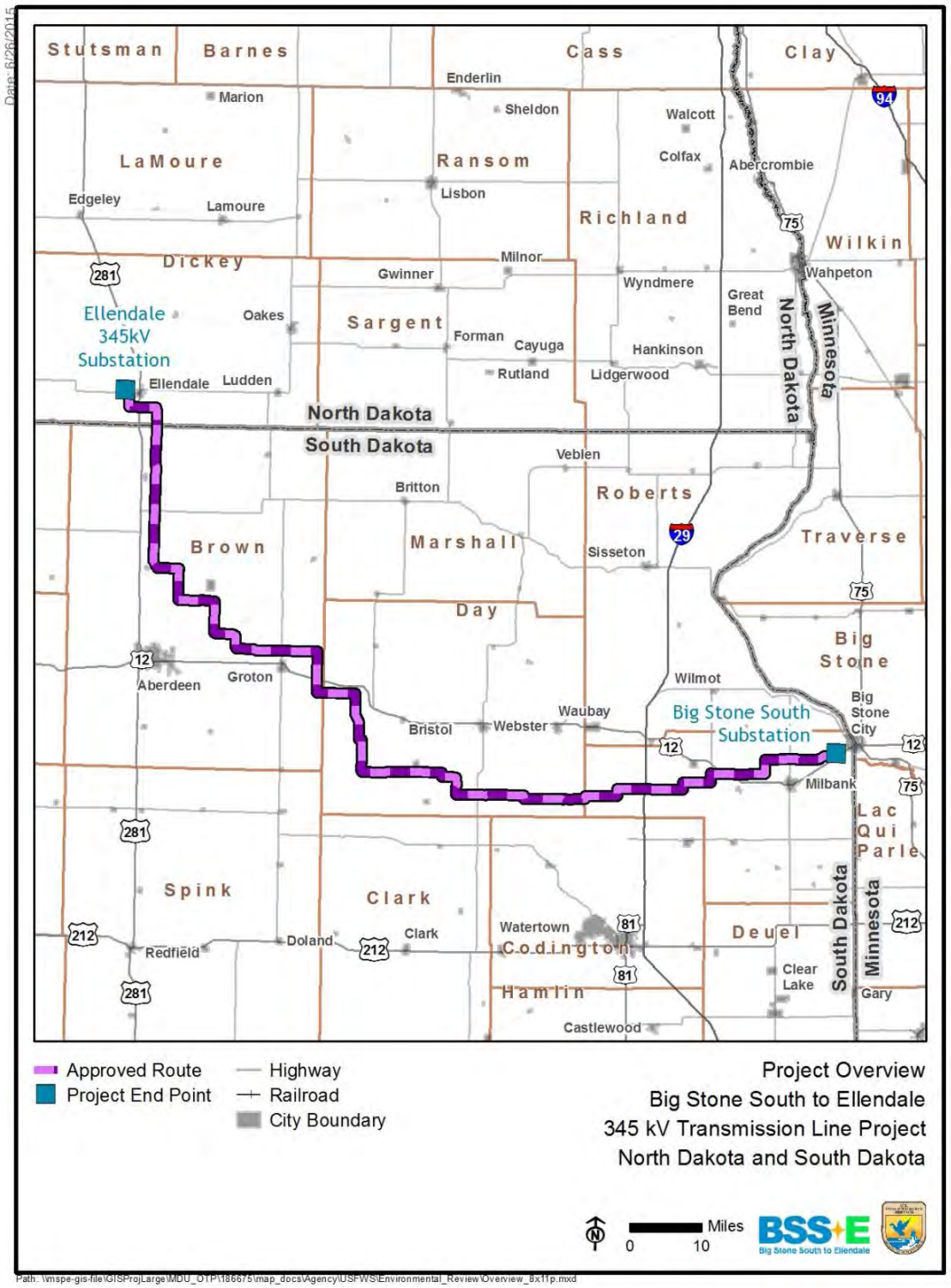
The detailed location of the proposed route is included in the map book in Appendix A. However, this proposed route may be subject to some refinement following completion of resource surveys and consultations and land rights discussion, and the exact length and location of the route is, as a result, subject to some minor adjustments during the final design stage.

1.2.2 Study Area Description

The Study Area for this EA consists of the USFWS easements that are crossed by the proposed Project ROW. Access roads were also assessed but only one access road at Structure 620 will be permanent, the rest are temporary and subject to change due to field conditions, landowner requests, and cultural resources. The proposed Project ROW will be 150-feet wide and will cross 12 grassland easements and 37 wetland easements. The 12 grassland easements crossed would have impacts from proposed transmission line structures and one permanent access road. Approximately 2,512 square feet (0.058 acres) of grassland easements would be directly permanently impacted by structures. Structure 620 and the permanent access road will result in 0.42 acres of impact to grassland easement. Out of the 37 wetland easements crossed, 32 wetland easements would have proposed transmission line structures on them, but only three structures would be in protected wetlands, resulting in 236 square feet (0.005 acres) of direct permanent impacts. The proposed Project ROW would overhang 5 USFWS wetland easements, but no structures would be installed on the easement parcel. Indirect impacts could occur on adjacent easement lands from increased sedimentation and runoff during construction and maintenance activities; noise; and, visual impacts.

The purpose of wetland easements is to conserve the wetland areas and the purpose of the grassland easements is to conserve the grasslands. Note that typically where there is a grassland easement there is also a wetland easement as this arrangement preserves the grassland and wetland mosaic. Easement activities and enforcement actions are in the jurisdiction of local USFWS Wetland Management District (WMD) personnel. The proposed Project crosses three USFWS WMDs: Kulm WMD (Dickey County, North Dakota), Sand Lake WMD (Brown County, South Dakota) and Waubay WMD (Day County and Grant County, South Dakota). Appendix A – Project Map Book shows locations of the USFWS grassland and wetland easements along the proposed Project route. Tables 4, 5, and 6 in Chapter 4 lists the USFWS easements that are crossed by the proposed Project ROW or by temporary access roads.

Figure 1: Project Location



1.3 Project Schedule

The Applicants propose that the proposed Project be in-service in 2018. A preliminary permitting and construction schedule for the proposed Project is provided below. This schedule is based on information known as of this Environmental Review and is based upon planning assumptions. This schedule may be subject to adjustment and revision as further information is developed.

1. **State Commission Approvals:** The South Dakota Public Utilities Commission (PUC) issued a Final Decision and Order on August 22, 2014 (Case No. EL13-028), and the North Dakota Public Service Commission issued a Findings of Fact, Conclusions of Law and Order for a Certificate of Corridor Compatibility for a Transmission Facility Corridor and a Route Permit on July 10, 2014 (Case No. PU-13-840).

2. **Equipment Procurement, Manufacture, and Delivery:** The Applicants will begin ordering the transmission and substation components as soon as practicable. Once the components have been ordered, delivery is anticipated to occur so as to allow construction to begin in 2016.

3. **Construction:** Proposed Project construction is expected to begin in 2016, subject to obtaining applicable permits. Construction would continue through 2018.

4. **Test and Operations:** The Applicants anticipate that system commissioning would occur in 2018.

5. **In-Service Date:** The expected in-service date in 2018.

6. **Clean-up and Restoration:** Clean-up and restoration activities may extend through 2019.

1.4 Purpose of and Need for Action

The Applicant's purpose and need for the proposed Project is to reduce the wholesale cost of energy delivery for the consumers across the MISO service region by enabling the delivery of low-cost electrical generation to load, reducing congestion costs, and increasing system reliability. The proposed Project is one of seventeen MVPs approved that met this need in the MISO footprint.

The USFWS will determine whether or not to issue a Letter of Non-Objection for the establishment of ROW and construction, operation, and maintenance of the proposed Project across USFWS easement lands. In order for the USFWS to issue a Letter of Non-Objection, the proposed Project would need to meet all applicable regulations pertaining to rights-of-way projects and to projects involving electrical power transmission lines (50 CFR 29.21-4 and 29.21-8), across USFWS easement lands.

1.5 Environmental Assessment

This USFWS EA has been developed to address and disclose the proposed Project's impact to USFWS easements ("the Proposed Action"). This EA is part of USFWS' evaluation process for issuance of a Letter of Non-Objection.

The USFWS' consideration of whether to issue a Letter of Non-Objection is a discretionary federal action that triggers the need for compliance with NEPA. The intent of NEPA is to support decision makers in making well-informed decisions based on an understanding of the potential environmental consequences of their action. NEPA established the Council on Environmental Quality (CEQ) that was charged with the development and implementation of regulations and ensuring federal agency compliance with NEPA. The CEQ regulations mandate that all federal agencies use a prescribed structured approach to environmental impact analysis. This approach also requires federal agencies to use an interdisciplinary and systematic approach in their decision-making process. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action.

The process for implementing NEPA is codified in Title 40 CFR, Parts 1500–1508, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act.) This EA has been prepared in compliance with the requirements of NEPA, as amended P.L. 91-190 (42 USC 4321–4347); the requirements set forth in the CEQ Regulations for Implementing the Procedural Provisions of NEPA relating to USFWS compliance with NEPA for USFWS actions (40 CFR Parts 1500–1508); the DOI NEPA procedures (43 CFR Part 46); and the USFWS NEPA Reference Handbook.

A comprehensive list of impact topics were considered during development of this EA. These impact topics were identified based on Federal laws, regulations, and Executive Orders; and the Applicants' knowledge of limited or easily impacted resources. A brief rationale for the selection of each impact topic to be carried forward in the analysis in this EA and the rationale for dismissing other topics from further consideration are described in Table 1.

Table 1: List of Topics Analyzed in this EA

Resource	EA Analysis Completed?	Justification
Physical Resources		
Physiography	No	Physiography, or physical geography, is a broad study of the physical patterns and processes of a region, including geology, climatology, and large-scale biological processes. The proposed Project lies within the Great Plains and Central Lowlands physiographic provinces, within the Interior Plains physiographic region. The Proposed Action would not impact any physiographic features or processes of the area.
Geology/Minerals	No	There are no unique geologic features, minerals, or oil and gas resources in the proposed Project area that would be impacted by the Proposed Action. Likewise, seismic risk is considered low. No subsidence potential or slope instability problems have been identified.
Paleontology	No	South Dakota, in particular, is known for very high potential of fossil yields, especially the Badlands, mostly along the White River, and the Hell Creek Formation (BLM 2013). Both of these areas are located west of the proposed Project route. East of the Missouri River, the Pierre Formation covers much of the Dakotas. Retreating glaciers during the last ice age in the eastern half of the states covered the area where the proposed Project is located in glacial sediment. The fossil-bearing rocks that are there are largely buried at depth much greater than where the transmission line structures would be installed (BLM 2013). Therefore, the proposed Project is not anticipated to affect any paleontological resources.
Soils	Yes	The Proposed Action would disturb soils along the transmission line route.
Surface Water	Yes	The proposed Project traverses two distinct hydrologic regions. The eastern and western portions tend to have a high density of pothole lakes and wetlands with a lower frequency of stream cannels. Conversely, the central portion of the proposed Project well-defined creeks and streams and a lower density of small isolated wetlands.
Groundwater	No	The proposed Project is underlain by unconsolidated geologic and soil materials that are generally of low permeability, resulting in a low groundwater potential. Additionally, none of the bedrock formations crossed by the proposed Project are significantly developed for groundwater supplies.

Resource	EA Analysis Completed?	Justification
Wild and Scenic Rivers	No	No wild or scenic rivers exist within or directly adjacent to the proposed Project.
Air Quality	No	All counties within both South Dakota and North Dakota are in attainment for all criteria air pollutants (USEPA 2015). Construction and maintenance equipment would emit minor, temporary emissions; these emissions would be well below reporting or permitting requirements and would not violate any ambient air quality standards. Fugitive dust emissions would be suppressed on an as needed basis through the use of Best Management Practices.
Biological Resources		
Vegetation	Yes	Impacts would occur from transmission line construction activities, access route and staging area construction, and vehicular traffic. Disturbance would include vegetation clearing and crushing of shrub and herbaceous vegetation from vehicles, equipment, and pole placement.
Wetlands and Riparian Areas	Yes	Numerous freshwater emergent wetlands occur within the ROW.
Wildlife	Yes	Impacts on wildlife during construction could include habitat fragmentation and animal displacement. Construction during the nesting season could result in the displacement of individual birds in and adjacent to the ROWs from increased noise levels and human presence. Other impacts include potential collision risk for migratory birds. Collision risks are primarily limited to areas where transmission lines cross important foraging and roosting habitats used during migration, and collisions could occur as the birds land and take off within these areas.
Federally Listed Species	Yes	Direct impacts during construction could include disturbance and habitat fragmentation. Impacts to federally listed species are discussed under vegetation and wetlands, and wildlife, respectively.
Heritage Resources and the Human Environment		
Cultural Resources	Yes	Proposed construction activities could result in both direct and indirect impacts on archaeological and historic resources.
Native American Concerns	Yes	Traditional Cultural Properties surveys were conducted in 2014 and will continue in 2015.

Resource	EA Analysis Completed?	Justification
Visual Resources	Yes	There would be potential impacts associated with the Proposed Action on visually sensitive areas such as travel routes, parks, cemeteries, and residential areas from construction of the Proposed Action.
Noise	Yes	Proposed construction activities would increase the ambient noise level in the surrounding areas.
Socioeconomics	No	No long-term jobs would be generated by the proposed Project. However, long-term benefits of the proposed Project would be passed on to the electrical consumers within the proposed Project area. Impacts to socioeconomic resources from the Proposed Action on USFWS easement lands would be negligible.
Environmental Justice	No	Executive Order 12898, Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations, requires all federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. Although the proposed transmission line route has elevated levels of both minority and low-income populations relative to the States of North Dakota and South Dakota, the Proposed Action is not anticipated to disproportionately impact these populations due to the minimal changes to the physical and human environment from the proposed Project.
Wastes (Hazardous or Solid)	No	Construction activities associated with the proposed Project would generate construction debris waste, which would require proper disposal. Recycling and/or reuse of all discarded materials would be encouraged whenever possible. Any non-hazardous construction debris or other solid waste that could not be reused or recycled is anticipated to be disposed of by a contractor at a landfill. If portable restrooms were brought on site for employee use during the construction period, they would be provided by a private contractor. The overall impact of waste generated from the proposed Project would be negligible.

Resource	EA Analysis Completed?	Justification
Human Health and Safety	No	No new or additional fire or law enforcement resources would be needed to support the Proposed Action. There is no federal standard for transmission line electric fields, nor state standards in North Dakota or South Dakota. Electric and magnetic field (EMF) levels for the proposed Project would be below the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines (2,000 mG and 4.2 kV/m) for public exposure to EMF. The results of the Applicants' analysis show that calculated EMF levels for the proposed facilities are under maximum operating conditions and normal operating conditions on the edge of the ROW are below the published guidelines from ICNIRP and the Institute of Electrical and Electronic Engineers. There are no anticipated stray voltage impacts or induced voltage impacts expected as a result of the Proposed Action.
Land Resources		
Recreation	No	Although recreation such as hunting and bird watching may occur on USFWS easements, all easements affected by the proposed Project are located on private lands and users must seek permission from the landowner to enter the property. Construction and maintenance associated with the Proposed Action is not anticipated to have any direct impact on recreational opportunities and recreational infrastructure in the proposed Project area. However, any indirect impacts on recreation experience caused by noise or visual impacts are discussed under those respective sections in this EA.
Farmlands Prime and Unique	No	Impacts to soils classified as prime or unique farmland are discussed under the soils section. However, lands with such soils that are actively cultivated are not typically found within USFWS easements. The Proposed Action is not anticipated to have an impact on the amount or use of farmlands in the area.
Wilderness Areas/Wilderness Characteristics	No	No areas with wilderness characteristics are found in or near the proposed Project area.

Resource	EA Analysis Completed?	Justification
Land Use	No	No changes to land use within the proposed ROW are anticipated. The vast majority of the land crossed by the proposed Project is cultivated agriculture or pasture privately-owned land. The land within the proposed Project ROW may continue to be farmed and grazed; permanent disturbance will be limited to the footprint of the transmission line structures which represents a very small fraction of the land along the proposed Project.
Transportation/Access	Yes	To construct the proposed Project under the Proposed Action, construction workers would travel to and access the proposed structure locations from existing roads that intersect the proposed Project. Therefore, potential impacts on transportation systems and access could occur.

2 Proposed Action and Alternatives

Two alternatives (the Proposed Action and No Action Alternative) are addressed in this EA. The Proposed Action Alternative involves the construction, operation, and maintenance of the proposed Project. Under the No Action Alternative, the Applicants would not undertake the Proposed Action.

2.1 Description of Proposed Action

Under the Proposed Action, the USFWS would issue a Letter of Non-Objection for the construction, operation, and maintenance of the proposed Project across USFWS easement lands.

The proposed Project will involve construction and operation of approximately 162-miles of new 345-kV single circuit transmission line between the Big Stone South Substation near Big Stone City, South Dakota and the new Ellendale 345-kV Substation near Ellendale, North Dakota. The transmission line will consist of overhead wires supported by steel monopole structures. The construction process would also involve construction of temporary access roads and permanent access roads only where absolutely necessary and construction of 4-5 temporary laydown areas for storage of supplies and equipment during construction. However, no laydown areas will be located on grassland easements or within protected USFWS wetlands in wetlands easements.

The transmission line and substation will be designed to meet all National Electric Safety Code (NESC) standards, all relevant state codes, and other standards that the Applicants have adopted. Appropriate standards will be met for construction and installation and all applicable safety procedures will be followed during and after installation. The standards have been established to identify minimum conductor distances to ground, conductor spacing, and other parameters. The following summarizes applicable standards as they relate to this proposed Project.

In general, a high-voltage transmission line consists of three phases, each at the end of a separate insulator string which are physically supported by structures. Each phase consists of one or more conductors. When more than one conductor is used to make up a phase, the term “bundled” conductors is used. Conductors are metal cables consisting of multiple strands of steel and aluminum wire wound together. The proposed Project will be utilizing a twisted pair (“T2”) conductor which was primarily selected because the twisted vertical bundles reduce the risk of galloping. There are also two shield wires strung above the electrical phases to prevent, to the extent possible, lighting from striking the phases. Shield wires are typically less than 1 inch in diameter. One of the shield wires will also include fiber optic cable that allows a path for substation protection and control equipment to communicate to equipment at other terminals on the transmission line. Transmission lines are constructed on a ROW in which the width is primarily dependent on structure design, span length, and the electrical safety requirements associated with the transmission line voltage. The ROW width for the proposed transmission line will generally be 150-feet.

2.1.1 Transmission Structure

Single pole, self-weathering or galvanized tubular steel single circuit structures are proposed for the majority of the proposed Project (Figures 2 and 3). The self-weathering steel oxidizes or rusts to form a dark reddish brown surface coating to protect the structure from further corrosion. The steel single poles ("monopoles") are placed on large concrete foundations, which are wider than the pole base and will either be direct embedded or drilled pier, depending on results of geotechnical surveys. Table 2 outlines typical characteristics of the 345-kV transmission line structures. Final design and geotechnical investigations may warrant the use of special structures to avoid sensitive areas, comply with reasonable landowner desires, or accommodate special engineering circumstances.

Table 2: Typical Characteristics of 345kV Transmission Line Structures

345 kV Transmission Line	Details
Voltage (kV)	345 kV
ROW width (feet)	150
Approximate span length (feet)	1,000
Range of structure heights (feet)	95 - 180
Number of structures per mile	5 - 7
Minimum ground clearance beneath conductor (feet)	35 - 40
Depth of concrete footings for the poles (feet)	25 - 50
Diameter of concrete footings for the poles (feet)	6 - 11
Average area of permanent disturbance per structure (square feet)	78.5 for 10 foot diameter footing

Figure 2: Typical Monopole Graphic

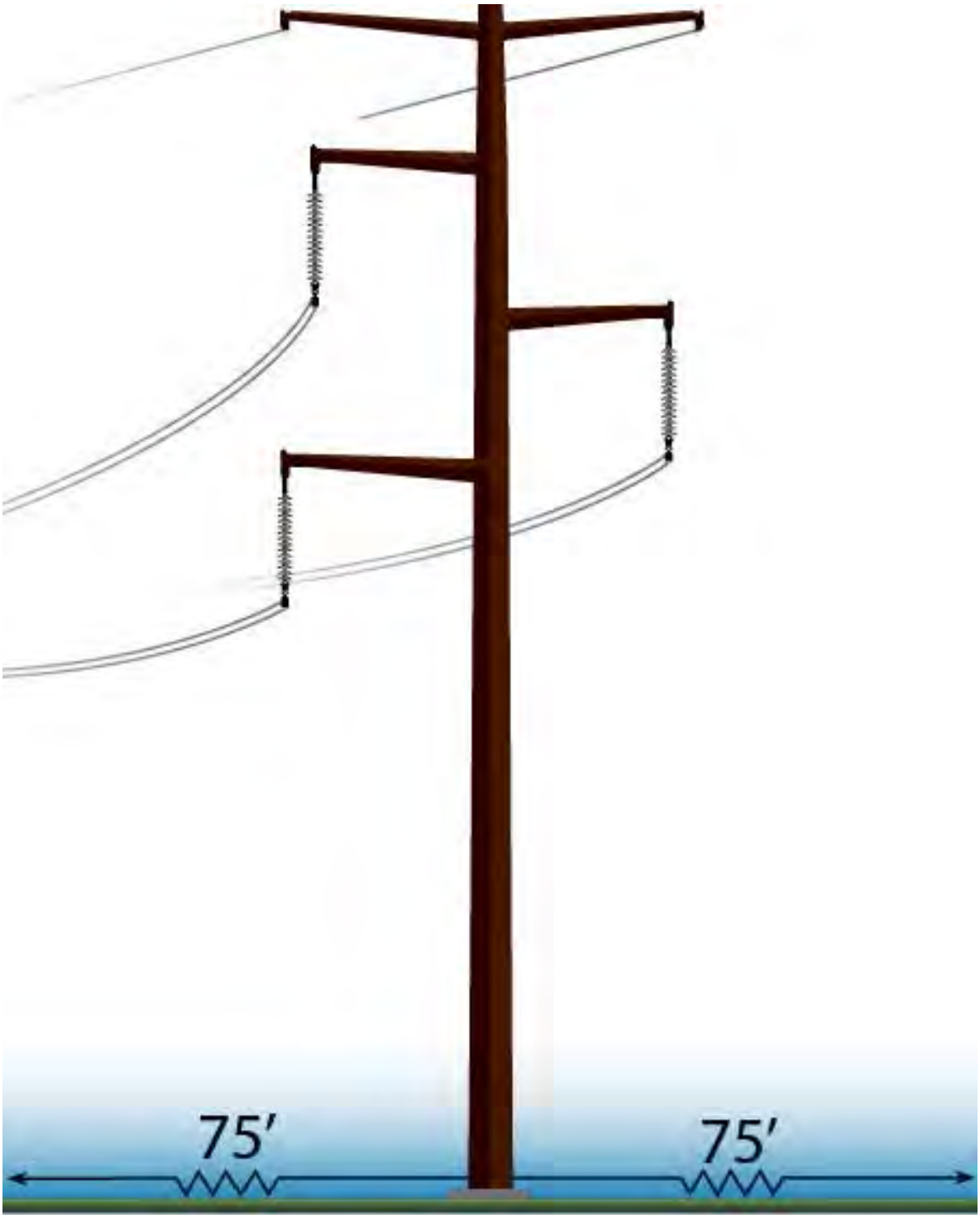
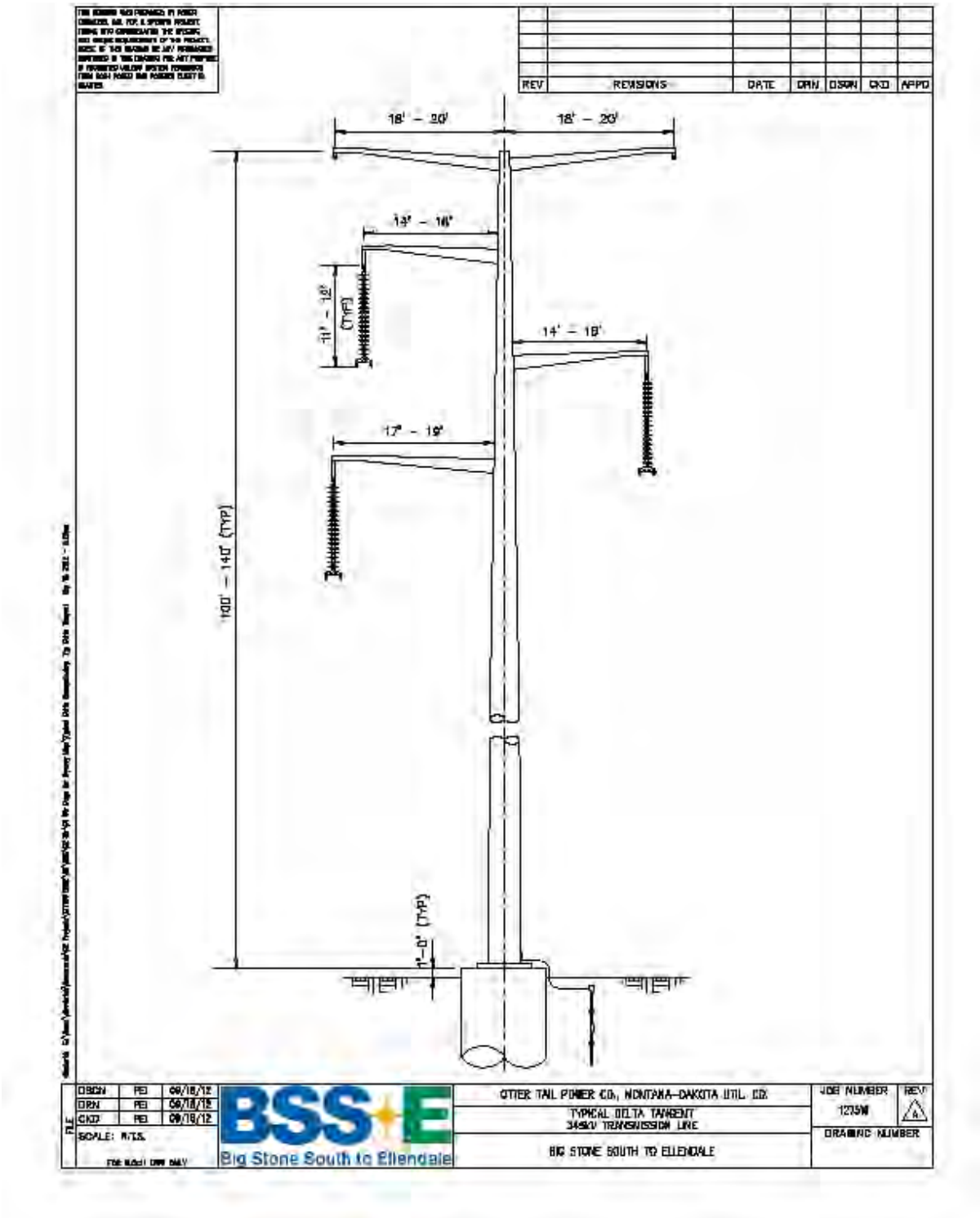


Figure 3: Typical Monopole Design



2.1.2 Right-of-Way Design

The majority of the new 345 kV-transmission line structures will be built with single poles, which typically require a 150-foot-wide ROW for the length of the transmission line. If the transmission line is placed on property division lines across private land, the easement width to be acquired from each of the adjacent landowner(s) will vary. The Applicants will coordinate with WMD staff regarding location of all transmission structures on USFWS easement lands. WMD staff will be notified when structure locations are staked so they may inspect and ensure structures are not in protected basins, wetlands, or other sensitive resources.

It is intended that the proposed Project will not share ROW with existing ROW features; rather, it will parallel ROWs of existing features. Throughout the route development process, the Applicants sought to identify areas to parallel existing linear features including roads. Identification of opportunities to parallel existing linear features minimizes the proliferation of new ROW corridors. In general, the transmission line centerline will be offset 183 feet from section lines to facilitate farming practices, 10 feet from quarter line section lines and on field edges, where approved. Cross country routing was avoided where possible.

Given the terrain in the area, construction of access roads outside of the ROW will generally not be needed. If obstructions exist that are completely blocking ingress and/or egress along the ROW, such as flowing creeks, the Applicants will arrange with landowners to use existing field roads or create temporary access from state and county highways to access the structure locations. One permanent road will be installed on USFWS easement lands at Structure 620, which is located on a grassland easement in Grant County (NW ¼ of Section 10 in Township 120N, R51W). The access road and other special construction methods required for Structure 620 is discussed in Section 2.1.4.

The Applicants' land agents will work individually with property owners to purchase easements for the proposed Project. Under the easement agreements, property owners will not be allowed to place any structures or other objects within the 150-foot ROW that will restrict access to the ROW, inhibit maintenance of the transmission line, or jeopardize safe operations of the transmission line, without the Applicants prior written approval.

2.1.3 Right-of-Way Preparation

The proposed Project primarily crosses agricultural and pasture lands. For safety and reliability purposes, tree and shrub clearing will be required in some areas in the proposed Project ROW. However, where safety requirements permit, trees and low growing shrub species will remain (generally less than 15 feet in height). Significant amounts of grading are not anticipated for preparation of the transmission line ROW. Some grading will be required for access roads and river crossings (if site conditions deem necessary) and other areas in which direct access is challenged and may require temporary access measures.

2.1.4 Transmission Construction Procedures

Construction will begin after required federal, state, and local approvals are obtained, sufficient property and ROWs are acquired, soil conditions are determined and final design is completed. The precise timing of construction will depend upon the various requirements that may be in place due to permit conditions, weather conditions, and available workforce; it is currently anticipated that tree clearing will being in fall 2015 and construction could begin June of 2016.

Transmission line structures are generally designed for installation at existing grades. Typically, structure sites with 10 percent or less slope will not be graded or leveled. At sites with more than 10 percent slope, working areas will be graded level or fill will be brought in for working pads. If the landowner permits, the Applicants prefer to leave the leveled areas and working pads in place for use in future maintenance activities. If the landowner does not wish to leave the area leveled, the site will be graded back to its pre-construction condition as much as possible, and all imported fill will be removed. No permanent change to existing grades will be required on USFWS easements, with the exception of the work area around Structure 620 as previously mentioned. Due to steep slopes in the area, Structure 620 will require a permanent access road and leveling of the work area around the proposed structure location to provide for a safe work area. The access road will be approximately 14 feet wide. The work area will be an approximately 100 foot diameter circle area centered on the structure. The ground elevation at the structure location will not be changed, but the ground above the structure elevation will be cut and the ground below filled. The cut and fill work will result in a max slope of two to three percent across the work area. The area of permanent impact will be approximately 0.42 acres. No ditches, berms, or culverts will be required during or after construction. The access road and work area grades will be maintained permanently to allow for access to maintain and repair the transmission line as needed. A grading plan for Structure 620 is included in Appendix B.

Construction laydown areas will be established for the proposed Project to handle delivery and temporary storage of equipment and materials necessary to construct the new transmission line facilities. Structures may either be delivered to the staked location or may be stored temporarily at a laydown area. When the structures are delivered to the location where they will be installed, they will be placed on the ROW out of the clear zone of any adjacent roadways or designated pathways. No laydown areas will be located on USFWS grassland easements or within protected wetlands on wetland easements.

The majority of structures will have a concrete foundation. The foundation contractor will establish batch plants, which may be portable, and may be located within laydown areas. If batch plants are located away from a laydown area, concrete trucks will be required to bring concrete from a concrete batch plant. No batch plants will be located on grassland easements or protected USFWS wetlands in wetlands easements.

The foundation contractor will be responsible for all appropriate permits and agreements associated with their work. Holes will be drilled in preparation for concrete. Depending on soil conditions, drilled pier foundations for tangent (in-line structures) may vary in diameter from 7 to 10 feet, and be 30 to 40 (or more) feet deep. Drilled pier foundations for dead-end structures (angle), which have higher load bearing requirements, will be larger at about 11 feet in diameter, and 50 (or more) feet deep. Insulators and other hardware will be attached while the structure is on the ground. After the concrete foundation is set the structure will then be lifted using a crane, placed on the foundation, and bolted to it.

Most of the construction activity will be limited to the area immediately around each structure. Little additional ground disturbance will be needed at the structure sites. The total area temporarily disturbed in the vicinity of each structure is expected to be confined to a smaller area, but was estimated with a 118 foot diameter (1 acre) for impact calculations to err on the side of caution and to allow the contractor flexibility to shift the work area for environmentally

sensitive areas. Temporary construction access roads will be needed to access structure locations at certain sites and will be located within the ROW where viable. If a temporary access road is needed outside of the ROW, the Applicants will work with each landowner to develop the best option for access while avoiding impacts to environmentally sensitive resources, such as wetlands. Where no existing roads provide access, temporary access roads up to 30-feet wide could be constructed and located through disturbed uplands (e.g. farmed land), once any necessary access easements have been secured from the landowner(s). Temporary access roads on USFWS easements will be more of a travel path. The proposed access roads are shown on the Project Map Book in Appendix A and acres of each road on USFWS easements is listed in tables 4, 5, and 6.

Once the structures have been erected, conductors will be installed by establishing stringing setup areas within the ROW. These areas are usually established every 2 to 5 miles along the proposed Project's route. Conductor stringing operations require brief access to each structure to secure the conductor wire to the insulator hardware and to install shield wire clamps once final sag is established. Stringing equipment generally consists of wire pullers, tensioners, conductor reels, shield wire reels, and sheave blocks. Stringing operations involve pulling lightweight cables or ropes through the stringing sheaves located at every structure site. This cable or rope will be used to pull the conductors through the sheaves under sufficient tension to keep the conductor from coming into contact with the ground. Temporary guard or clearance poles will be installed as needed over existing distribution or communication lines, streets, roads, highways, or other obstructions, after any necessary notifications are made and permits obtained. This ensures that conductors will not obstruct traffic or contact existing energized conductors or other cables. Helicopters would be utilized to string wires across the James River and other places determined necessary.

Special caution will be paid attention to for mitigating the spread of soybean cyst nematodes (SCN) during construction. SCN, a pest of significant concern to the State of South Dakota because of its negative impacts on agricultural yields, can be spread by the movement of soil across cultivated lands. All cultivated fields were tested for SCN by the proposed Project and mitigation techniques to minimize the spread of soil during construction have been identified.

2.1.5 Restoration Procedures

During construction, crews will attempt to limit ground disturbance wherever possible. Upon completion of construction activities, landowners will be contacted to determine if any damage has occurred as a result of the proposed Project. If damage has occurred to crops, fences, or the property, the Applicants will fairly reimburse the landowner for the damages sustained and if necessary, will have the area restored to the extent practical to pre-construction condition. Disturbed areas will be restored to their preconstruction condition to the maximum extent practicable or as required by regulatory agencies. Post-construction reclamation activities include removing and disposing of debris, dismantling all temporary facilities (including laydown areas and temporary access roads), leveling disturbed soil, alleviating soil compaction, and reseeding non-cultivated areas disturbed by construction activities with vegetation similar to that which was removed. On USFWS easement lands, any and all areas disturbed by construction will be reseeded to a native grass and forb mix specified by the appropriate WMD office following completion of construction.

Erosion control measures will be implemented as necessary to minimize runoff during construction. Specific measures will be determined once final design of the route is complete. Erosion control measures such as installation of silt or straw bale fences, biorolls, mulching, seeding, or mesh fabric overlay will be installed when and where appropriate. Access routes to structure locations will be reviewed prior to the mobilization of equipment so erosion concerns can be avoided or minimized. Construction crews will exercise caution when equipment is near delineated wetlands and within 50 feet of open water streams and rivers and will not drive equipment through streams or rivers crossed by the transmission line.

2.1.6 Maintenance Procedures

Transmission infrastructure has very few mechanical elements and is built to withstand normal weather extremes. With the exception of severe weather, such as tornadoes and extreme ice storms, transmission lines rarely fail. They are automatically taken out of service by the operation of protective relaying equipment when a fault is sensed on the system; such interruptions are usually only momentary. Scheduled maintenance outages are also infrequent. As a result, the average annual availability of transmission infrastructure is very high, in excess of 99 percent.

Over the life of the proposed Project, the Applicants will use the ROW to perform inspections (usually by fixed wing aircraft), maintain equipment, and make repairs. The Applicants will also conduct routine maintenance to remove undesired vegetation that may interfere with the safe and reliable operation of the proposed line.

2.2 No Action Alternative

Under the “No Action” alternative the proposed Project would not be built, and as a result, the proposed Project area would continue to operate and maintain existing transmission lines. Implementing this alternative would preclude most short-term environmental impacts associated with construction activities and long-term impacts from the proposed Project. However, if the proposed Project is not constructed as planned, the existing transmission system would be unable to reliably accommodate significant new generation interconnection.

The MISO analyses of this proposed Project identified several 230-kV and 115-kV transmission facilities that would be loaded above safe operating levels in the future without the proposed Project, if additional generation is built (Midwest ISO 2012). The construction of the proposed Project will provide a new high-voltage transmission path for the benefit of customers on the MISO network, including customers of the Applicants in North Dakota. In addition, the MISO MVP analysis identified economic benefits to North Dakota and South Dakota (and all Local Resource Zones within MISO) (Midwest ISO 2012). Short-term economic benefits include influx in activity within the region from construction and payments received by landowners for easements. Long term benefits include supporting public policy, increasing system capacity, and adding to the tax base. These economic benefits would not be realized by North Dakota and South Dakota without the proposed Project.

This alternative would fail to meet the purpose and need of the proposed Project as permitted and approved in the South Dakota and North Dakota State Permit Application Process for supporting the MISO’s MVP portfolio, a regionally-planned portfolio of transmission projects supported by significant research and analysis.

If one key element of the regional expansion plan, especially a 'backbone' element such as the proposed Project, designed for both reliability and economic attributes, is not constructed, considerable redesign could be required. This would result in possible delay, additional expense, and adverse impacts to the reliable addition of new generation supplies and service to load. If the proposed Project is not constructed as planned, the existing transmission system would be unable to continue to provide reliable service if significant new generation is interconnected.

2.3 Alternatives Considered but Dismissed

Several alternatives, including alternative transmission corridors and routes, have been considered but are ultimately not analyzed in detail in this EA as viable alternatives. The proposed Project's route selection process and design configuration centered on a multi-faceted approach in which the Applicants considered state and federal requirements, public comments received at public meetings, and extensive analysis of available environmental data. The alternative selection process was primarily driven by extensive public participation and agency coordination programs in both South Dakota and North Dakota.

The Applicants began their analysis of the proposed Project route by collecting Geographic Information System data from local, state, and federal agencies for much of northeastern South Dakota and southeastern North Dakota. The Applicants used these data, along with data collected during field visits, to develop a proposed Project study area and identify initial opportunities and constraints such as state and federal lands. The Applicants then narrowed the study area into study corridors that were used for agency and public outreach to help identify additional opportunities and constraints to be considered during routing. Next, the Applicants developed a series of route segments within the study corridors, which were typically short linear segments in proximity to public roadways, section or quarter section field lines, or existing corridors that a potential transmission line route could be near. It was considered desirable to locate the new transmission line near facilities such as roadways, section lines, and existing corridors in order to minimize impacts to open land areas, avoid impacts to homes, businesses, or wind energy facilities, and allow for easier access to the ROW for construction and maintenance purposes. The feasibility of using these segments was evaluated on an individual basis.

Once evaluation of the route segments was completed, the segments were linked together into numerous alternative preliminary transmission line routes. The Applicants evaluated the preliminary routes, measuring them against both the transmission line routing considerations for South and North Dakota and input on sensitive and important resources identified by the public. The proposed transmission line route was selected based on several considerations, including the following:

- Minimizing total length and construction costs
- Minimizing impacts to humans and human settlements, including (but not limited to) displacement, noise, aesthetics, cultural values, recreation, and public services
- Consideration of effects on public health and safety
- Offsetting existing ROW (roadway or other utility ROW) or section lines to minimize impacts to land-based economies, including (but not limited to) agricultural fields and mining facilities

- Placing structures to minimize impacts to agricultural production/allow for the movement of farm equipment
- Preference for mono-pole structures rather than H-frame structures
- Minimizing effects on archaeological, cultural properties, and historic resources
- Minimizing impacts to wetlands, surface waters, and rivers
- Minimizing impacts to rare or endangered species and unique natural resources
- Minimizing effects to airports or other land use conflicts

Upon determination of the preferred route, notifications were sent to federal and state agencies in May 2013, requesting comment on the preferred route. Feedback received on the preferred route led to the development of the Proposed Action route.

The Proposed Action route was selected in an effort to minimize the distance between the two substation endpoints, minimize adverse impacts to human settlements and the natural environment, minimize transmission line corridor congestion, and improve the reliability of the regional electrical system. Preliminary routes were evaluated and rejected based on comments and guidance from agencies, public, and tribes. In addition, preliminary routes parallel to Interstate 29, traveling north-south near Britton, South Dakota, and a route going near Waubay, South Dakota were rejected based on specific constraints and resources present within each area. These constraints included federal and state managed lands, sensitive species habitat, archaeological resources, proximity to occupied homes, crossing existing transmission lines, large lakes and water bodies, river crossings, length, and the number of angle structures required. The preferred transmission line route avoided more constraints than the alternative routes and minimized the distance between substations to the greatest extent possible. At the time of this EA preparation, the Applicants are working with and will continue to work directly with affected property owners to address localized and specific routing issues and concerns.

3 Affected Environment

3.1 Soils

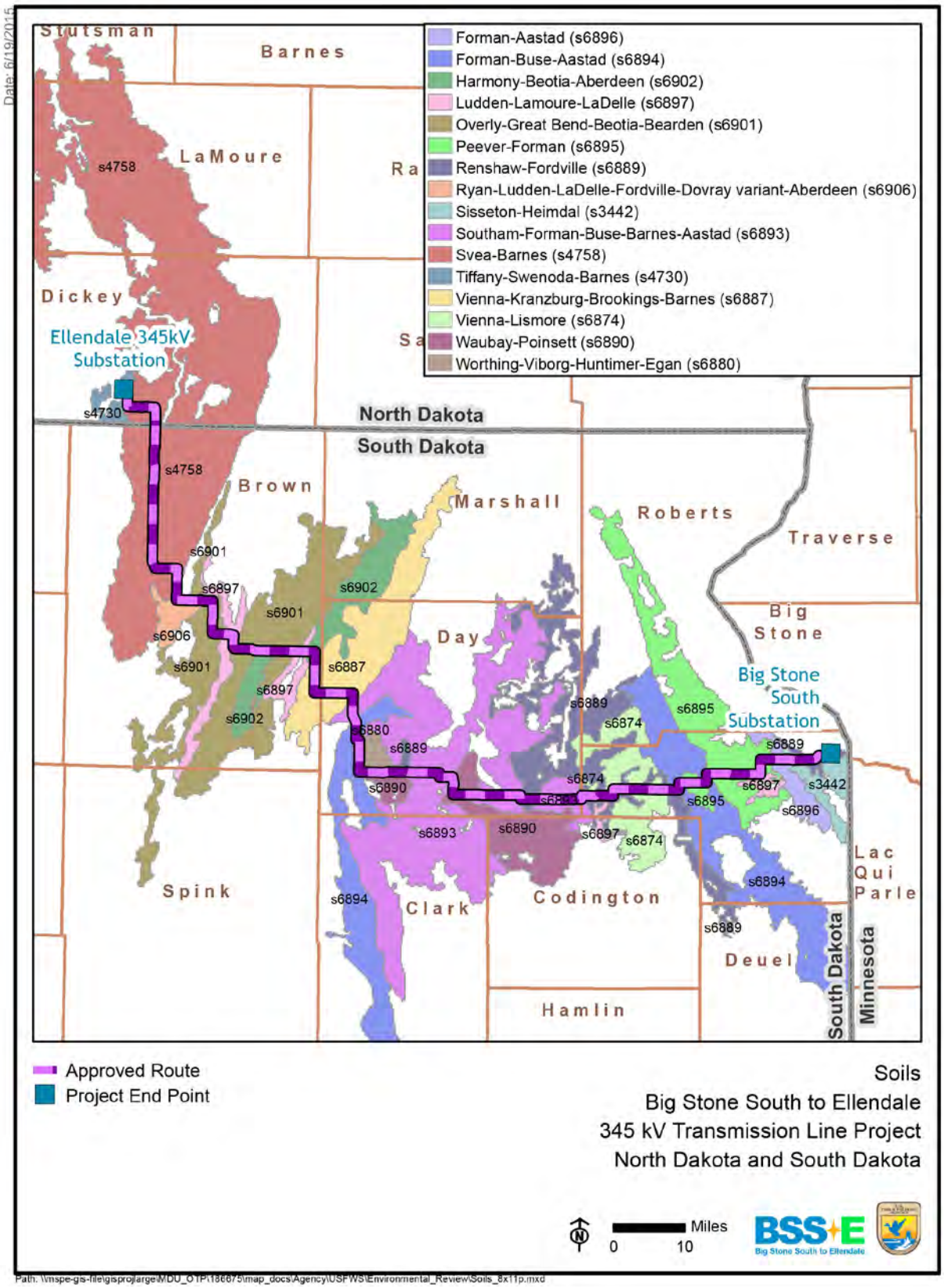
The proposed Project traverses four physiographic regions in the Dakotas. From northwest to southeast, these are the James River Lowlands, the Lake Dakota Plain, the Coteau des Prairies, and the Minnesota River Lowlands. The Coteau des Prairies is the most conspicuous landform of eastern South Dakota and consists of a highland area (an erosional remnant) between the Minnesota-Red River Lowland to the east and the James River Lowland to the west.

Soils within the ROW route generally consist of deep, well-drained soils formed over glacial till or glaciofluvial settings. Permeability in these soils is moderate. They are generally classified as fine-loamy, mixed, superactive, frigid Pachic or Calcic Hapludolls; however, soils classified as Argiudolls, Endoaquolls, Natraquerts, Endoaquerts, Eutrudepts, and Argiaquolls are also present in the ROW route (NRCS 2014).

Soils can be grouped by soil associations. An association is a group of individual soil series that occur together in a characteristic geographic pattern or a distinctive pattern of soils, relief, and drainage. Each soil association is typically composed of one or more major soils and one or more minor soil components. Soil associations are defined by each county's Natural Resources Conservation Service office. The soil associations located in the ROW route are shown in Figure 4. Approximately 50 percent of the soils within the proposed Project ROW are designated as prime farmland soil, and an additional 20 percent is prime farmland soil if drained or irrigated

Soil databases do not have attributes to identify erodible or highly erodible soils. In general, soils of six percent or greater slope have a higher potential for erosion due to surface runoff, if disturbed. Less than one percent of the soils within the proposed Project ROW are on slopes of six percent or greater. Soil properties that also influence erosion from water runoff include soil texture, percent organic matter, structure infiltration capacity, and soil permeability.

Figure 4: Soils Map



3.2 Surface Water

Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. Waters of the United States are defined under Section 404 of the Clean Water Act, as amended, as (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow perennially or have continuous flow at least seasonally (typically 3 months), and (4) wetlands that directly abut such tributaries.

The proposed Project lies within the Prairie Pothole Region of the Great Plains and traverses three water basins, as defined by the U.S. Geological Society (USGS) and shown in Figure 5. From northwest to east, the proposed Project ROW passes through the James River, Big Sioux, and Minnesota water basins, respectively. Within the water basins, the proposed Project crosses 12 watershed units. They include: Maple River, Sand Lake-James River, Lower Elm River, Moccasin Creek – James River, Lower Mud Creek, Antelope Creek, Pierpont Lake, Upper Mud Creek, Grass Lake, Bitter Lake, Headwaters Big Sioux River, and South Fork Whetstone River.

The eastern and western portions of the proposed Project ROW tend to have a high density of shallow pothole lakes and wetlands with a lower frequency of stream cannels. The central portion of the proposed Project lies within the broad valley floor of the James River, with well-defined creeks and streams and a lower density of small isolated wetlands. Creeks and streams are generally meandering, limited to toe slopes and stream valley, and are intermittent or perennial depending on the watershed location. Stream channels along the edges of the James River valley tend to be linear. The proposed Project crosses 20 named streams.

Electronic Federal Emergency Management Agency (FEMA) floodplain data is only available for two of the counties crossed by the proposed Project, and only available for a portion of one of those counties. There are a total of 38 mapped floodplains crossed by the proposed Project; nine of these crossings are greater than 1,000 feet wide and cannot be spanned by the proposed Project.

3.3 Vegetation and Wetlands

3.3.1 Overview

The proposed Project is located in the Great Plains Steppe and the Prairie Parkland (Temperate) Ecological Provinces as defined in the Ecological Sub-regions of the United States (McNab 1994).

The Great Plains Steppe is crossed in the western portion of the proposed Project. Historically, land cover in the Great Plains Steppe occurred as an area of nearly level to undulating continental glacial till and glacial lake plains dominated by fire-dependent grasslands, wetlands, and stream courses. Most of the grasslands, wetlands, and stream courses were modified to agricultural production. Native grasses and forbs persist in those areas where steep slopes, rock soils, or wetlands prohibited conversion of lands to crop production.

The area of the Prairie Parkland (Temperate) Province crossed by the eastern section of the proposed Project was historically characterized by a predominance of treeless fire-dependent grassland and brushland types interrupted by lakes, rivers, streams, marshes, and pothole wetlands.

The proposed Project includes five general habitat or cover types: cropland, native grassland, non-native grassland, wetland, and upland/riparian woodland. Cropland is the most common type of land cover crossed by the proposed Project. Grasslands are mostly restricted to the Coteau des Prairies or to slopes adjacent to riparian corridors. Wetlands are abundant along the majority of the proposed Project, the vast majority of which are freshwater emergent wetlands. Less than one percent of the length of the proposed Project crosses woodland, most of which is associated with tree lines or wind breaks.

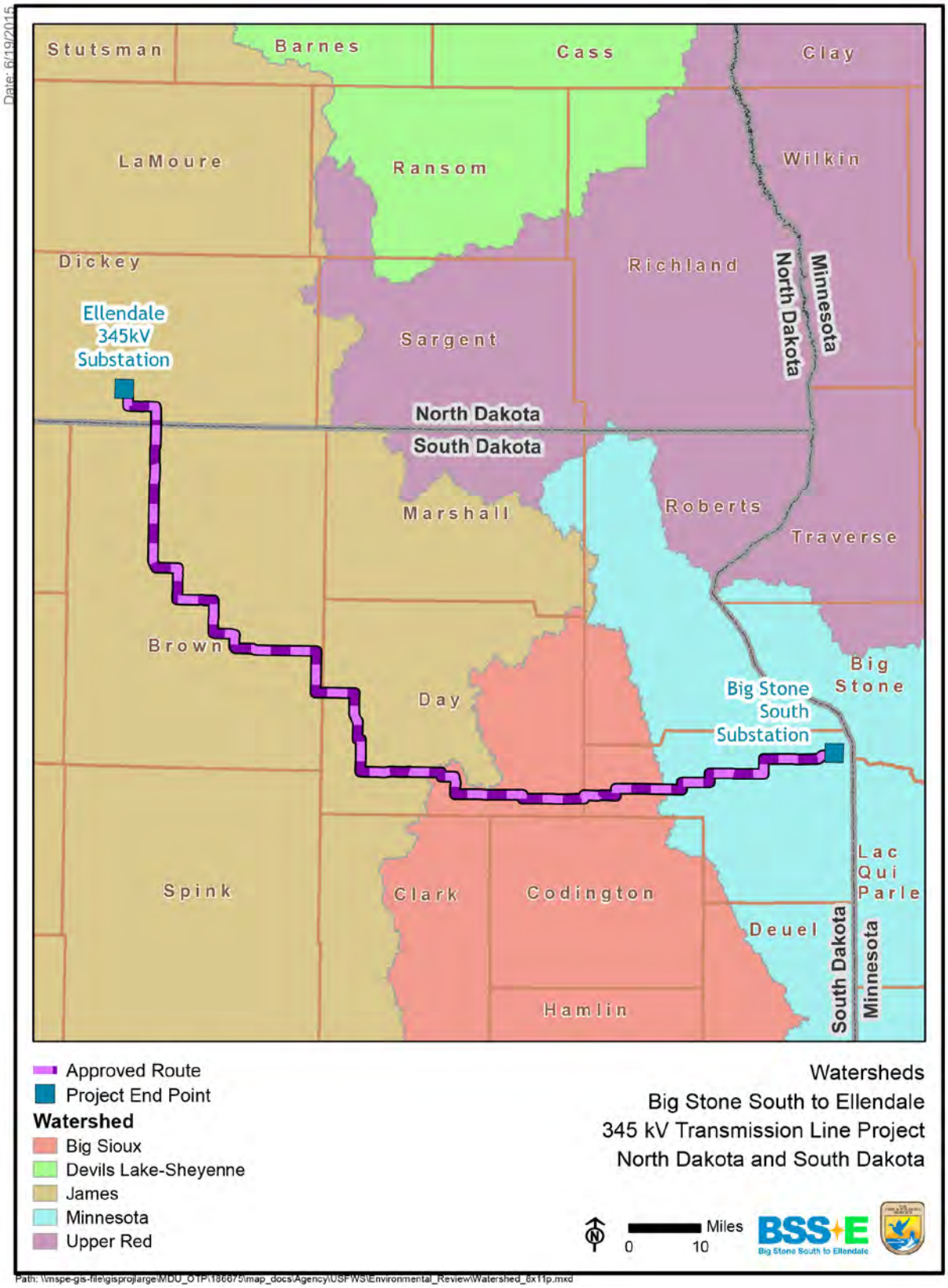
A GIS habitat model was developed for the proposed Project area using infrared imagery and an on-the-ground assessment method to map areas of native prairie and other land covers within the proposed Project ROW. The main purpose of this analysis was to focus on native communities in the proposed Project area, particularly native prairie habitat. The prairie habitats were ranked as high or low quality by identifying species assemblages, estimating anthropogenic disturbance, and noting other dominant land-use types in the area. The results of the GIS habitat model identified blocks of high and low quality native prairie in the proposed Project area, along with other cover types, including non-native grasslands, croplands, and others. In general the grassland areas in the ROW (high and low quality prairie, and non-native grasslands) are currently being used for pasture.

The USFWS maintains protection on designated wetlands located in USFWS easement lands through the Migratory Bird Hunting and Conservation Stamp Act/Duck Stamp Act. Both offsite and onsite wetland reviews were conducted on wetlands located in USFWS easements, in accordance with the *1987 Corps of Engineers Wetlands Delineation Manual* (1987 Manual; USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (Regional Supplement; USACE 2010).

The preliminary, offsite review identified potential wetlands located within a one-mile wide corridor of the proposed Project route. Wetland boundaries were identified with GIS mapping using aerial photography spanning ten years; National Wetland Inventory maps; Soil Survey Geographic data; and, USGS topographical maps. Onsite wetland reviews were conducted in October, 2014, and May, 2015. Onsite reviews were performed within a 500-foot-wide corridor extending 250 feet on either side of the proposed Project route.

All wetlands within the proposed Project ROW were classified according to the USFWS *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin Classification System; Cowardin et al. 1979). Wetlands were placed in either the palustrine, riverine, or lacustrine system. All field verified wetlands within the ROW are shown in the Project Map Book, in Appendix A.

Figure 5: Hydrology Map



3.3.2 Grassland Easements

Grassland easements are legal agreements between individual landowners and the USFWS. Grasslands protected by USFWS easements remain in private ownership and must remain in grass cover. They may provide vegetation for grazing and wildlife forage, cover, and nesting. Grasslands are important habitats that also reduce soil erosion from wind and water, trap rain and snow thus recharging groundwater supplies, and filter chemicals (USFWS 2014). Grassland easements are surface easements that minimize impacts to land cover.

Historically, North Dakota and South Dakota were primarily prairie, although much of the area has been modified for agricultural production. As of 2011, the USFWS had protected approximately 1,128,513 acres of grassland in easement throughout North and South Dakota (USFWS 2011).

3.3.3 Wetland Easements

Wetland easements are legal agreements between individual landowners and the USFWS. Wetlands protected by easements cannot be drained, burned, filled, or leveled. Lands protected by USFWS easements remain in private ownership. Wetland habitats are beneficial to erosion control and runoff reduction, flood prevention, groundwater recharge, livestock forage, and critical habitat providing food, cover and nesting sites for wildlife species such as duck, pheasants, and deer (USFWS 2014).

Wetlands occur throughout the Study Area as the proposed Project traverses the Prairie Pothole Region of the upper Midwest. Wetlands are typically small, isolated depressions dominated by emergent vegetation, but also may be found along drainages, rivers, and streams. Common seasonal and semipermanent wetland vegetation includes reed canarygrass (*Phalaris arundinaceae*), prairie cordgrass (*Spartina pectinata*), and cattail (*Typha* spp.). Many wetlands are temporary in nature and harbor annual species, such as smartweed (*Polygonum spp.*), nut sedges (*Cyperus spp.*), and annual grasses [barnyard grass (*Echinochloa spp.*)]. As of 2011, the USFWS had protected approximately 1,386,279 acres of land in wetland easement throughout North and South Dakota (USFWS 2011).

3.3.4 Noxious and Invasive Species

The prevention of the introduction or spread of noxious and invasive weeds is a high priority for federal, state, and county agencies. Under Executive Order 13112 of February 3, 1999 – Invasive Species, federal agencies shall not authorize, fund, or carry out actions likely to cause or promote the introduction or spread of invasive species in the U.S. or elsewhere unless it has been determined that the benefits of such actions outweigh the potential harm caused by invasive species and that all feasible and prudent measures to minimize the risk of harm must be taken in conjunction with the actions. The Federal Plant Protection Act contains a list of 137 federally restricted and regulated federal noxious weeds, as per CFR Title 7, Chapter III, Part 360. Each state is federally mandated to uphold the rules and regulations set forth by this act and manage their lands accordingly. Invasive plants that are widespread in the proposed Project area include Canada thistle (*Cirsium arvense*) and leafy spurge (*Euphorbia esula*). Additionally, the soybean cyst nematode (SCN) is a particular species of concern in the area because of its negative impacts on agricultural yields.

3.4 Wildlife

3.4.1 Overview

The proposed Project ROW area supports fauna associated with agricultural lands, a fragmented grassland landscape that contains small parcels of non-native grassland, and tallgrass prairie in the Prairie Pothole Region. Species typical of the Upper Great Plains can be found here, although densities and relative abundance have not been determined. Mammals common in these habitat types include raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), muskrat (*Ondatra zibethicus*), red fox (*Vulpes vulpes*), black-tailed jackrabbit (*Lepus townsendii*), white-tailed deer (*Odocoileus virginianus*), and coyote (*Canis latrans*).

The proposed Project area contains high species richness for wetland and grassland birds in the U.S.; the Prairie Pothole Region provides breeding habitat for at least 130 species of birds (USFWS 2011). In addition to birds that breed in the proposed Project area, many species of birds migrate through or use the area as wintering ground. The proposed Project area supports 27 of the USFWS' species of conservation concern including ferruginous hawk (Buteo regalis), willet (Tringa semipalmata), short-eared owl (Asio flammeus), loggerhead shrike (Lanius ludovicianus),grasshopper sparrow (Ammodramus savannarum), chestnut-collared longspur (Calcarius ornatus), and Baird's sparrow (Ammodramus bairdii) (USFWS 2011). The area includes stopover habitat during migration for large numbers of passerines, waterfowl and shorebirds. The James River basin is one of few major north–south migration corridors in the northern Great Plains with relatively intact riparian vegetation. The river forms a natural flight path for migrating birds—one of the most heavily used in the Central Flyway – which draws large numbers of migratory birds to move through the Dakotas in spring and fall (USFWS 2005).

The avian community includes songbirds, such as red-winged black bird (*Agelaius phoeniceus*), horned-lark (Eremophila alpestris), western meadowlark (*Sturnella neglecta)* and bobolink (*Dolichonyx oryzivorus*), waterfowl such as mallard (Anas platyrhynchos*) and blue-winged teal (*Anas discors*),* raptors such as red-tailed hawk (Buteo jamaicensis*),* owls such as great-horned owl (Bubo virginianus*),* shorebirds such as killdeer (Charadrius vociferous) and lesser yellowlegs (*Tringa flavipes)* and game birds such as ring-necked pheasant (*Phasianus colchinus*).

The Migratory Bird Treaty Act (MBTA) protects the majority of birds in the U.S, with the exception of non-native species and non-migratory species, and various grouse and quail species. The majority of the bird species occurring within the proposed Project area are protected under the MBTA. Additionally, the bald eagle (Haliaeetus leucocephalus) and golden eagle (Aquila chrysaetos) are protected under the Bald and Golden Eagle Protection Act.

Examples of reptiles found in the proposed Project area include northern leopard frog (*Rana pipiens*), tiger salamander (*Ambystoma tirgrimun*), western painted turtle (*Chrysemys picta belli*), American toad (*Anaxyrus americanus*), and common garter snake (*Thamnophis sirtalis*) (Hoberg and Gause 1992).

Wetland features are relatively numerous throughout the proposed Project area. These wetland features attract high numbers of migratory waterfowl to the area. The presence of numerous waterfowl using these wetlands and lakes also attract predatory species such as bald eagles and osprey *(Pandion haliaetus*). Mammals utilizing these resources include species such as raccoon, muskrat, and mink (Neovison vison).

The prevalence of pasture and grasslands near the proposed Project area provides moderate to high quality habitat for grassland-dependent species such as loggerhead shrike, grasshopper sparrow, sharp-tailed grouse (Tympanuchus phasianellus), marbled godwit (*Limosa fedoa*), and predatory raptors, such as short-eared owls (*Asio flammeus*), Swainson's hawk (*Buteo swainsoni*), and northern harrier (*Circus cyaneus*).

Agricultural lands are used by species that tolerate or thrive on grain or seed crops such as corn (*Zea mays*), wheat (*Triticum spp.*), and sunflowers (*Helianthus annuus*). Ring-necked pheasants, horned lark (*Eremophila alpestris*), vesper sparrow (*Pooecetes gramineus*), killdeer, American robins (*Turdus migratorius*) among others are present within agricultural lands but occur at lower densities than areas that provide year-round food and cover such as native grassland or woodlands.

Various biological surveys were conducted on USFWS easement lands, as determined to be appropriate through USFWS coordination. These surveys included:

- Protected butterfly surveys were conducted in 2013, 2014, and 2015. No protected butterflies were located during the surveys.
- Bald eagle stick nest surveys were conducted in April and May 2013 and 2015 within a 2-mile-wide area along the proposed Project route. Biologists identified three active bald eagle stick nests in the 2013 survey. The nearest nest was located approximately 0.7 miles from the route, and none of the three are located on grassland easements. During the 2015 survey a new active bald eagle stick nest was identified approximately 1,000 feet from the proposed Project route. The nest is not located on a grassland easement.
- Sharp-tailed grouse lek presence surveys were also conducted in April and May 2013 within a 2-mile-wide area along the proposed Project route. No sharp-tailed grouse leks were observed.
- Windshield survey for piping plover (*Charadrius melodus*) and their nesting habitat was conducted in 2015 and no plovers were located on suitable habitat.

3.4.2 Endangered, Threatened and Candidate Species

According to the USFWS Information for Planning and Conservation (IPac) tool (USFWS, 2015a), eight species listed as federally endangered or threatened in accordance with the Endangered Species Act (ESA), may occur in the counties where the proposed Project is located. These species are listed in Table 3, and include the piping plover, red knot (*Calidris canutus rufa*), Sprague's pipit (*Anthus spragueii*), whooping crane (*Grus Americana*), Topeka shiner (*Notropis Topeka*), Dakota skipper (*Hesperia dacotae*), poweshiek skipperling (*Oarisma Poweshiek)*, and the northern long-eared bat (*Myotis septentrionalis*).

Table 3: Known Threatened, Endangered and Candidate Species in Proposed Project Area

Scientific Name	Common Name	Federal Status	Critical Habitat Crossed	Suitable Habitat	Likely to Occur in Proposed Project Area
Birds					
Charadrius melodus[1]	Piping plover	Threatened	No	Typically use alkali wetlands and river courses with broad beaches for nesting. They may also stop at flooded fields, along lake edges, or along wetland shores during migratory periods.	Possible – suitable habitat nearby
Calidris canutus rufa[2]	Red knot	Threatened	No	Noncoastal stopover habitat information is lacking for red knots.	Possible – the species is a full-distance migrant from the coastal southeast U.S. coastal to the Arctic. Presence is likely inconsistent from year-to-year and brief.
Anthus spragueii[3]	Sprague's pipit	Candidate	No	Inhabits well-drained native grasslands with moderate litter depths, few visual obstructions, and little woody vegetation. During migration, it also occurs in stubble and fallow fields.	Possible – suitable habitat present
Grus americana[4]	Whooping crane	Endangered	No	Whooping cranes prefer seasonally flooded shallow emergent palustrine wetlands in spring and unconsolidated semi-permanent lacustrine wetlands in the fall for migration stopover habitat. Whooping cranes also prefer unobstructed views, both vertically and horizontally.	Possible – suitable habitat present

Scientific Name	Common Name	Federal Status	Critical Habitat Crossed	Suitable Habitat	Likely to Occur in Proposed Project Area
Fishes					
Notropis Topeka[5]	Topeka shiner	Endangered	No	Inhabits slow moving, small- to mid-sized prairie streams with sand, gravel, or rubble bottoms. They prefer pool and oxbow areas that are outside main channel courses.	Possible
Insects					
Hesperia dacotae[6]	Dakota skipper	Threatened	No	Prefer native dry mesic to dry prairie where mid-height grasses such as little bluestem, prairie dropseed, and side oats grama are a major component of the vegetation. Potential habitat is limited to prairie remants or wetland areas surrounded by prairie remnants.	Yes – suitable habitat present
Oarisma Poweshiek[7]	Poweshiek skipperling	Endangered	No	Prefer native dry mesic to dry prairie where mid-height grasses such as little bluestem, prairie dropseed, and side oats grama are a major component of the vegetation. Potential habitat is limited to prairie remants or wetland areas surrounded by prairie remnants.	Yes – suitable habitat present

Scientific Name	Common Name	Federal Status	Critical Habitat Crossed	Suitable Habitat	Likely to Occur in Proposed Project Area
Mammals					
Myotis septentrionalis[8]	Northern long-eared bat	Threatened	No	Spend winter hibernating in caves and mines. During the summer they roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees). Males and non-reproductive females may also roost in cooler places, like caves and mines.	Unlikely

References: [1](USSCP 2013), [2](USFWS 2015b), [3](BirdLife Int 2015), [4](USFWS 1990), [5](MN DNR 2015c), [6](MN DNR 2015a), [7](MN DNR 2015d), [8](MN DNR 2015b)

3.5 Cultural Resources and Native American Concerns

Cultural resources include prehistoric or historic archaeological sites, buildings, structures, districts, or other places or objects considered important by the local or regional communities. These resources are protected and identified under several Federal Laws and executive orders. The Federal Laws include the National Historic Preservation Act (1966, as amended in 2000), the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Reparation Act (1990). Cultural resources addressed in this EA include known resources that are determined or recommended eligible or are unevaluated for inclusion in the National Register of Historic Places (NRHP).

Archeologically, all of the proposed Project area lies within the Northeastern Plains subarea of the Northern Plains area (USFWS 2011).

There have been five cultural traditions or lifeways recognized by archeologists for the American Indians in the Northeastern Plains: from earliest to latest these are Paleo-Indian, Plains Archaic, Plains Woodland, Plains Village, and Equestrian Nomadic. During any time in history, existing groups of peoples could be found living different lifeways in different parts of the proposed Project area (USFWS 2011).

A Class I Literature Search and a Level I Records Search was conducted for the North Dakota and South Dakota sections of the proposed Project, respectively. During the literature and record searches, 12 recorded cultural sites were identified that are located on either wetland or grassland easements, but not necessarily in proximity to the proposed Project.

In the North Dakota section, a model was developed to identify areas warranting a Class III Intensive Archaeological and Traditional Cultural Property (TCP) Resources Inventory. A cultural resource subcontractor, working with the Sisseton-Wahpeton-Oyate (SW) Tribal

Historic Preservation Officer (THPO), identified four areas exhibiting moderate to high potential for containing intact archaeological resources and /or TCPs. The four archaeological survey areas were located wholly or partially within four wetland easements. The archaeological surveys were conducted in those four areas in October and November 2014, and no archaeological resources or TCPs were identified during the surveys. A field architectural survey was also conducted in October 2014, during which no historic period buildings, structures, or sites are identified that are eligible for listing in the NRHP.

Archaeological surveys are planned for 60 areas in the South Dakota portion of the proposed Project. Of the 60 areas, 28 are located on wetland or grassland easements. Surveys were completed in the fall 2015. The survey findings were submitted in a report to the South Dakota State Historic Preservation Officer (SHPO) and the USFWS.

A field architectural survey was also conducted in October 2014. Four previously recorded sites along the proposed Project were revisited, including two NRHP eligible bridges, one NRHP eligible road underpass, and an NRHP eligible railroad grade segment. In addition, five new historic farmsteads and one railroad grade segment were identified in the Study Area. HDR recommends that no historic properties will be adversely affected and that no further cultural resources work is needed to take into account the effects of the proposed Project on historic buildings and structures within the APE. Site forms have been submitted to the South Dakota SHPO; the full survey report was submitted to the South Dakota SHPO and USFWS.

3.6 Visual Resources

The discussion of visual quality and aesthetics is based on a qualitative review of the existing landscape environment within the proposed Project ROW area. Visual and aesthetic resources within the proposed Project area were identified through consultation with state and local agency officials, comments received from participating citizens, and through a review of county comprehensive land use plans, aerial photography and field observation.

Determining the relative scenic value or visual importance of an area is a complex process involving both the philosophical and/or psychological response to what may be perceived as having high scenic value by an individual.

Generally, landscapes that incorporate a balanced mixture of diversity and harmony have the greatest potential for high scenic value and may be considered important to persons living in or traveling through a region. Viewer response is based on the sensitivity and exposure of the viewer to a particular viewshed. Sensitivity relates to the magnitude of the viewer's concern for the viewshed, while exposure is a function of the type, distance, perspective, and duration of the view.

The landscape topography crossed by the ROW corridor is a mixture of agriculture, farmsteads, fallow fields, wetlands, and gently rolling hillside. Rural residences and farm buildings (inhabited and uninhabited) scattered along rural county or township roads are focal points in the agricultural character of the landscape. Additional man-made infrastructure including towns and cities; transmission lines; highways; county roads; railroads; grain silos; communication towers; and, other structures. Scattered areas of tree cover occur throughout the proposed Project route, primarily planted as protection from the wind and sun around rural residences, farmsteads, or

winter feed lots. Many residents have surrounded their homes with a mix of deciduous and coniferous trees that serve as natural windbreaks, shade, and enhanced privacy for homes.

Along the eastern portion of the proposed Project ROW, the Coteau des Prairies feature consists of a relatively high plateau, rising from a nearly level till plain, including prairie flatlands with slopes along its borders. The slopes of the Coteau des Prairies that intersect the ROW area near the cities of Marvin and Twin Brooks and also near the cities of Andover and Groton. Where the Coteau des Prairies ascends and descends, visual characteristics of the area include a higher concentration of rivers and creeks while the top of the Coteau des Prairies includes a larger viewshed of flatter prairie grasslands. In the area west of the Coteau des Prairies, the topography remains relatively flat, dominated by cultivated agricultural land and with scattered infrastructure and gentle slopes leading to the James River which runs from north to south in the proposed Project area.

3.7 Noise

Noise is defined as unwanted sound. Noise may include a variety of sounds of different intensities across the entire frequency spectrum. Noise is measured in units of decibels (dB) on a logarithmic scale. Because human hearing is not equally sensitive to all frequencies of sound, certain frequencies are given more "weight." The A-weighted decibel (dBA) scale corresponds to the frequency sensitivity range for human hearing. Noise levels capable of being heard by humans are measured in dBA. A noise level change of 3 dBA is barely perceptible to average human hearing. A 5 dBA change in noise levels, however, is clearly noticeable. A 10 dBA change in noise levels is perceived as a doubling or halving of noise loudness, while a 20 dBA change is considered a dramatic change in loudness.

Cumulative noise increases occur on a logarithmic scale. If a noise source is doubled, there is a 3 dBA increase in noise, which is barely discernible to the human ear. For cumulative increases resulting from sources of different magnitudes, the rule of thumb is that if there is a difference of greater than 10 dBA between noise sources, there will be no additive effect (i.e., only the louder source will be heard and the quieter source will not contribute to louder noise levels) (USEPA 1981).

South and North Dakota do not regulate noise from transmission lines (that is, corona noise) with measureable standards. Also, corona noise does not contain high levels of low frequency noise. Generally, background noise levels in rural areas vary between 40 and 50 dBA, while in suburban areas these levels increase to 50 to 60 dBA. In urban areas, noise levels vary between 60 and 70 dBA (USEPA 1981). Most of the proposed Project area has background levels consistent with rural areas. Windy conditions tend to increase ambient noise levels compared to other rural areas. Additionally, higher levels exist near roads and other areas of human activity.

3.8 Transportation and Access

The majority of the proposed Project ROW is within 500 feet of existing surface transportation routes, including county and township roads. The transportation network that will be used during construction and for maintenance during operation is comprised largely of rural or section line roadways. The South Dakota portion of the ROW crosses active railroads in four locations (T124N R62W, T123N R60W, T120N R50W, T121N R48W) and inactive railroad lines in two locations (T124N R63W, T120N R57W). In addition, the closest registered airport facility is

about 2.5 miles from the South Dakota portion of the ROW. There is one private landing strip located about 0.9 miles south of the South Dakota portion of the ROW.

No commercial or general aviation airports are present within the North Dakota portion of the ROW. The closest airport is the Ellendale Municipal Airport and is located in Section 1, Township 129N, Range 63W, and is approximately 2.6 miles from the North Dakota portion of the ROW.

The North Dakota portion of the ROW will cross State Highway 11 in Section 9, Township 129N, Range 63W, and U.S. Highway 281 in Section 23, Township 129N, Range 63W. Determining the specific capacity of any highway is a complex process; however, general estimates are used for planning purposes. For purposes of comparison, the functional capacity of a two-lane, paved rural highway is approximately 5,000 vehicles per day, referred to as the average annual daily traffic (AADT). In general, the U.S. and state highways in and near the proposed Project ROW carry higher levels of traffic than the average for rural North and South Dakota, but represent only a fraction of the roadway capacities.

4 Environmental Consequences

Impacts are discussed in terms of temporary (short-term), permanent (long-term), and direct versus in-direct, depending upon the resource. Only impacts from the Proposed Action are discussed, as under the No Action Alternative, no impacts to USFWS easements would occur.

4.1 Soils

Impacts on soils due to the construction of the Proposed Action would be anticipated to be short-term, lasting for the duration of construction and reclamation, and limited in scope. For the purpose of this analysis, it is assumed that compaction, clearing and grading activities would result in the disturbance of approximately 187 acres of soils on USFWS easement lands, primarily as a result of the installation of 123 transmission line structures on easement lands. About 71 percent of these structures (87 of the 123 structures) will be located on the upland portions of wetland easements. About 27 percent of the structures will be located on grassland easements (33 of the 123 structures) and two (2) percent of the structures (3 of the 123 structures) will be located within designated wetlands on wetland easements. A 30-foot-wide-temporary travel path within the ROW will be used for vehicle traffic to each structure location, in woodlands and shrublands, the full 150-foot-width of the ROW will be cleared.

The primary effects during construction would result from soil compaction, disturbance, and erosion. Compaction of soils would disturb and modify the soil structure. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and would be eliminated within the footprints of the structures. Loss of soil structure due to compaction from foot and vehicle traffic could change drainage patterns, but could be minimized by soil decompaction methods such as aeration. Soil erosion would be a factor for soils that are found on slopes of greater than six percent throughout the proposed Project area, primarily along the margins of the Couteau des Prairies. During construction, clearing and grading would leave soils exposed until they revegetate according to the Best Management Practices (BMPs) in Chapter 5, which would lead to an increase in erosion potential. After the proposed Project construction and reclamation activities are completed, negligible, direct, long-term soil loss would occur from structure placement. Permanent impacts to soils are estimated to be 1.82 acres for the proposed Project, of which only about 0.48 acres would occur on USFWS grassland and wetland easements.

4.2 Surface Water

Negligible direct impacts to rivers and streams are anticipated from the proposed Project; rivers, streams, and lakes will be spanned. The proposed Project will require 106 stream crossings, of which 10 crossings are located on grassland or wetland easements. No structures will be constructed within streams, thus no potential permanent impacts are anticipated to streams. The proposed Project will also cross 50 non-flowing bodies of water, of which 19 are located on grassland or wetland easements. However, all of bodies of water will be spanned, thus no potential permanent impacts to bodies of water are anticipated.

During construction, indirect impacts to surface water could occur. Loss of vegetation and soil compaction could increase storm water volume and velocity entering drainage channels because of reduced water absorption.

This increased runoff could affect the surface water quality of receiving water bodies. These changes in drainage would be highly localized, site-specific, and would be expected to be negligible. Surface runoff would be directed away from new poles and would backfill any settlement of soil in the pole excavation and pole annular space. Additionally, BMPs that are outlined in the Stormwater Pollution Prevention Plan (SWPPP) would be used to ensure that soils disturbed during construction activities would not pollute nearby water bodies. Adherence to the stormwater BMPs would further reduce stormwater-related impacts. Long-term, negligible to minor, adverse impacts on surface water would be expected from clearing of vegetation, upgrading of existing county and township roads, and grading or compaction of land to improve access and facilitate construction activities within the proposed Project ROW. Sediment and erosion control BMPs identified in the SWPPP would be applied to reduce the potential for deposition of contaminated substances into surface bodies of water. Impacts on the watershed drainage basins would be expected to be minimal.

Construction personnel would follow appropriate BMPs to protect against potential petroleum or hazardous material spills. No equipment maintenance or refueling would occur in a protected wetland. In the event of a spill or leak of fuel or other construction-related products, there could be adverse impacts on surface water quality. Construction equipment would be maintained according to the manufacturer's specifications and fuels and other potentially hazardous materials would be contained and stored appropriately. If a spill or leak were to occur, BMPs would be implemented to contain the spill and minimize the potential for, and extent of, associated contamination.

The proposed Project will require construction of 44 structures within mapped floodplain, of which 2 will be located on a grassland or wetland easement. The impact to floodplains on grassland and wetland easements is anticipated to be 157 square feet. Due to the small footprint of the transmission structures, and limited number of structures to be placed in floodplain, no measurable increase in flood potential due to construction of the proposed Project is anticipated.

4.3 Vegetation and Wetlands

Direct and indirect impacts to vegetation on USFWS easement lands would occur from transmission line construction activities, access, and vehicular traffic. Disturbance would include tree and shrub clearing and crushing (driving over) of shrub and herbaceous vegetation from vehicles, equipment, and pole placement. The proposed Project ROW crosses 49 USFWS easements, of which 12 are grassland easements and 37 are wetland easements. Approximately 438 acres of USFWS easements occur within the proposed Project ROW and about 16 acres of USFWS easement are overhung by the proposed Project ROW.

Temporary disturbance would impact (via compaction and tree/shrub clearing) up to 1 acre of area around each transmission structure, in addition to land used to access the ROW. The vast majority of the temporarily disturbed areas would be restored to their pre-construction conditions via the use of the BMPs outlined in Chapter 5. Direct, permanent impacts to USFWS easement lands would include the impacts from the 10-foot-diameter (78.5 square feet) foundations associated with each transmission line structure proposed within a grassland easement or within a wetland in a wetland easement. If the structure is not within the boundaries of a wetland in a wetland easement, no impact will occur to the easement. Permanent impacts to grassland easement were calculated assuming all poles had a permanent impact to grassland.

Given these assumptions, the proposed Project will result in the following list of permanent and temporary impacts:

- A total of 2,748 square feet (0.063 acres) of direct permanently impacted USFWS easements from 35 transmission structures (excluding Structure 620)
    - 2,512 square feet (0.058 acres) would be on grassland easements
    - 236 square feet (0.005 acres) of impacts would be on wetland easements. The direct permanent impact to wetland easements is very small, especially in relation to the approximately 57 acres of field verified wetlands that occur within the proposed Project ROW on USFWS wetland easements.
- A total of 0.42 acres of permanent impact to create access to Structure 620 and to create a more level work area around the structure is required for construction and maintenance activities.
- A total of about 36 acres of USFWS easements will be temporarily impacted from construction activities.
    - Assuming up to 1 acre of area around each transmission structure would be impacted during construction (including Structure 620)
- About 23 acres of temporary impacts, including compaction, rutting, vehicle and foot traffic, matting, and vegetation flattening, would occur on grassland easements and wetlands within a wetland easement for temporary construction access. It is estimated based on the current temporary access road plan, that 150 acres of access road will cross USFWS easements; however, only 23 acres will be temporarily impacts. The other 127 acres of temporary access roads occur on upland areas of wetland easements and would not result in impacts.
- A total of about 2.72 acres of trees will be cleared from USFWS grassland and wetland easements.

Table 4 shows USFWS easements crossed by the ROW that contain structures. Table 5 contains the USFWS “overhang” easements within the proposed Project ROW that do not have a structure on them (USFWS easements overhung by the ROW). Overhang easements do not have direct impacts as no poles will be located on them. Overhang easements will need to be acquired for the air space that the structure arm and wire occupy. Table 6 contains the USFWS easements that are crossed by temporary access roads but not by the proposed Project ROW.

Table 4: USFWS Easements with Structures

State	Twp	Rng	Sec	Easement Type	Acres of ROW Crossing Easement	Nearest Structure Number	Permanent Structure Impact (sq ft)[1]	Access Road Crossing Easement (Ac)[2]	Temp Impact from Access Road (Ac)[2, 3]	Tree Removal in ROW on Easement (Ac)[4]	Map Book Page
ND	129N	63W	9	Wetland	3.92	004-P	78.5	0.26	0.07	-	1
ND	129N	63W	15	Wetland	9.13	009-P	-	1.84	0.62	-	2
						010-P	-			-	2
ND	129N	63W	22	Wetland	13.54	013-P	-	1.05	None	-	2
						014-P	-			-	2
						015-P	-			-	2
						016-P	-			-	2, 3
						017-P	-				2, 3
ND	129N	63W	23	Wetland	13.60	018-P	-	2.16	0.08	-	2, 3
						020-P	-			-	3
						021-P	-			-	3
ND	129N	63W	24	Wetland	9.11	024-P	78.5	2.97	0.10	0.01	3
						025-P	-			-	3
ND	129N	62W	20	Wetland	10.68	033-P	78.5	2.67	0.30	-	4
ND	129N	62W	29	Wetland	14.49	035-P	-	2.05	0.07	-	4, 5
						036-P	-			-	5
						037-P	-			-	4, 5
						038-P	-			-	5

State	Twp	Rng	Sec	Easement Type	Acres of ROW Crossing Easement	Nearest Structure Number	Permanent Structure Impact (sq ft)[1]	Access Road Crossing Easement (Ac)[2]	Temp Impact from Access Road (Ac)[2, 3]	Tree Removal in ROW on Easement (Ac)[4]	Map Book Page
ND	129N	62W	32	Wetland	16.34	039-P	-	3.39	0.28	0.12	5
						040-P	-			-	5
						041-P	-			-	5, 6
						042-P	-			-	5, 6
						043-P	-			-	6
SD	128N	63W	7	Wetland	9.11	048-P	-	2.91	0.38	-	6, 7
						049-P	-			-	6, 7
						050-P	-			-	7
SD	128N	63W	18	Wetland	9.09	055-P	-	2.15	None	0.16	7
						055.1-P	-			-	8
SD	128N	63W	19	Wetland	3.54	056-P	-	0.13	None	-	8
SD	128N	64W	25	Wetland	18.17	061-P	-	2.23	None	-	8, 9
						062-P	-			-	8, 9
						063-P	-			-	9
						064-P	-			-	9
						065-P	-			-	9
SD	128N	63W	31	Wetland	5.56	069-P	-	0.86	None	-	9, 10

State	Twp	Rng	Sec	Easement Type	Acres of ROW Crossing Easement	Nearest Structure Number	Permanent Structure Impact (sq ft)[1]	Access Road Crossing Easement (Ac)[2]	Temp Impact from Access Road (Ac)[2, 3]	Tree Removal in ROW on Easement (Ac)[4]	Map Book Page
SD	127N	63W	6	Wetland	9.08	070-P	-	0.54	None	-	10
						071-P	-			-	10
						072-P	-			-	10
				Grassland	9.10	073-P	78.5	1.95	1.95	-	10
						074-P	78.5			-	10
SD	127N	63W	7	Grassland	7.90	078-P	78.5	0.33	0.33	-	11
						078.1-P	78.5			-	11
SD	126N	64W	1	Wetland	9.14	100-P	-	4.29	0.12	-	14
						101-P	-			-	14
SD	126N	64W	24	Wetland	9.11	111-P	-	0.26	None	0.26	16
						112-P	-			-	16
SD	125N	64W	1	Wetland	9.10	125-P	-	1.49	0.28	0.19	18
						126-P	-			-	18
						126.1-P	-			-	18
SD	121N	59W	25	Grassland	2.27	379-P	78.5	<0.01	None	-	46
						380-P	78.5			-	46
SD	120N	58W	5	Wetland	9.09	392-P	-	1.87	None	-	47
						393-P	-			-	47
						394-P	-			-	47, 48

State	Twp	Rng	Sec	Easement Type	Acres of ROW Crossing Easement	Nearest Structure Number	Permanent Structure Impact (sq ft)[1]	Access Road Crossing Easement (Ac)[2]	Temp Impact from Access Road (Ac)[2, 3]	Tree Removal in ROW on Easement (Ac)[4]	Map Book Page
SD	120N	57W	1	Wetland	4.17	441-P	-	1.93	None	-	52
						442-P	-			-	52
SD	120N	56W	17	Wetland	9.07	464-P	-	0.31	None	-	54
						465-P	-			-	54
SD	120N	56W	14	Wetland	9.24	474-P	-	1.97	0.03	-	55
						475-P	-			-	55
						476-P	-			-	55
SD	120N	56W	13	Grassland	4.57	479-P	78.5	0.12	0.12	-	55, 56
				Wetland	9.05	481-P	-	4.00	0.03	-	56
						482-P	-			-	56
SD	120N	55W	14	Wetland	0.42	503-P	-	0.03	None	-	58
SD	120N	55W	24	Grassland	4.59	512-P	78.5	0.17	0.17	0.18	58, 59
						513-P	78.5				58, 59
SD	120N	54W	19	Wetland	4.54	516-P	-	0.08	None	-	59
						517-P	-			-	59
						518-P	-			-	59
SD	120N	54W	20	Wetland	9.06	519-P	-	1.63	None	-	59
						520-P	-			-	59
SD	120N	54W	21	Wetland	18.12	523-P	-	7.73	<0.01	0.29	60

State	Twp	Rng	Sec	Easement Type	Acres of ROW Crossing Easement	Nearest Structure Number	Permanent Structure Impact (sq ft)[1]	Access Road Crossing Easement (Ac)[2]	Temp Impact from Access Road (Ac)[2, 3]	Tree Removal in ROW on Easement (Ac)[4]	Map Book Page
						524-P	-			-	60
						525-P	-			-	60
						526-P	-			-	60
SD	120N	54W	22	Wetland	13.11	527-P	-	4.84	0.03	-	60
						528-P	-			-	60
						529-P	-			-	60
						530-P	-			-	60
						531-P	-			-	60
SD	120N	54W	23	Wetland	18.36	532-P	-	5.25	<0.01	0.02	60
						533-P	-			-	60, 61
						534-P	-			-	61
						535-P	-			-	61
						536-P	-			-	61
SD	120N	54W	24	Wetland	16.53	537-P	-	5.72	None	0.23	61
						538-P	-			-	61
						538.1-P	-			-	61
						539-P	-			-	61
						540-P	-			-	61
SD	120N	53W	12	Wetland	18.34	541-P	-	3.59	0.01	0.02	61

State	Twp	Rng	Sec	Easement Type	Acres of ROW Crossing Easement	Nearest Structure Number	Permanent Structure Impact (sq ft)[1]	Access Road Crossing Easement (Ac)[2]	Temp Impact from Access Road (Ac)[2, 3]	Tree Removal in ROW on Easement (Ac)[4]	Map Book Page
						542-P	-			-	61
						543-P	-			-	61, 62
						544-P	-			-	62
						545-P	-			-	62
SD	120N	52W	9	Grassland	4.70	559-P	78.5	0.32	0.32	0.05	63
SD	120N	52W	14	Wetland	4.53	593-P	-	0.83	0.03	-	64
SD	120N	52W	13	Wetland	4.55	597-P	-	0.23	None	0.04	64
						598-P	-			-	64
SD	120N	51W	15	Grassland	1.08	615-P	78.5	0.70	0.70	-	68
SD	120N	51W	10	Grassland	35.00	616-P	78.5	9.60	9.60	0.01	68
						617-P	78.5			--	68
						618-P	78.5			--	68
						619-P	78.5			-	68
						620-P	0.42[5]	See str impact		-	68
						621-P	78.5			-	68
						622-P	78.5			-	68
						623-P	78.5			-	68
						624-P	78.5			-	68

State	Twp	Rng	Sec	Easement Type	Acres of ROW Crossing Easement	Nearest Structure Number	Permanent Structure Impact (sq ft)[1]	Access Road Crossing Easement (Ac)[2]	Temp Impact from Access Road (Ac)[2, 3]	Tree Removal in ROW on Easement (Ac)[4]	Map Book Page
SD	120N	51W	11	Grassland	16.28	625-P	78.5	1.56	1.56	0.50	68
						626-P	78.5			-	68
						627-P	78.5			-	68
						628-P	78.5			-	68
						629-P	78.5			-	68, 69
SD	120N	51W	12	Grassland	9.06	630-P	78.5	1.22	1.22	-	69
						631-P	78.5			-	69
SD	120N	50W	7	Grassland	10.76	636-P	78.5	1.10	1.10	<0.01	69, 70
						637-P	78.5			-	69, 70
						638-P	78.5			-	69, 70
SD	120N	50W	6	Grassland	12.27	641-P	78.5	0.69	0.69	0.43	69, 70
						642-P	78.5			-	69, 70
						643-P	78.5			-	70
TOTALS					**438.46**		**0.48 ac**	**89.02**	**20.19**	**2.51**	

[1]Assumes 10-foot-diameter (78.5 square feet) foundation per structure of all structures within grassland easements, and only those structures within wetlands on wetland easements, will constitute permanent impact
[2]Access roads will be approximately 30 feet wide
[3]Access roads impacts will be temporary and only include the wetland area of wetland easements
[4]Treed areas were delineated using 2013 LiDAR data and 2014 NAIP Aerial imagery
[5]Structure 620 will require a permanent access road and work area that will result in 0.42 acres of impact

Table 5: USFWS Easements with No Structures but with Overhang

State	Twp	Rng	Sec	Easement Type	Acres of ROW Crossing Easement	Nearest Structure Number[1]	Access Road Crossing Easement (Ac)[2]	Temp Impact from Access Road (Ac)[2, 3]	Tree Removal in ROW on Easement (Ac)[4]	Map Book Page
ND	129N	62W	19	Wetland	6.96	026-P	3.86	0.05	0.10	3
						027-P			-	4
						028-P			-	4
						029-P			-	4
						030-P			-	4
ND	129N	62W	20	Wetland	N/A[5]	031-P	N/A[5]	N/A[5]	-	4
						032-P				4
						034-P				4
SD	127N	64W	12	Wetland	1.39	079-P	<0.1	None	-	11
SD	121N	57W	31	Wetland	2.31	418-P	None	None	0.11	50
SD	120N	53W	11	Wetland	3.71	541-P	0.88	0.03	-	61
SD	120N	51W	11	Wetland	2.06	626-P	None	None	N/A[6]	68
TOTALS					**16.43**		**4.74**	**0.08**	**0.21**	

[1]Indicates the nearest structure to the ROW overhang for orientation
[2]Access roads will be approximately 30 feet wide
[3]Access roads impacts will be temporary and only include the wetland area of wetland easements
[4]Treed areas were delineated using 2013 LiDAR data and 2014 NAIP Aerial imagery
[5]Please refer to Structure 33 in Table 4
[6]Tree removal for the Structure 626 overhang easement at included with the tree removal total listed for Structure 625 in Table 4

Table 6: USFWS Easements with Access Road Crossings Only

State	Twp	Rng	Sec	Easement Type	Nearest Structure Number[1]	Access Road Crossing Easement (Ac)[2]	Temp Impact from Access Road (Ac)[2, 3]	Map Book Page
SD	128N	64W	12	Wetland	051.1-P	1.03	0.02	7
SD	126N	63W	6	Wetland	99-P	0.49	0.15	
SD	126N	64W	12	Wetland	102-P	0.32	None	
SD	124N	62W	36	Wetland	221-P	0.50	0.01	
SD	120N	57W	5	Wetland	422-P	0.26	None	
SD	121N	57W	35	Wetland	435-P	0.21	None	
SD	120N	56W	24	Wetland	480-P	2.39	0.19	
SD	120N	55W	22	Wetland	497-P	<0.01	None	
SD	120N	51W	9	Grassland	611-P	2.64	2.64	
TOTALS						**56.35**	**3.01**	

[1]Indicates the nearest structure to the access road for orientation
[2]Access roads will be approximately 30 feet wide
[3]Access roads impacts will be temporary. On wetland easements, the temporary impact was calculated for the wetland area of wetland easements.

4.4 Wildlife

Both direct and indirect effects could occur on wildlife species. Unavoidable direct impacts on wildlife include reduction or alteration of vegetation, habitat fragmentation, and animal displacement during construction. Additionally, there may be an increase in non-significant indirect impacts such as noise, human presence in sensitive habitats, and vehicle-related mortalities. Long-term direct impacts include an increase in collision risk between birds and the transmission lines.

Habitat fragmentation could occur directly as a result of establishing the ROW and access roads and indirectly as a result of increased noise or dust; increased human presence; and other more subtle changes to the environment causing wildlife to avoid otherwise suitable habitats. The proposed Project Route avoids Waterfowl Production Areas and state Wildlife Management Areas. However, temporary indirect habitat fragmentation can be expected from the increased level of traffic and activity along the ROW. Increased noise and human presence along the ROWs during line construction would directly limit wildlife use of these areas in the short term. Adverse effects of noise on different species of wildlife vary with the intensity and the duration of the disturbance. Effects can range from temporary avoidance of the area during construction to long-term effects, shifts in home range, and altered reproductive success. Some breeding birds could be limited in their ability to temporarily relocate during periods of disturbance because of fidelity to nests and unfledged young. This could result in nest abandonment and failure. Due to their lack of mobility, amphibians in terrestrial habitats could be impacted by construction activities. Impacts could range from direct mortality due to being crushed by construction equipment to experiencing localized reduction of recruitment from loss of habitat. However, no population-level impacts to either reptile or amphibian species would occur.

Temporary disturbances and habitat losses of small mammals could result in an increased vulnerability to predators and increased competition for food and shelter. Localized impacts to mammal breeding and survival rates could occur. Project construction could result in direct mortality of small, less mobile mammals within the ROW corridor, but impacts would be minor as overall disturbance would be small and short-term. Other direct impacts also could include short-term displacement during construction and minor, short-term loss of habitat. Many of the smaller mammal species have high reproductive potential and are common in surrounding habitats. Construction-related direct impacts to other mammals, including foraging bats, would be minor and short term.

Short- and long-term, negligible, adverse impacts on aquatic biological resources could also occur. Aquatic biological resources are inherently susceptible to changes in hydrology, water quality, and sedimentation. Increased sedimentation and stormwater runoff could impact water quality by increasing turbidity levels that would affect small fish and invertebrate species. Additionally, any pollutants carried by stormwater runoff near clearing activities could more easily enter bodies of water because the reduction in vegetation and soil compaction would provide a less effective buffer between staging and habitat areas. Once ground disturbing activities were completed, the Applicants will conduct reseeding and restoration on easement lands, as described in Chapter 5. Other BMPs identified in the SWPPP could include diversion structures, silt fences, and retention ponds, would reduce impacts on aquatic resources further.

Impacts to birds (songbirds, waterfowl, shorebirds, wading birds, and raptors) from construction activities could result from disturbance during the breeding season. Construction during the nesting season could result in the direct, inadvertent loss of nests by ground-nesting birds located within the surface disturbance areas or direct displacement of individual birds in and adjacent to the ROW from increased noise levels and human presence. Nest abandonment could also occur for any species, due to increased habitat fragmentation, noise levels and human presence. Displaced birds would increase intraspecific and interspecific competition for resources in their newly occupied habitat. The increase in competition may cause reduced survival and fecundity in the displaced species, along with species not located along the ROW. Potential displacement of breeding songbirds or water birds could result in the loss of that breeding pair's annual productivity, which would be a minor, short-term impact. However, the temporary nature of the proposed disturbances would minimize potential impacts, and the breeding pair's productivity would be expected to return the following breeding season.

The new transmission line would be constructed in accordance with recommendations and standards outlined in the Avian Power Line Interaction Committee's (APLIC's) Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 and Mitigating Bird Collisions with Power Lines: The State of the Art in 1994. The new lines would not pose an electrocution risk to birds. The potential risk of birds colliding with the transmission lines would depend on a number of factors. Specifically, utility structure type and location; habitat use near transmission lines; and bird size, maneuverability, and flight behavior, are particularly important in evaluating a species' vulnerability to colliding with transmission lines (APLIC 2006).

However, during migratory flights, the altitudes of most migrating bird species would be located above transmission line heights. Potential collision risk for migratory birds would be primarily limited to areas where transmission lines cross important foraging and roosting habitats used during migration, and collisions could occur as the birds land and take off within these areas. Studies suggest that the majority of bird collisions occur with the smallest diameter wire, which is typically the shield wire located above the phase conductors on transmission lines. Most collisions occur mid-span (APLIC 2012). Therefore, marking the shield wires on transmission lines is the most appropriate bird collision deterrent. A common observation in collision studies is that birds show the ability to avoid a transmission line if they see the lines early enough. Many of these studies indicate that collision risk can be lowered by more than half and, in some cases, by as much as 80 percent after lines have been marked (APLIC 2012). There are three general types of line marking devices: aerial marker spheres, spirals, and suspended devices (swinging, flapping, and fixed) (APLIC 2012). Proven documentation indicating one method is better than the other does not exist, since several factors may exist when a collision occurs.

Increased raptor abundance has been documented in landscapes fragmented by manmade structures, such as fence posts and transmission lines. These vertical structures may enhance raptor foraging and predation efficiency because of increased availability of perch, nesting, and roosting sites (APLIC 2012). Several species of raptor can occur in the area around the proposed Project. These species construct or utilize stick nests and include the bald eagle, red-tailed hawk, Swainson's hawk, northern harrier, osprey, and great-horned owl. Suitable nest trees typically occur along major river courses, lakes, wetland complexes, tree rows (shelter belts), and farm copses. As discussed in Chapter 3, bald eagle stick nest surveys were conducted along the proposed Project.

Four active bald eagle nests were identified, the closest of which is located a little over 1,000 feet from the proposed Project in Grant County, SD. However, none of the bald eagle stick nests are within proximity of wetland or grassland easements.

Several BMPs would be implemented as part of the proposed Project to minimize impacts to wildlife, as detailed in Chapter 5. It is anticipated that no significant impacts to wildlife would occur following implementation of these BMPs. Similarly, no significant impacts are anticipated to occur to the eight federally-listed species which may occur in the counties where the proposed Project is located, following the implementation of the species specific BMPs discussed in Chapter 5. Impacts to the eight federally-listed species which may occur in the proposed Project area are discussed further below. Per recommendation from the USFWS, the proposed Project will have no effect upon the gray wolf (*Canis lupus*) as there are no known populations in the proposed Project area.

4.4.1 Piping Plover

Possible impacts to piping plover include potential collision, potential for impacts to nesting habitat, and potential disruption during nesting. A direct impact to piping plover could occur in the event of a collision with the transmission line. While typical flight height information is not readily available, at times piping plovers walk or run rather than fly. However, trading flights between nesting and foraging locations do occur.

There is no known nesting habitat or designated critical habitat near the proposed Project ROW. Piping plovers typically utilize alkali wetlands and river courses with broad beaches for nesting. They may stop at flooded fields, along lake edges, or along wetland shores during migratory periods. The Applicants propose to conduct pre-construction surveys for active nesting piping plovers within the ROW. If active nesting areas are identified during the surveys, the Applicants propose to maintain a 0.5-mile buffer from active piping plover nesting areas. Prudent construction BMPs will help to minimize direct and indirect impacts to the piping plover and its associated aquatic beach habitat. The proposed Project may affect, but is not likely to adversely affect the piping plover and its habitat.

4.4.2 Red Knot

As previously stated, little information is available regarding red knot stopover habitat, and the northern plains of the U.S. is not on the regular migration pathway for this long-distance migratory bird that travels thousands of miles at a time without stopping (USFWS 2015b). Since red knots are a full-migration bird, it is expected that any stopover use of habitat along the proposed Project would be very minimal. Since the presence of this species along the proposed Project would be rare, the length of presence would be short if it were to occur, presence would only be for stopover activities, and because collisions with a transmission line for a small shorebird such as a red knot is unlikely, the proposed Project may affect, but is not likely to adversely affect the red knot and its habitat.

4.4.3 Sprague's Pipit

Overall, no impacts on Sprague's pipit are expected, or if they occur they would be negligible. Most of the land cover within the ROW is actively cultivated land or small parcels of pasture land, and therefore the potential for suitable habitat is low.

No occurrences of Sprague's pipit have been documented within 1 mile of the ROW. However, Sprague's pipit may be present during migration.

Direct effects to Sprague's pipit could occur if transmission line structures or other infrastructure eliminates native prairie habitat or where this habitat type is reduced. Indirect effects would occur if existing native prairie habitats were degraded by the introduction of non-native or invasive species that could degrade or destroy these habitats over time. Pre-construction surveys for grassland birds, such as the Sprague's pipit, will be conducted prior to construction in grassland areas. If active nests are identified, a buffer from active nesting areas will be established to prevent proposed Project construction from disturbing nesting activities. Therefore, the proposed Project may affect, but is not likely to adversely affect the red knot and its habitat.

4.4.4 Whooping Cranes

The proposed Project is located on the far eastern side of the 95 percent migration corridor, with about 15 miles of proposed Project route within the 95 percent migration corridor (Cooperative Whooping Crane Tracking Project, 2007). The potential direct effect to whooping cranes include collisions with transmission lines. According to USFWS, collisions with power lines are the greatest known source of mortality for fledged whooping cranes. Specifically, Stehn and Wassenich (2007) stated that shield wires are the wires most often struck by birds in flight.

Migrating cranes are most vulnerable to collisions with structures in the early morning or late evening when light levels are diminished, as they fly at very low altitudes between roost and foraging sites, or when flying at low altitude when starting or ending a migration flight, especially when thermal currents are minimal. The primary indirect proposed Project effect is the potential for whooping cranes to avoid the stopover habitat located near the proposed Project.

Loss of migration habitat is a growing concern for the Aransas-Wood Buffalo migratory population. Searching for suitable stopover habitat may cause increased exposure to hazards as birds are required to fly low for longer distances. However, due to the location of the proposed Project near existing roadways and other facilities and the abundance of suitable habitat nearby, the observed loss of suitable habitat is presumed to be low. The increased disturbance within the migration route could also place the cranes at greater risk of exposure to other hazards encountered during migration such as structures, hunters, disease, and predation.

A line marking plan will be part of the proposed Project to mitigate potential impacts to whooping cranes and other migratory birds that may use habitat along the proposed Project. The line marking plan is described in more detail in Section 5.4.6. A total of almost 42 miles is proposed for marking outside of the 95 percent migration corridor, which exceeds the length of additional marking called for in the USFWS Region 6 Guidelines. Combined with the almost 15 miles proposed to be marked within the 95 percent migration corridor, over 56 miles of the 163 mile long proposed Project will be marked. The proposed Project may affect, but is not likely to adversely affect the whooping crane and its habitat.

4.4.5 Topeka Shiner

The Topeka shiner is a small minnow inhabiting slow moving, small- to mid-sized prairie streams with sand, gravel, or rubble bottoms that are consistent with some of the stream types crossed in Brown County, South Dakota. They prefer pool and oxbow areas that are outside main channel courses. Pools occupied by this species are in contact with groundwater and usually contain vegetation and areas of exposed gravel.

The Topeka shiner has occurred in a branch of the Maple River. The proposed Project will not include the permanent placement of structures in any streams or tributaries, so no permanent impacts to the Topeka shiner or aquatic species habitat are anticipated. Direct impacts to the Topeka shiner will be avoided by spanning appropriate aquatic habitats. Indirect impacts will be minimized by utilizing erosion and sedimentation control measures that reduce or prevent sediment from reaching adjacent waterways.

No work within rivers or streams is proposed for the proposed Project. In addition, soil erosion into streams and rivers will be minimized through the use of erosion and sediment BMPs during construction as discussed in Chapter 5. The proposed Project may affect, but is not likely to adversely affect the Topeka shiner and its habitat.

4.4.6 Dakota Skipper

Dakota skippers prefer native dry mesic to dry prairie where mid-height grasses such as little bluestem, prairie dropseed, and side oats grama are a major component of the vegetation. Potential habitat for this species is limited to prairie remnants or wetland areas surrounded by prairie remnants, particularly on steep slopes. The majority of known sites occur along the Coteau des Prairies at the eastern end of the South Dakota portion of the ROW area.

The direct effect to the Dakota skipper from the proposed Project is possible loss of habitat. Generally, loss of habitat associated with the proposed Project will be limited to permanent impacts at structure installation locations or temporary impacts due to construction activities. The proposed Project has attempted to span suitable Dakota skipper habitat and will limit disturbance in those areas to the extent practicable. Surveys of suitable habitat in 2013, 2014, and 2015 did not identify any Dakota skipper. The proposed Project may affect, but is not likely to adversely affect the Dakota skipper and its habitat.

4.4.7 Poweshiek Skipperling

Similar to the Dakota skipper, the Poweshiek skipperling prefer native dry mesic to dry prairie where mid-height grasses such as little bluestem, prairie dropseed, and side oats grama are a major component of the vegetation. Potential habitat for the species is limited to prairie remnants or wetland areas surrounded by prairie remnants. The majority of known sites occur along the Coteau des Prairies at the eastern end of the South Dakota portion of the ROW.

The direct effect to the Poweshiek skipperling is possible loss of habitat. The proposed Project has attempted to span suitable Poweshiek skipperling habitat and will limit disturbance in those areas to the extent practicable. Surveys of suitable habitat in 2013, 2014, and 2015 did not identify any Poweshiek skipperling. The proposed Project may affect, but is not likely to adversely affect the Poweshiek skipperling and its habitat.

4.4.8 Northern Long-eared Bat

The northern long-eared bat utilize both live trees and snags for roosting during summer. Minimizing tree clearing was one of the routing criteria that were used for the proposed Project. The proposed Project will require over 2,950 acres of land for easements. Of the 2,900 acres of easement required for the proposed Project, only about 25 acres of trees will be cleared, of which about 2.7 acres of tree clearing will occur on USFWS grassland or wetland easements Tables 4 and 5). Tree clearing will be conducted between November 1 and March 31 to avoid the incidental take of summer roosting northern long-eared bats. The proposed Project may affect, but is not likely to adversely affect the northern long-eared bat and its habitat.

4.5 Cultural Resources and Native American Concerns

Many of the historic sites encountered during surveys on easement lands retain traditional cultural values and are likely to qualify under Criterion A of the NRHP for their association with the broad patterns of history. USFWS, in consultation with SHPO, will make final determinations on eligibility of all sites. Of the sites that are determined eligible for the NRHP, there may be adverse visual effects from the proposed Project if it is determined that the integrity of setting contributes to the qualities that make them eligible, and that their integrity of setting will be diminished with the intrusion of the transmission line in their immediate viewsheds. All proposed transmission structures would be located in the least impactful locations possible without straying from the selected ROW route. Where avoidance of impacts is not possible, mitigation would be required for any impacts to eligible NRHP sites. Overall impacts, following minimization and mitigation efforts, would be anticipated to be below the significance threshold.

4.6 Visual Resources

The proposed Project will create a new visual element within the ROW corridor, but the degree to which the transmission line will be visible will vary by location. The visual impact of the transmission line could affect landowners who live along or near the ROW, or community residents who travel along the roads regularly. The natural landscape in the proposed Project area is often characterized as rolling or flat terrain used for agricultural purposes, with the exception of the steeper slopes at the edges of the Coteau des Prairies. The exact viewshed of the ROW will be determined by the engineering of the individual structures, elevation, and natural and man-made objects. Depending on a viewer’s physical location, the terrain conditions, and natural landscape features such as tree cover or man-made features such as a barn, the transmission line structures could be visible for distances up to two miles. A viewer’s degree of discernible detail decreases as the physical distance from an object increases.

Structure installation would have a direct, long-term impact on the visual environment in the proposed Project area. The structures will be noticeable to casual observers, and would draw attention of residents. However, the visual impacts would not have an effect on the use or function of the lands in USFWS easement. Impacts to visual resources on easement lands is therefore considered less than significant.

4.7 Noise

Noise from construction activities varies depending on the type of construction equipment being used, the area that the action would occur in, and the distance from the noise source. Constriction activities can cause a temporary increase in sound that is well above the ambient level. A variety of sounds are emitted from loaders, trucks, and other work equipment. Construction equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban or rural area (USEPA 1981).

Construction usually involves several pieces of equipment (e.g., bulldozers and trucks) that could be used simultaneously. To predict how these activities would impact adjacent populations, noise from the proposed construction equipment was estimated. The combined noise from the equipment was conservatively estimated to determine the total impact of noise from construction activities at a given distance. Examples of expected construction noise during daytime hours at specific distances are shown in Table 6. These sound levels were estimated by adding the noise from several pieces of equipment and then calculating the decrease in noise levels at various distances from the source.

Table 6: Estimated Noise Levels from Construction Activities

Distance from Noise Source	Estimated Noise Level	Human Effect
50 feet	90 to 94 dBA	Very annoying Hearing damage (8 hours)
100 feet	84 to 88 dBA	Annoying
150 feet	81 to 85 dBA	Annoying
200 feet	78 to 82 dBA	Telephone use difficult
400 feet	72 to 76 dBA	Telephone use difficult
800 feet	66 to 70 dBA	Intrusive
1,200 feet	< 64 dBA	Quiet to Intrusive

The short-term increase in ambient noise levels from construction of the proposed Project would not cause significant adverse effects on the surrounding populations. The noise from construction equipment would be localized, short-term, and intermittent during machinery operations. Heavy construction equipment would be used periodically during construction; therefore noise levels from the equipment would fluctuate throughout the day.

Once construction activities are complete, noise levels would return to existing noise levels. Maintenance noise would stem from patrolling the transmission line would be similar to existing noise levels. Therefore, there would be no impacts to the noise environment from maintenance activities.

4.8 Transportation and Access

Transmission lines can present an important safety concern to airports and aircraft. The Federal Aviation Administration has established guidelines to determine the appropriate setback distance for tall structures, including transmission lines, from public use airports and heliports. Federal Aviation Regulation Part 77 establishes standards and notice requirements for reporting airspace obstructions for objects currently impacting or that could impact navigable airspace around aviation facilities. Certain objects such as steel pole transmission line structures have the potential to conflict with the operation of airport navigational aids and weather observation station facilities, including radar facilities used for aircraft navigation. These facilities may require routing regulations similar to those applicable to airports and airstrips. Preliminary glide slope reviews, as well as coordination with Federal Aviation Administration and state Airports Commission staff, indicate that the proposed Project will not impact airport navigational aids or weather observation facilities at any registered aircraft facility or airport. The Applicants will file an airspace form detailing the proposed Project specifications with the Federal Aviation Administration.

The maximum construction workforce is expected to generate an average of approximately 50 additional vehicle trips per day on local roadways. Considering any combination of state and county highways and other township roads throughout the proposed Project area, the traffic impacts are negligible. Since many of the area roadways have minimal traffic currently, the addition of about 50 vehicle trips represents a large percentage increase and may be perceptible; however, no significant impact on traffic is expected. Slow-moving construction vehicles may cause delays on smaller roads, similar to farm equipment during harvest. In addition, delays may occur as the transmission line is being strung across a roadway. These impacts will be short term and temporary.

Use of public and private roads for delivery of equipment and materials, and by construction personnel, is not expected to affect the road conditions. The Applicants will work with the county and townships so that roads are maintained in preconstruction condition and will repair any road damage. Additionally, when crossing roads during stringing operations, guard structures may be utilized as necessary to eliminate traffic delays and provide safeguards for the public. The Applicants will work with the respective state and local highway departments regarding applicable permitting requirements.

Use of temporary access roads across agricultural lands may result in compaction of agricultural soils and loss of crops. Where necessary, compacted soils will be disked following construction, and landowners will be compensated for crop losses. Access to the ROW once it is completed will be required periodically to perform inspections, conduct maintenance, and repair damage. Regular maintenance and inspections will be performed during the life of the proposed Project to ensure its continued integrity. Generally, the Applicants inspect the transmission lines at least once per year. Inspections are typically limited to the immediate ROW and travel paths. Overall impacts to transportation and access from the proposed Project would be minor.

4.9 Cumulative Impacts

CEQ regulations (40 CFR 1508.7) require the assessment of cumulative impacts in the decision-making process for federal actions. A cumulative impact is an impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency, organization, or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

To determine potential cumulative impacts, actions in the vicinity of the proposed Project were identified. Potential projects identified as cumulative actions included any planning or development activity that has recently been, is currently being, or that is likely be implemented in the reasonably foreseeable future and that may have cumulative impacts with the proposed Project.

The cumulative impacts analysis focuses on geographical proximity and incremental actions from the proposed Project construction and operation in conjunction with past, present, and reasonably foreseeable future regional projects or actions. Residual effects anticipated from the proposed Project, after taking into account all BMPs proposed by the Applicants, was the basis for the cumulative impacts described below.

4.9.1 Past, Present, and Reasonably Foreseeable Future Actions

Several transmission lines and wind energy developments have recently been developed or are currently in development within the general proposed Project vicinity, as shown in Tables 7 and 8. Transmission lines and wind energy developments are the focus of this section, as these developments are considered to have the most potential for cumulative impacts, when considered in conjunction with the proposed Project.

Table 7: Proposed or Recently Constructed Transmission Lines in the Proposed Project Vicinity

Name	State(s)	Length	Expected Completion Date	Description
Center to Grand Forks	North Dakota	250 miles	2014	345-kilovolt transmission line from Center to Grand Forks.
Merricourt to Ellendale	North Dakota	30 miles	2012	230-kilovolt transmission line
Big Stone South to Brookings	South Dakota	145 miles	2017	345-kilovolt transmission line between Big Stone South Substation to Brookings, South Dakota.
Lower Brule to Witten	South Dakota	72 miles	2014 to 2015	230-kilovolt transmission line that would connect the proposed Lower Brule Substation with the existing Witten Substation.

Table 8: Existing and Proposed Wind Energy Development in the Proposed Project Vicinity

State	Statewide Online Wind Power	Statewide Wind Power Under Construction	Statewide Proposed Wind Power	Example Recent and Future Wind Projects in the Plan Area
North Dakota	1,886 MW	536 MW	4,238 MW	100 to 200 MW Courtenay Wind Farm, Courtenay, ND 50 MW Rolette Wind Project, Rolette County, ND 150 MW Thunder Spirit Wind Project, Hettinger, ND
South Dakota	882 MW	124 MW	7,399 MW	80 MW Beethoven Wind Farm in Bon Homme, Hutchinson, and Charles Mix counties. The project came online in May 2015. 300 MW Wind Farm proposed in Campbell County

Source: AWEA 2015

4.9.2 Impacts by Resource

Soils. Ground-disturbing activities, movement of construction vehicles and equipment during the construction phase of the proposed Project, and improvements to existing access routes would contribute to a minor, short-term soil disturbance and soil loss due to wind erosion and soil compaction. These impacts would be incremental to other regional effects occurring as a result of area development, recreational users, and agricultural users. Soil movement could also result in minor amounts of fugitive dust. Soil effects in the long term would be considered to be cumulatively incremental and negligible.

Water Resources. No cumulative impacts on water resources would be expected from current development due to spatial and temporal isolation. Renewable energy projects in the area do not occur along the same bodies of water. Short- and long-term, negligible, adverse cumulative impacts on water resources would be expected from other proposed transmission lines if construction activities for adjacent lines occur at the same time. BMPs established by the SWPPP would be implemented to reduce any potential impacts. Any additional construction of transmission lines in the future would likely be built after construction activities associated with the Proposed Action were complete. Vegetation clearing would occur during construction of the proposed transmission lines; however, the lines would be expected to be geographically isolated. Any cumulative impacts would be negligible and short-term.

Vegetation. Vegetation clearing and grading during construction of the proposed Project, and the construction of new access routes or improvements to existing routes, would contribute to minor short-term disturbance and vegetation loss. These impacts would be incremental to other regional effects, occurring as a result of area development including wind energy projects, new transmission lines, and recreational and agricultural users. Vegetation impacts in the long term would be considered incremental and minor.

Invasive Species. Development activities directly remove or alter native habitat and increase human activity in an area, which may lead to cumulative adverse impacts on native species if invasive species spread. Increased use of vehicles and equipment could introduce non-native plant species to an area and newly disturbed soil could allow non-native species to become established. The introduction of non-native plant species could impact wildlife species which depend on native plant species. The contribution of the proposed Project to the cumulative impacts associated with invasive species in the long term would be considered incremental and minor.

Wetlands and Riparian Zones. No cumulative impacts on wetlands or riparian zones would be expected from the proposed Project in combination with current or proposed development due to spatial and temporal isolation of other past, present and reasonably foreseeable projects.

Wildlife. Construction activities associated with the Proposed Action would temporarily fragment habitat and would contribute to minor short-term impacts on wildlife. These impacts would be incremental to other regional effects, including renewable energy development and transmission, livestock grazing, and recreation. A number of these activities could result in land use changes occurring in the proposed Project area and could destroy and fragment habitat, disrupt movement corridors and potentially prevent wildlife species from accessing all or portions of their home range. In naturally fragmented habitats, such as in the proposed Project area, impacts to may also affect connectivity between habitats. Cumulative wildlife impacts in the long term would be considered incremental and minor.

Migratory Birds. Energy development activities and especially transmission would contribute to short-term and long-term adverse effects on avian species. Additional transmission lines would cause short-term disturbance during construction and potentially increase the risk of avian collisions. Migratory bird impacts in the long term would be considered incremental and moderate.

Special Status Species. Energy development and transmission would have incremental adverse effects on special status species as these activities often result in large and permanent change to the landscape and can effectively render a portion of a landscape uninhabitable to many species. These activities directly remove and fragment habitat, increase human activity in the area, sever travel corridors, and potentially introduce non-native plant species. The proposed Project is anticipated to contribute incremental and minor impacts to cumulative adverse impacts on special status species.

Cultural Resources. The proposed Project area has a diverse and well-sequenced cultural record reflecting prehistoric use and rich, multi-ethnic historic heritage. However, the geographic distribution of recorded sites is not representative as large swaths of the proposed Project vicinity have not been inventoried or studied. These are primarily private lands located throughout the vicinity. Cultural resources are at risk of degradation due to erosion, agriculture, and development. Cultural resources on private lands are especially at risk of degradation due to extensive agriculture, commercial development, and lack of identification and state or federal protection. Linear resources in the proposed Project vicinity are particularly sensitive to cumulative impacts due to the piecemeal degradation of individual segments.

There would be little cumulative impact to cultural resources associated with the Proposed Action. None of the existing and proposed wind and power transmission projects identified for cumulative impacts overlap with the permanent ROWs of the Proposed Action, and cultural resources in the permanent ROWs would not experience cumulative impacts. Sites in the area of analysis for indirect impacts are two miles or more from the described projects and are unlikely to experience cumulative impacts to their historic settings. Linear resources intersected by the Proposed Action do not extend to the described projects and would not sustain cumulative impacts to additional segments.

Visual Resources. Cumulative effects to visual resources may result from existing and proposed wind facilities and any future transmission lines. However, the transmission lines and wind facilities are visually different and any cumulative effect would be anticipated to be minor.

Noise. The Proposed Action would not be expected to have a noticeable long-term impact on the noise environment. Proposed construction activities would produce elevated noise levels as these activities move along the transmission line. Construction from the proposed wind facilities and any future transmission line could have short-term adverse, cumulative impacts on the noise environment in the event construction activities occur at the same time in the same region. These cumulative impacts would last only until construction in a particular area is complete, so impacts would be negligible and short-term.

Transportation. Project-related transportation effects associated with the Proposed Action would be negligible and short term in nature. When added to trips generated by other past, present, and reasonably foreseeable projects, the cumulative impacts would be minor and limited to public roadways where capacity would not be substantially diminished. The roadway conditions are not expected to change from current conditions, with many of the roads already reported as fair to poor condition.

5 Replacement and Best Management Practices

5.1 Soils

To reduce adverse effects to and from the soils, and as dictated in the conditions of the National Pollution Discharge Elimination System (NPDES) permit that will be required, the proposed Project will develop and utilize BMPs during construction to protect topsoil and adjacent wetland resources, and minimize soil erosion. BMPs may include:

- Containment of stockpiled material away from stream bank and shorelines as required by the NPDES permit
- Stockpiling and respreading topsoil at laydown areas and/or permitted areas
- Reseeding and revegetating disturbed areas as required by the NPDES permit
    - Utilizing a USFWS recommended seed mix for reseeding on USFWS easements
- Implementing erosion and sediment controls as required by the NPDES permit
- Minimizing waste waters generated by construction
- Soils on grassland easements will not be covered with organic fill.

Permanent or temporary soil erosion control measures for all slopes, channels, ditches, disturbed land area, and soil stockpiles would be implemented as soon as practicable after final grading or the final earth disturbance has been completed. When it is not possible to permanently stabilize a disturbed area after an earth disturbance has been completed, or where significant earth disturbance activity temporarily ceases, temporary erosion control measures would be implemented as soon as practicable.

Soils disturbed during construction will be de-compacted and restored to preconstruction contours to the extent practicable so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate rev-vegetation and prevent erosion. Additionally, no equipment maintenance will occur on grassland easements or protected USFWS wetlands in wetlands easements, which would reduce the risk of an accidental spill.

5.2 Surface Water

Erosion control measures will be implemented as necessary to minimize runoff during construction. Specific measures will be determined once final design of the route is complete. Erosion control measures such as installation of silt or straw bale fences, biorolls, mulching, seeding, or mesh fabric overlay will be installed when and where appropriate. Access routes to structure locations will be reviewed prior to the mobilization of equipment so erosion concerns can be avoided or minimized. Construction crews will exercise caution when equipment is near delineated wetlands and within 50 feet of open water streams and rivers and will not drive equipment through streams or rivers crossed by the transmission line. Construction crews will minimize, or eliminate if possible, access across protected depressions or basins on wetland easements.

5.3 Vegetation and Wetlands

The Applicants have, and will continue to, work closely with landowners and agencies to minimize impacts to existing vegetation within the proposed ROW. Final structure locations are being designed to minimize impacts to existing vegetation and land use. In particular, the following conservation measures are proposed for USFWS grassland and wetland easements.

- A construction monitoring plan will be developed to monitor the implementation of BMPs during construction.
- All on-site crews will be trained about the importance of staying on defined access routes and within the ROW.
- Aside from Structure 620, no site grading is anticipated. If grading is necessary, the WMD will be notified prior to work.
- Tree clearing activities will be minimized and disturbances will be stabilized as soon as practicable. No stump removal is anticipated as trees will be cut above ground level.
- The transmission line structures will be constructed within protected wetland basins during the winter, to the extent practicable. If summer construction becomes necessary, all fill placed in protected wetland basins for temporary construction access roads must be removed upon tower completion. The WMD will be notified when tower construction is complete and/or fill is removed so a visual inspection may be made of the site. No fill will be placed in protected basins.
- Non-native weeds will be controlled by limiting the number of construction vehicles, washing vehicles, and using weed-free seed and straw.
- All cultivated fields were tested for SCN by the proposed Project and mitigation techniques to minimize the spread of soil during construction have been identified.
- Utilizing a USFWS recommended native seed mix for restoration.

5.3.1 Grassland Easement Replacement

To the extent practicable, and while attempting to minimize impacts to other proposed Project routing criteria (e.g., existing residences, forest, cultural resources, etc.), the proposed Project has minimized the crossing of grasslands and grassland easements. For those grassland easements that could not be avoided, the proposed Project then attempted to minimize the number of transmission structures that will be required to be constructed within grassland easements. In addition, impacts on native vegetation have been minimized, when possible, by spanning habitats of higher quality. Where spanning has not been feasible, impacts on grassland easement vegetation will be mitigated by reestablishing similar native species once construction is complete. Areas disturbed during construction will be reseeded or otherwise stabilized with a native grass and forb mix specified by the USFWS.

The Applicants will work with the USFWS to coordinate the purchase of the replacement acres. The Applicants will provide funding to replace the acres of grassland easement lost through construction of the transmission line structures. Replacement will be acre for acre (for those contracts with less than one acre of loss, a minimum of one acre will be used for replacement of impacts to grassland easements). The Applicants propose to provide 1 acre replacement of grassland easement acreage for the 0.48 acres of direct permanent impacts from the proposed Project in South Dakota.

5.3.2 Wetland Easement Replacement

Minimizing impacts to wetlands and USFWS wetland easements was one of the routing criteria for the proposed Project. Once the route for the proposed Project was approved, the proposed Project attempted to further minimize impacts to wetlands by spanning wetlands to the extent practicable. Permanent impacts on jurisdictional wetlands will be permitted under U.S. Army Corps of Engineers (USACE) jurisdiction. Wetland replacement will occur as required by applicable permits. Temporary impacts will be minimized by utilizing erosion and sedimentation control BMPs that minimize or prevent sediment from reaching adjacent waterways and protect topsoil. The Applicants will use BMPs during construction and operation of the proposed Project to protect topsoil and adjacent wetland resources and to minimize soil erosion. Additional BMPs may be used to limit impacts include the use of tracked equipment, winter construction in wetlands, and matting. Practices may include containing excavated material, protecting exposed soil, stabilizing restored material, and re-vegetating disturbed areas. Areas on wetland easements disturbed during construction will be reseeded or otherwise stabilized with a native seed mix specified by the USFWS.

The Applicants will work with the USFWS to coordinate the purchase of the replacement acres in the appropriate state. The Applicants will provide funding to replace the acres of wetland easement lost through construction of the transmission line structures. Replacement will be acre for acre (for those contracts with less than one acre of loss, a minimum of one acre will be used for replacement for impacts to wetland easements).

The Project proposes to provide 1 acre replacement of wetland easement acreage for the 0.005 acres of direct permanent impacts from the proposed Project in North Dakota.

5.4 Wildlife

Various BMPs or conservation measures are proposed for the following protected wildlife species.

5.4.1 Migratory Birds

To discourage active nesting within temporary or permanent disturbance areas associated with construction, tree removal, ground clearing, or mowing, these proposed Project activities will occur in late fall to early spring (outside the bird breeding/nesting season). If ROW areas are not cleared in early spring before the breeding season, a survey of the construction areas for active nests of protected species will be conducted. If an active nest is found, a construction buffer around the nest will be established. Restricting construction activities during this time frame (May to August) will allow nesting birds to breed without direct disturbance. In areas where construction activity disturbs non-cropland vegetative cover, the areas will be reseeded or otherwise stabilized to a similar condition as it was before construction or per applicable permit requirements.

5.4.2 Raptors and Eagles

Tree clearing associated with the proposed Project is proposed to occur from November 2015 through February 2016. Residual clearing may need to be performed in the winter of 2016/2017 due to late acquired land rights on limited tracts of land requiring eminent domain actions. Although proposed Project tree clearing will not directly impact known raptor nests, construction activity could indirectly affect nesting activities.

If tree clearing is not finished before December 1st when bald eagles may begin building their nests, the proposed Project Applicants will notify USFWS. Proposed Project biologists and USFWS staff will monitor the eagle nest in vicinity of the proposed Project ROW while tree clearing continues, to ensure that clearing activity does not impact nesting activities. Bald eagles fledge by August 1, after which construction may resume as needed. To minimize impacts on breeding eagles, subsequent field surveys will occur during the spring leaf-out period (anticipated to be April 2016) to locate any eagle nests that may have been built after the 2015 field surveys. If an active eagle nest is located in the proposed Project Area, the Applicants will follow USFWS guidelines to reduce impacts on breeding eagles, including but not limited to performing seasonal monitoring of known eagle nests along the route.

A transmission line marking plan has been developed to reduce the potential for bird strikes. The plan is consistent with the APLIC recommendations in *Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC, 2012). Additional details on the line marking plan is included in Section 5.4.6.

5.4.3 Sharp-tailed Grouse

Prior to construction the Applicants will conduct sharp-tailed grouse lek surveys. If during surveys, a lek site is found that is active and within 1 mile of the ROW, construction activity timing will be restricted in that specific location, so that construction activities do not occur between sunrise and 3 hours after sunrise during the active lekking season (March 1 through June 30), to avoid disturbance to the birds attending the lek.

5.4.4 Piping Plover

Pre-construction surveys for active nesting piping plovers within the proposed Project ROW will be conducted. If active nesting areas are identified during surveys, a 0.5-mile buffer from active nesting areas will be established to prevent proposed Project construction from disturbing nesting activities.

5.4.5 Red Knot

Since the presence of this migratory species along the proposed Project is rare, the length of presence would be short if it were to occur (presence would only be for stopover activities), and because collisions with a transmission line for a small shorebird such as a red knot is unlikely, no species specific mitigation is proposed.

5.4.6 Sprague's Pipit

A pre-construction survey for grassland birds, such as the Sprague's pipit, will be conducted prior to construction in grassland areas. If active nests are identified, a construction buffer from active nesting areas will be established to prevent proposed Project construction from disturbing nesting activities.

5.4.7 Whooping Cranes

A line marking plan will be part of the proposed Project to mitigate potential impacts to whooping cranes and other migratory birds that may use habitat along the proposed Project. As recommended by USFWS, the line marking plan includes marking sections of the proposed Project within one-mile of potentially suitable stopover habitat within the 95 percent whooping crane migration corridor.

In addition, the USFWS recommends marking an equal length of existing power lines within one-mile of suitable stopover habitat. However, it is not feasible to mark an existing distance of equal line due to the complexities of the proposed Project involving more than one utility owner and the shortage of suitable existing transmission lines within the 95 percent whooping crane migration corridor. In addition, the Applicants have found that the existing transmission lines have not been engineered to support the additional ice and wind loading associated with the line marking devices.

To meet the spirit of the USFWS Region 6 Guidance for line marking for migratory and grassland birds (including prairie grouse) and colonial nesting species, line marking will extend outside of the 95 percent whooping crane migration corridor. Agencies identified wetlands, open water habitats and high quality grasslands as the habitat of species of concern. Thus, line marking is planned at open water crossings (including major rivers), large wetland complexes, and flyways that may connect these types of resources. This will afford protection to species of concern, such as waterfowl, in addition to whooping cranes which may stray into potentially suitable habitat outside the 95 percent migration corridor. A total of almost 42 miles is proposed for marking outside of the 95 percent migration corridor, which exceeds the length of additional marking called for in the Region 6 Guidelines. Combined with the almost 15 miles proposed to be marked within the 95 percent migration corridor, over 56 miles of the 162 mile long proposed Project will be marked.

5.4.8 Topeka Shiner

No work within rivers or streams is proposed for the Project. In addition, soil erosion into streams and rivers will be minimized through the use of erosion and sediment BMPs during construction as discussed in Sections 5.1 and 5.2. No further mitigation for Topeka shiner is proposed.

5.4.9 Dakota Skipper

Travel routes to construction sites on Grassland Easements will be minimized to reduce impacts to potential Dakota skipper habitat. The preferred construction time frame is winter to further avoid impact to potential habitat.

The Applicants conducted three consecutive years of surveys and found no Dakota skippers, therefore no further mitigation is proposed.

5.4.10 Poweshiek Skipperling

Travel routes to construction sites on Grassland Easements will be minimized to reduce impacts to potential Poweshiek skipperling habitat. The preferred construction time frame is winter to further avoid impact to potential habitat.

The Applicants conducted three consecutive years of surveys and found no Poweshiek skipperlings, therefore no further mitigation is proposed.

5.4.11 Northern Long-eared Bat

Tree clearing will be minimized to the extent possible and conducted between November 1 and March 31 to avoid the incidental take of summer roosting northern long-eared bats.

5.5 Cultural Resources and Native American Concerns

Impacts will be minimized by designing pole placement, access roads, and associated construction so that it occurs outside of known cultural resource boundaries within the permanent ROW. All on-site crews will be educated on the protection of cultural resources and the procedures to cease work and notify the proper authorities in the case of unanticipated discoveries. If any inadvertent discoveries are located during construction, USFWS cultural resources staff will be notified in accordance with applicable guidance and law.

The Draft South Dakota Cultural Resources Level III Inventory Report was provided to the South Dakota SHPO, USACE and USFWS. The finalized report is anticipated to be provided in mid-December following reviews. The North Dakota Cultural Resources Class III Inventory Report was provided to the SHPO and USFWS. SHPO mailed the Project a concurrence letter on July 24, 2015. USFWS is anticipated to consult with THPOs and SHPOs in November or December 2015. A Memorandum of Agreement (MOA) between USFWS and other parties, as appropriate, may be developed for indirect impacts to cultural resources. NHPA Section 106 requirements would be completed, and the MOA (if deemed necessary) may be signed, before a final decision is made by USFWS regarding whether or not to grant a Letter of Non-Objection and Compatibility Determination for the proposed Project.

5.6 Visual Resources

BMPs for visual resources on USFWS easement lands include:

- Where feasible, the location of structures, fiber optic regeneration stations, and other disturbed areas will be determined by considering input from landowners or land management agencies to minimize visual impacts.
- Structure types (designs) will be uniform to the extent practical. In general, the Applicants propose to use single pole steel structures ranging in height from approximately 125 to 155 feet. H-frame structures would potentially allow for lower structure height; however, during public meetings a strong preference for mono-pole structures was expressed by the public. This was primarily voiced by area farmers as a way to limit the footprint of a pole and concerns about navigating farm equipment around the pole.
- Care will be used to preserve the natural landscape; construction and operation will be conducted to prevent any unnecessary destruction, scarring, or defacing of the natural surroundings. During operation, clearing of trees and shrubs will be conducted only as necessary per North American Electric Reliability Corporation standards and to allow safe operation and inspection of the proposed Project.
- Most of the lands crossed by the proposed Project ROW are currently used for agriculture. Following construction, most of these lands will return to their current agricultural use and visual characteristics.

5.7 Noise

During construction, noise levels will be minimized by ensuring that construction equipment is equipped with mufflers that are in good working order. Construction activities will generally be limited to the hours of 7 a.m. to 9 p.m.

5.8 Transportation and Access

BMPs for transportation and access on USFWS easement lands include:

- All fill placed in protected wetland basins for temporary construction access roads will be removed upon structure completion. The WMD will be notified when tower construction is complete and/or fill is removed so a visual inspection may be made of the site.
- Travel routes to construction sites on Grassland Easements will be minimized to reduce impacts to grassland, ground nesting birds, and potential Dakota skipper/Poweshiek skipperling habitat.
- One permanent road will be installed to structures on USFWS easement lands at Structure 620 in Grant County.

6 Outreach and Coordination

6.1 Outreach Summary

As part of the EA process, coordination with federal, state, and local agencies is ongoing, as well as consultation and communication with the public. Table 9 provides a brief summary of the proposed Project coordination completed to date, specifically with the USFWS. Following public release of the Draft EA, USFWS will consider all input received and revise the EA, as appropriate.

Table 9: Summary of Project Consultation and Coordination

Date	Activity
2012 July	• Project notification letter mailed to North Dakota and South Dakota state and federal agencies
2012 August	• Project notification letter and map mailed to the agriculture commissioner, attorney general, and governor of North Dakota • Notification letter and map mailed to county, state, and city representatives, and non-government organizations in North Dakota and South Dakota o August 28-30 - Held meetings with North Dakota and South Dakota county zoning and planning representatives and a follow up email was sent to all attendees containing the meeting minutes o August 28 – Held interagency meeting with South Dakota state and federal agencies; attendees were followed up with via email containing the meeting notes o August 29 - Held interagency meeting with North Dakota state and federal agencies; attendees were followed up with via email containing the meeting notes
2012 September	• Project website and hotline made available to the public • Corridor notification letter for open house meetings mailed to county, state, and city representatives, and non-government organizations in North Dakota, South Dakota, and Minnesota • Notification letter for open house meetings mailed to township representatives in North Dakota, South Dakota, and Minnesota
2012 October	• Press release sent to 21 North Dakota, South Dakota, and Minnesota publications • Landowner notification postcard invitation to public open house meetings sent • October 15-18 Corridor public open house meetings held in: o Wheaton, MN o Milbank, SD o Webster, SD

Date	Activity
	o Aberdeen, SD o Ellendale, ND o Britton, SD
2012 November - December	• *Power Delivered* newsletter was sent to all stakeholders in the proposed Project including state, federal, county, and local representatives and agencies, as well as open house meeting attendees and those who had commented or signed up for the mailing list
2013 January	• January 16-17 – Held interagency meetings for the North Dakota and South Dakota state and federal agencies which included a follow up letter enclosed with the meeting minutes and letter from the owners • January 28-29 – Hosted an online webinar and conference call with county representatives in North Dakota and South Dakota including Day, Brown, Grant, Dickey, Sargent, and Marshall Counties to describe the routing process
2013 February	• Notification letter for routing open house meetings sent to all stakeholders including state, federal, and local agencies, elected officials, and non-government organizations. • Notification postcard for routing open house meetings sent to all landowners within the preliminary corridors of the proposed Project, as well as any active participants that have attended a meeting or submitted a comment. • Press release sent to publications in North Dakota and South Dakota announcing the routing open house meetings • February 25-27 Routing public open house meetings held in: o Groton, SD o Ellendale, ND o Britton, SD o Webster, SD o Milbank, SD
2013 March	• A follow-up postcard was sent to all routing open house meeting attendees
2013 April	• Additional Route Segment notification letters were mailed to landowners within the 150ft right-of-way of new route segments added to the preliminary routes for review during the routing process
2013 May	• Preferred Route notification letters were sent to all North and South Dakota state and federal agencies as well as tribal governments and representatives • Preferred Route notification letters were sent to county commissioners and administrators, as well as the chairman of all townships adjacent to the preferred route

Date	Activity
2013 June	• Preferred route notification letters were sent to landowners within 500ft of the preferred route centerline. • Preferred route maps were made available on the proposed Project website • Second Edition of *Power Delivered* mailings were sent to all stakeholders, landowners within a half-mile of the preliminary routes, and active participants in the proposed Project • Second Edition of *Power Delivered* emails were sent electronically to all stakeholders, landowners within a half-mile of the preliminary routes, and active participants in the proposed Project.
2013 July	• USFWS Meeting to discuss the study area, easement parcel data, thoughts and comments
2014 January	• *Power Delivered* proposed Project Newsletter (Issue 4) was posted to the website and hard copies were mailed to stakeholders, open house meeting attendees and those who had commented or signed up for the mailing list • U.S. Department of Defense response letter received on Siting Clearinghouse coordinated review of the preferred route. Review concluded minimal impacts are expected • Email received from the Federal Aviation Administration and a response email provided by the proposed Project team
2014 February	• Meeting with USFWS WMD and Ecological Services staff • Agency meeting with the USFWS to discuss the proposed Project and the Letter of Non-Objection process
2014 March	• Agency meeting with the USACE to discuss water crossing options • Conference call with North Dakota State Water Commission to discuss their permit and review process
2014 June	• *Power Delivered* proposed Project Newsletter (Issue 5) was posted to the website and hard copies were mailed to stakeholders, open house meeting attendees and those who had commented or signed up for the mailing list
2014 August	• Press release submitted to media outlets regarding route approval • Website updated with ND Route Approval • Agency meeting with the USFWS to discuss the proposed Project and the Letter of Non-Objection process
2014 September	• *Power Delivered* proposed Project Newsletter (Issue 6) was posted to the website and hard copies were mailed to stakeholders, open house meeting attendees and those who had commented or signed up for the mailing list • BSSE team sent survey access mailer to landowners

Date	Activity
2014 October	• PUC sent mailer for affected landowners • Phase 1 of website updates completed
2014 November	• Mailer sent to all landowners along the route who need to sign option agreement
2015 January	• Completed website updates including an interactive PDF of landowner packers, printer friendly version of landowner packets and revised website content • Filed Affidavit for landowner packet mailing • Made phone calls to local government representatives regarding landowner packets • Email sent to SD PUC regarding SCN mitigation plan and upcoming survey and geotech work • Scheduled and attended in-person meetings with local officials (township and county)
2015 February	• Township Chair letter mailed to all township supervisors
2015 March	• Ellendale Township Annual Meeting held
2015 April	• *Power Delivered* proposed Project Newsletter (Issue 7) posted to the website and hard copies mailed to stakeholders, open house meeting attendees, and those who had commented or signed up for the mailing list • Agency meeting with the USFWS to discuss the proposed Project and the Letter of Non-Objection process
2015 June	• Agency meeting with the USFWS to discuss the proposed Project and the Letter of Non-Objection process • Conference call to discuss the Grant County eagle nest
2015 July	• Agency meeting with the USFWS to discuss the proposed Project and the Letter of Non-Objection process
2015 August	• Initial Draft EA provided to the USFWS for review and comment
2015 September	• Draft EA provided to the USFWS for review and comment with revised Structure 620 impact
2015 October	• Conference call to discuss agency permitting processes and threatened and endangered species determinations
2015 November	• Draft EA provided to the USFWS for review and comment

6.2 Open House Meetings

6.2.1 Corridor Open House Meetings

The applicants hosted a series of six corridor open house meetings from Monday, October 15 through Thursday, October 18, 2012, to gather input from local stakeholders, agency representatives, and landowners within the study corridors of the Big Stone South to Ellendale Transmission Line.

6.2.1.1 OUTREACH

Prior to the corridor open house meetings, proposed Project notification letters and corridor maps were sent to agencies, non-government organizations, county officials, township supervisors, and city representatives. An open house notification postcard was sent to 8,582 landowners within the study corridors.

Advertisements exhibiting the corridor open house meeting locations and dates were place in 6 publications corresponding with meeting locations. Press releases containing notifications the proposed Project and scheduled open houses were sent to 26 media outlets.

6.2.1.2 ATTENDANCE

A total of 206 individuals attended the six corridor open house meetings. Table 10 provides the number of attendees at each meeting.

Table 10: Attendance from the 2012 Corridor Open House Meetings

Date	Time	Location	Number of Attendees	Comment Forms
Monday, October 15th	5-7pm	Wheaton, MN	18	1
Tuesday, October 16th	11am-1pm	Milbank, SD	64	5
	5-7pm	Webster, SD	28	0
Wednesday, October 17th	11am-1pm	Aberdeen, SD	32	0
	5-7pm	Ellendale, SD	16	1
Thursday, October 18th	11am-1pm	Britton, SD	48	2
Total			**206**	**9**

6.2.2 Routing Open House Meetings

The applicants hosted a series of five routing open house meetings from Monday, February 25 through Wednesday, February 27, 2013, to gather input from local stakeholders, agency representatives, and landowners within the study corridors located near the preliminary routes of the Big Stone South to Ellendale Transmission Line.

6.2.2.1 OUTREACH

Prior to the routing open house meetings, 757 proposed Project notification letters and corridor maps were sent to agencies, non-government organizations, county officials, township

supervisors, and city representatives. An open house notification postcard was sent to 5,533 landowners within the study corridors. This postcard was also sent to previous open house meeting attendees and those who had commented on the website or signed up for the mailing list.

Advertisements identifying the routing open house meeting locations and dates were place in 6 publications corresponding with meeting locations. Press releases were sent to 21 publications notifying them of the proposed Project and scheduled open houses. Two publications ran stories about the open house meetings.

6.2.2.2 ATTENDANCE

A total of 336 individuals attended the five routing open house meetings. The Meeting Overview is provided below, in Table 11.

Table 11: Attendance from the 2013 Routing Open House Meetings

Date	Time	Location	Number of Attendees	Comment Forms	GIS Comment Forms
Monday, February 25th	5:30-7pm	Groton, SD	65	3	1
Tuesday, February 26th	11:30am-1pm	Ellendale, ND	54	1	9
	5:30-7pm	Britton, SD	72	1	12
Wednesday, February 27th	11:30am-1pm	Webster, SD	78	5	20
	5:30-7pm	Milbank, SD	67	4	6
Total			**336**	**14**	**48**

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Appendix A

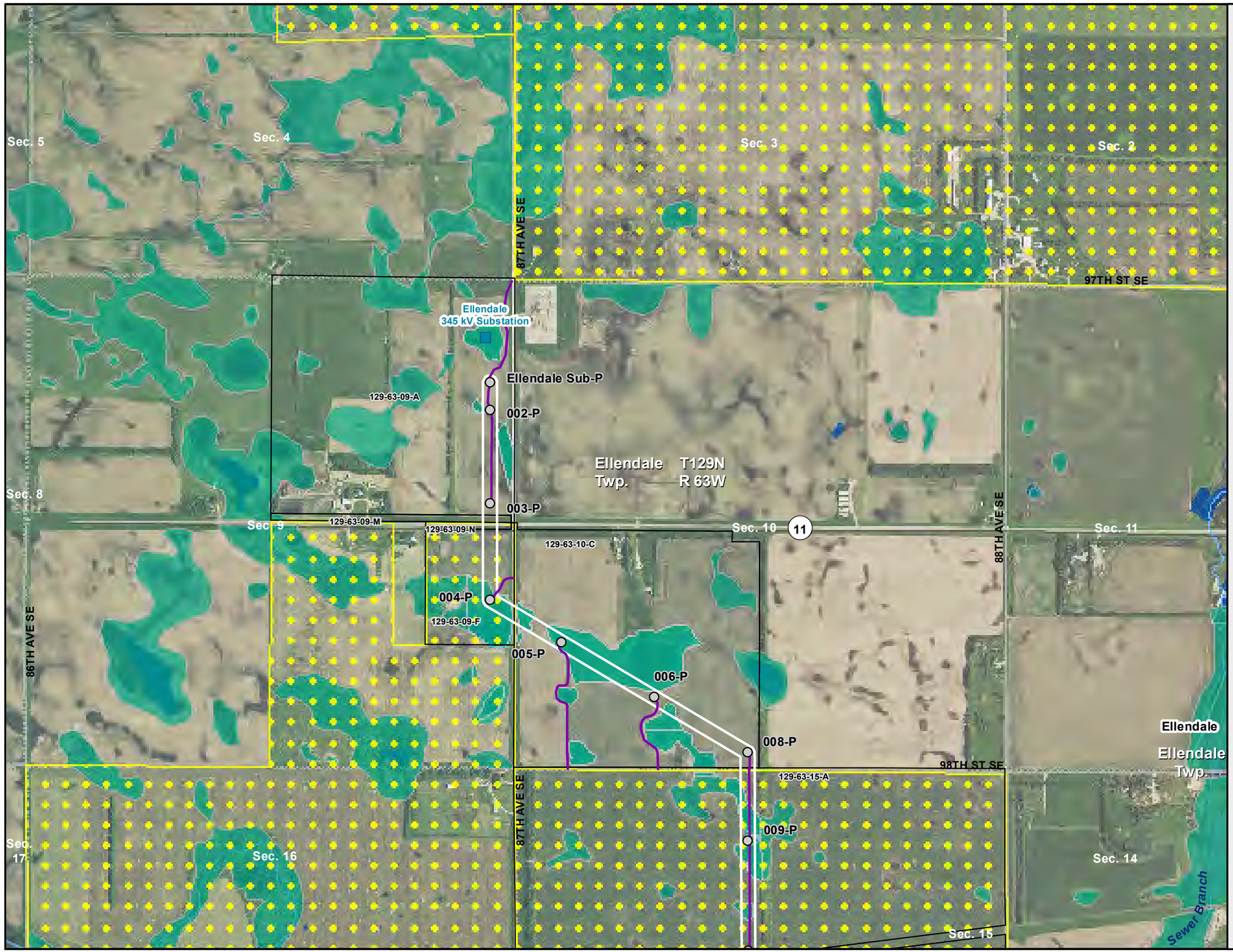
Date: 11/16/2015

Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

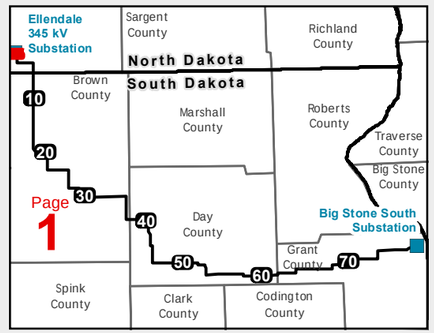
Map Book Issued November 16, 2015



- Project Start/End Point
- Structures as of 11/13/2015
- Right-of-Way as of 11/13/2015
- Access Roads as of 8/17/2015
- Parcels
- Desktop Delineated or Field Verified Wetlands
- NHD Stream
- NHD Waterbody
- USFWS Grassland Easement
- USFWS Wetland Easement
- Section
- Township
- County Boundary
- State Boundary

1:12,000

0 1,000 2,000 Feet



BSSE Big Stone South to Ellendale

Path: \\mspe-gis-file\GISProjLarge\MDU_OTP\186675\map_docs\Agency\USFWS\Environmental_Review\Appendix_A _Project_Map_Book.mxd

Date: 11/16/2015

Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

Sec. 8 | Sec. 9 | Sec. 10 | Sec. 11 | Ellendale Twp.

129-63-10-C | 129-63-15-A | 008-P | 009-P | 010-P | 011-P | 012-P | 013-P | 014-P | 015-P | 016-P | 017-P | 018-P | 019-P

98TH ST SE | 99TH ST SE | 86TH AVE SE | 87TH AVE SE | 88TH AVE SE

120-56-15-N | Sec. 15 | Sec. 16 | Sec. 14 | Sec. 17 | Sec. 21 | Sec. 22 | Sec. 23 | Sec. 20

129-63-15-C | 129-63-15-B | 129-63-22-A | 129-63-22-B | 129-63-23-D | 129-63-23-C

Ellendale Twp. | T129N R 63W | Sewer Branch

- Project Start/End Point
- Structures as of 11/13/2015
- Right-of-Way as of 11/13/2015
- Access Roads as of 8/17/2015
- Parcels
- Desktop Delineated or Field Verified Wetlands
- NHD Stream
- NHD Waterbody
- USFWS Grassland Easement
- USFWS Wetland Easement
- Section
- Township
- County Boundary
- State Boundary

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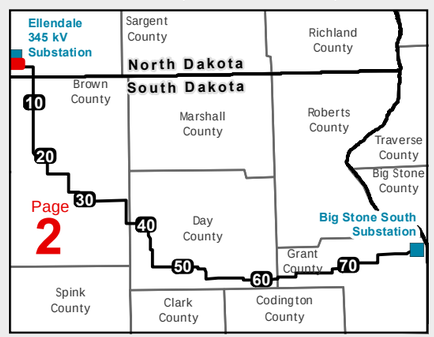

BSSE Big Stone South to Ellendale

U.S. Fish & Wildlife Service

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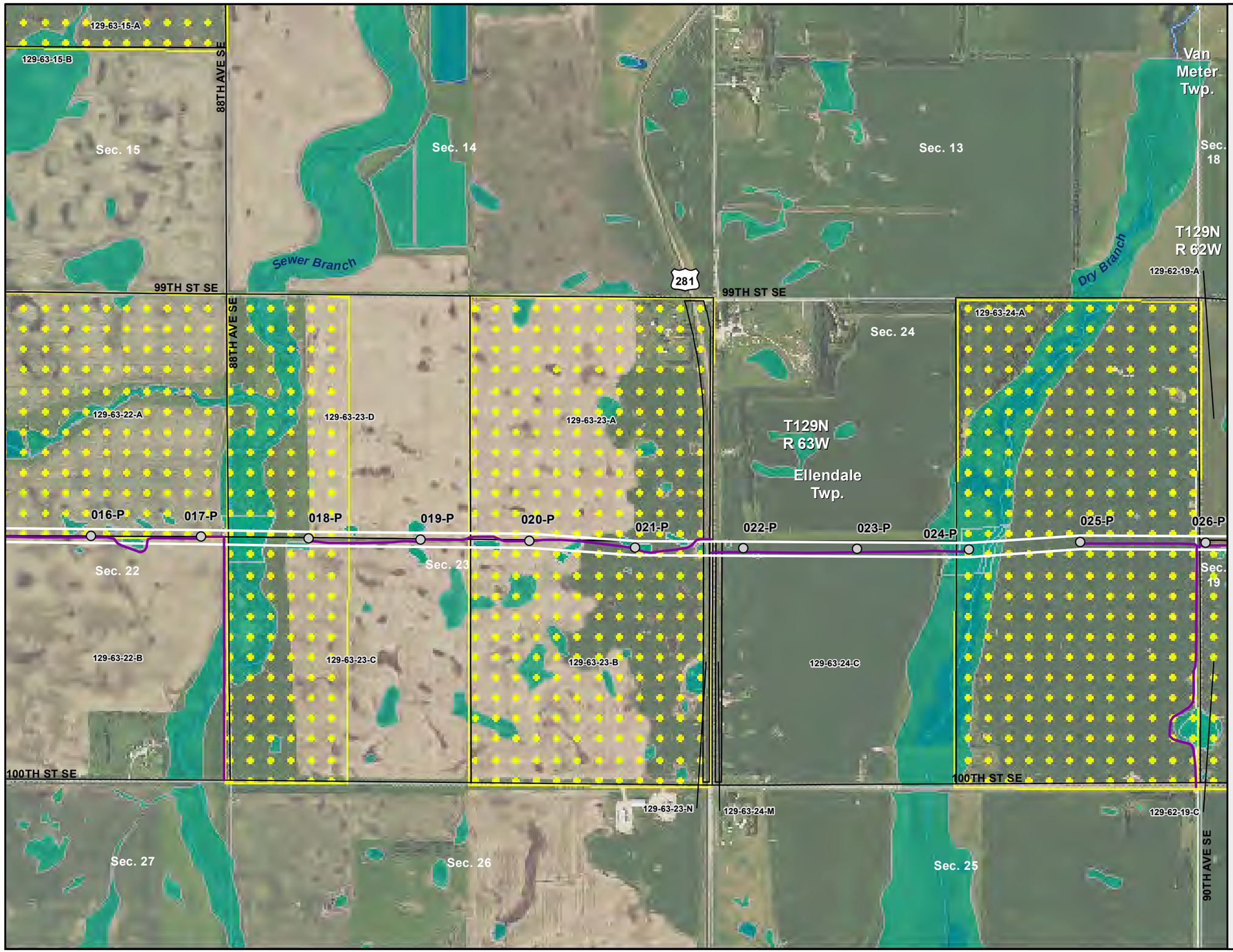
Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015



- Project Start/End Point
- Structures as of 11/13/2015
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- Township
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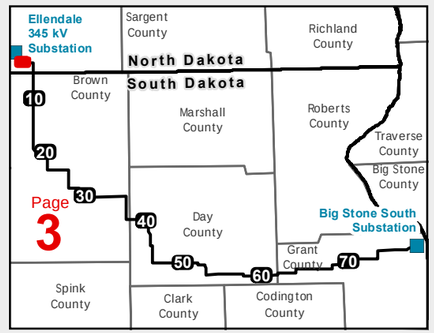

BSS+E Big Stone South to Ellendale

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Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

Dry Branch
Ellendale Twp.
Sec. 13
Sec. 18
Sec. 17
Sec. 16
T129N R 63W
99TH ST SE
129-63-24-A
129-62-19-A
91ST AVE SE
129-62-20-D
T129N R 62W
Sec. 20
92ND AVE SE
Van Meter Twp.
Sec. 21
Sec. 24
026-P
027-P
Sec. 19
028-P
029-P
030-P
031-P
032-P
033-P
034-P
035-P
129-62-19-C
129-62-19-B
129-62-20-C
129-62-20-B
100TH ST SE
90TH AVE SE
Sec. 25
Sec. 30
129-62-29-D
Sec. 29
129-62-29-A
Sec. 28

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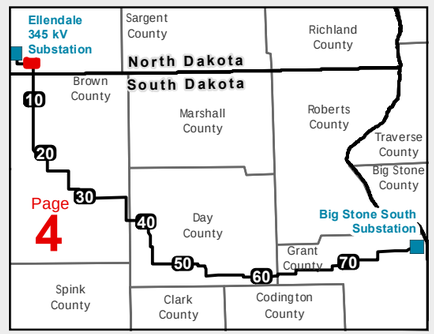

BSSE Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

Sec. 19 | Sec. 20 | Sec. 21
Sec. 30 | Sec. 29 | Sec. 28
Sec. 31 | Sec. 32 | Sec. 33
T129N R 62W
Van Meter Twp.
100TH ST SE
101ST ST SE
91ST AVE SE
92ND AVE SE
129-62-19-B
129-62-19-C
129-62-20-B
129-62-20-C
129-62-29-A
129-62-29-C
129-62-29-D
129-62-32-A
129-62-32-B
129-62-32-C
129-62-32-D
034-P
035-P
036-P
037-P
038-P
039-P
040-P
041-P
042-P
Maple River

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- USFWS Wetland Easement
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- Township
- County Boundary
- State Boundary

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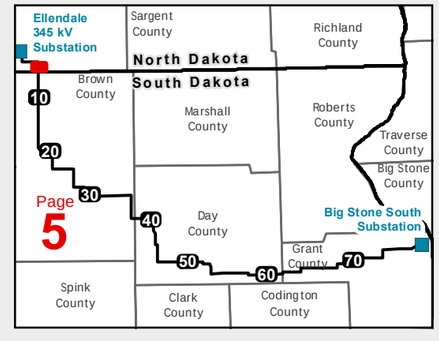

BSS+E Big Stone South to Ellendale

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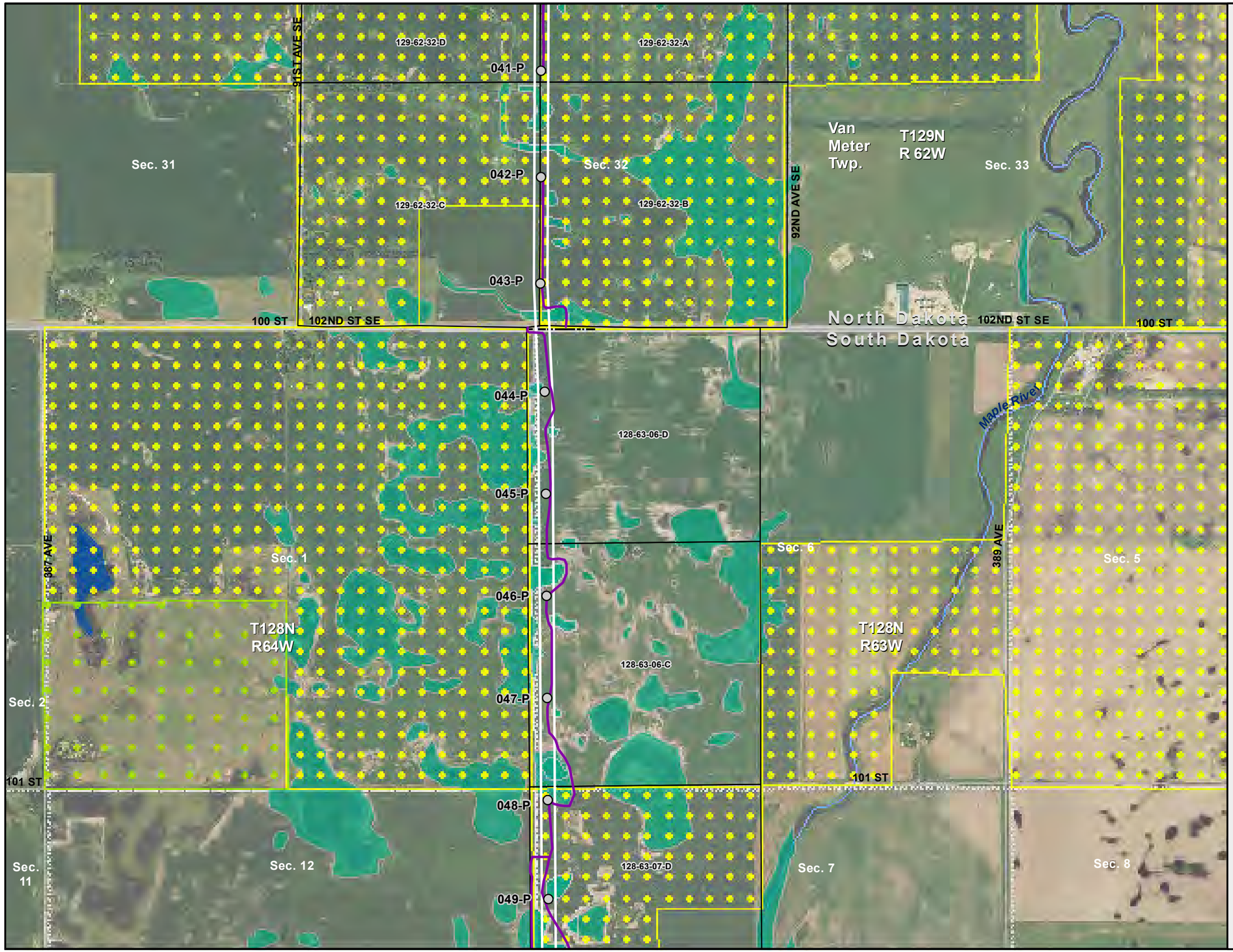
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015



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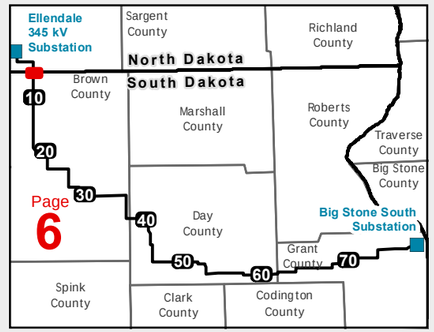

BSSE Big Stone South to Ellendale

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Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

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Sec. 2
Sec. 1
Sec. 6
Sec. 5
101 ST
128-63-06-C
048-P
049-P
128-63-07-D
050-P
Maple River
Sec. 7
Sec. 8
387 AVE
389 AVE
Sec. 11
Sec. 12
051-P
128-63-07-C
051.1-P
T128N
R64W
T128N
R63W
102 ST
052-P
053-P
128-63-18-D
Sec. 13
Sec. 18
Sec. 17
054-P
055-P
128-63-18-C
Sec. 14

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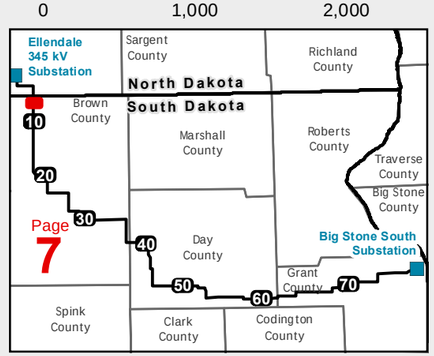

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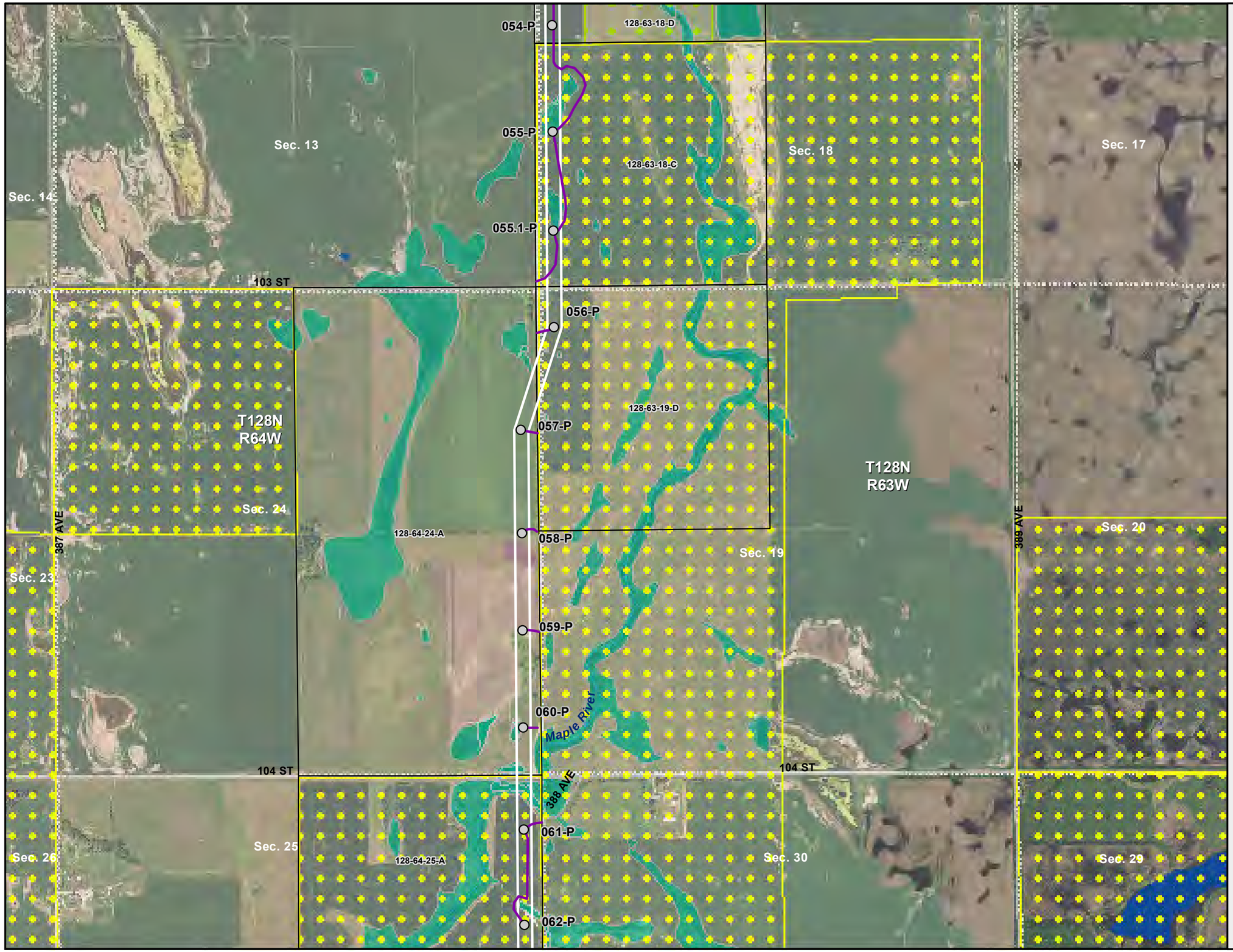
Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015



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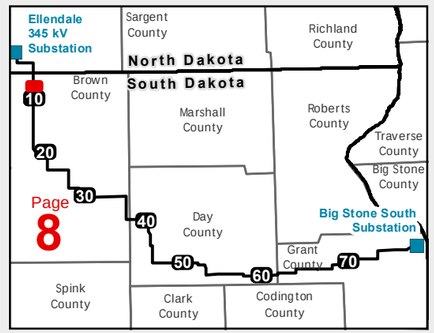

BSSE Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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Sec. 23 | Sec. 24 | 104 ST | 128-64-24-A | Sec. 19 | 104 ST | Sec. 20

Sec. 26 | 061-P | 128-64-25-A | 062-P | Sec. 25 | 063-P | Sec. 30 | 387 AVE | Sec. 29

064-P | 128-64-25-B | T128N R64W | 388 AVE | 065-P | T128N R63W | 105 ST

128-64-36-A | 066-P | 128-64-36-E | 067-P | Sec. 34 | Sec. 32

Sec. 35 | Maple River | Sec. 36 | 128-63-31-C | 068-P | 128-64-36-B | 069-P

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Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

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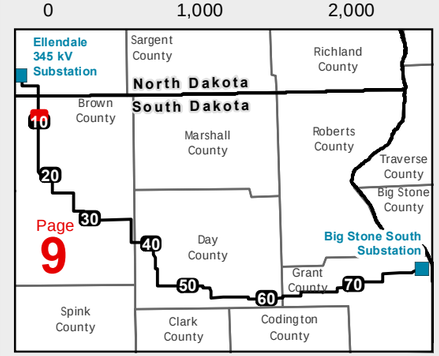

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Maple River
Sec. 35
Sec. 36
T128N
R64W
128-64-36-E
128-64-36-B
068-P
069-P
128-63-31-C
Sec. 31
T128N
R63W
Sec. 32
106 ST
106 ST
388 AVE
070-P
071-P
072-P
127-63-06-D
Sec. 6
389 AVE
Sec. 5
Sec. 2
387 AVE
Sec. 1
T127N
R64W
073-P
T127N
R63W
074-P
107 ST
107 ST
075-P
Sec. 7
Sec. 11
Sec. 12
388 AVE
127-63-07-A
Sec. 8
CTY HWY 10
076-P

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Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

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- USFWS Wetland Easement
- Section
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- County Boundary
- State Boundary

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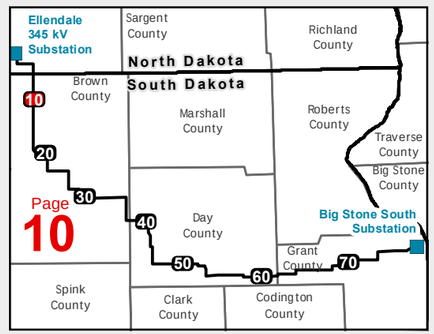

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Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

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Sec. 2 | 107 ST | Sec. 1 | 127-63-06-D | Sec. 6 | 107 ST | Sec. 5

387 AVE | 388 AVE | 389 AVE

075-P | 076-P | 077-P | 078-P | 078.1-P | 079-P | 080-P | 081-P | 082-P | 083-P

127-63-07-A | 127-63-07-C | 127-64-12-B | 127-64-13-A | 127-64-13-B

CTY HWY 10 | 1ST ST | Sec. 11 | Sec. 12 | Sec. 7 | Sec. 8 | Sec. 14 | Sec. 13 | Sec. 18 | Sec. 17

T127N R64W | T127N R63W | 108 ST

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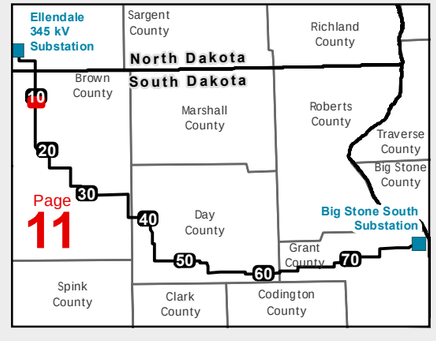

BSS-E Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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345 kV Transmission Line Project
North Dakota and South Dakota

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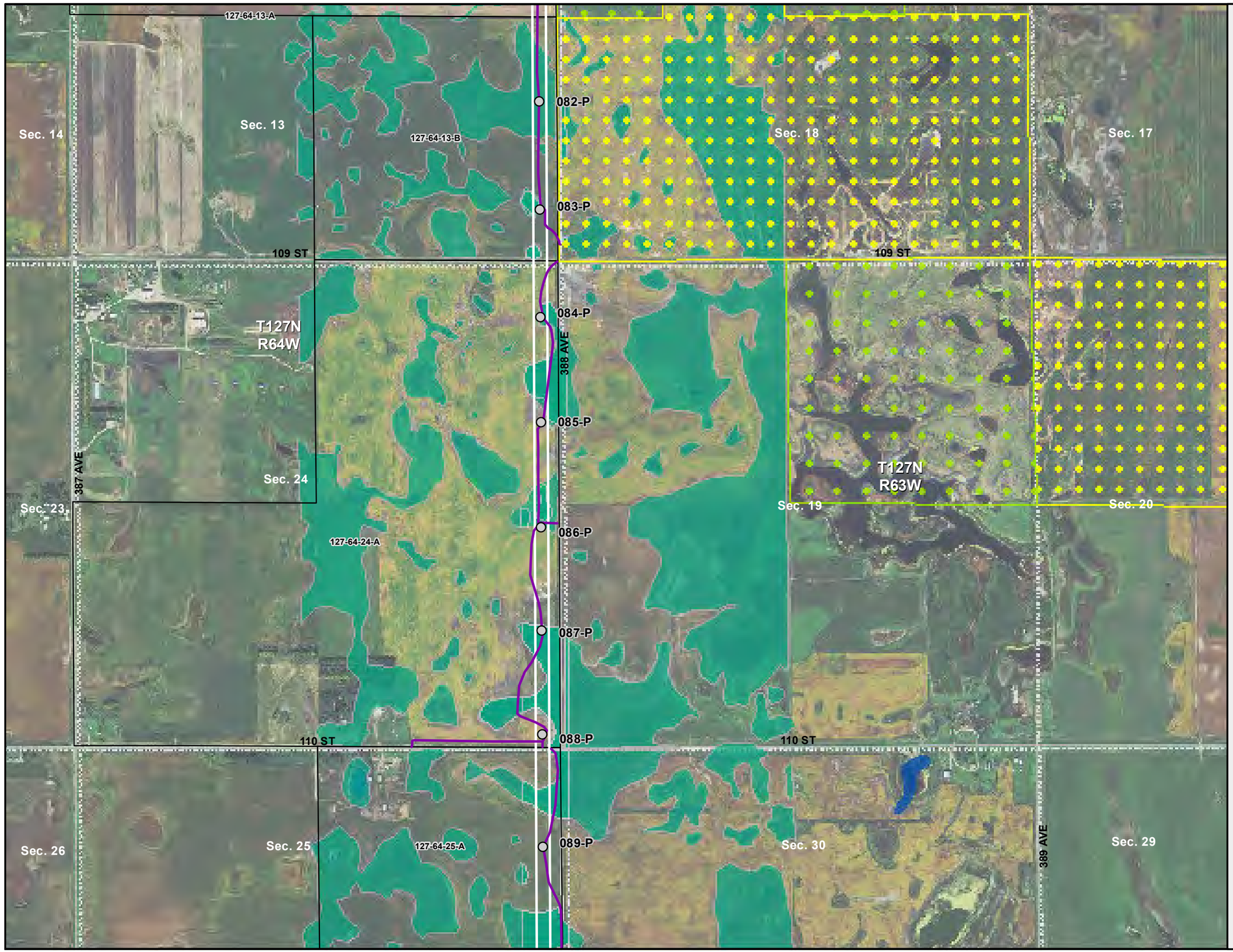

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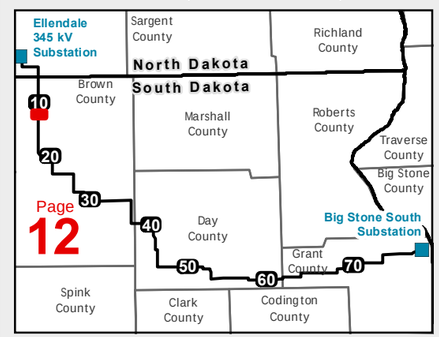

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Sec. 23 | Sec. 24 | Sec. 19 | Sec. 20

127-64-24-A

127-64-25-A

089-P

090-P

091-P

092-P

093-P

094-P

095-P

096-P

387 AVE

Sec. 25 | Sec. 26 | Sec. 30 | Sec. 29

127-64-25-B

111 ST

T127N
R63W

389 AVE

T127N
R64W

Sec. 35 | Sec. 36 | Sec. 31 | Sec. 32

127-64-36-A

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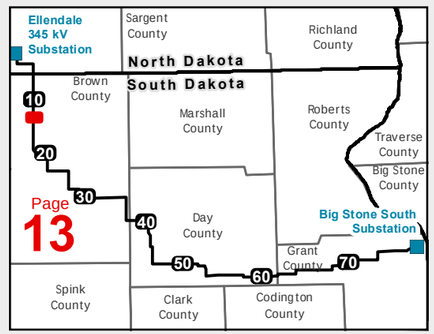

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U.S. FISH & WILDLIFE SERVICE

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Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

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095-P
096-P
097-P
098-P
099-P
100-P
101-P
102-P
103-P

Sec. 35
T127N R64W
Sec. 36
Sec. 31
T127N R63W
Sec. 32
Sec. 2
Sec. 1
Sec. 6
Sec. 5
T126N R64W
T126N R63W
Sec. 11
Sec. 12
Sec. 7
Sec. 8

127-64-36-A
127-64-36-N
126-64-01-M
126-64-01-A
126-64-01-B
126-64-12-B

SD HWY 10
10
387 AVE
388 AVE
389 AVE

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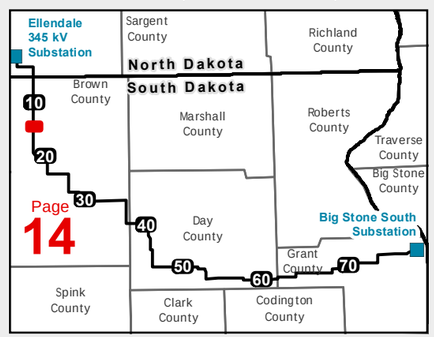

BSSE Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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North Dakota and South Dakota

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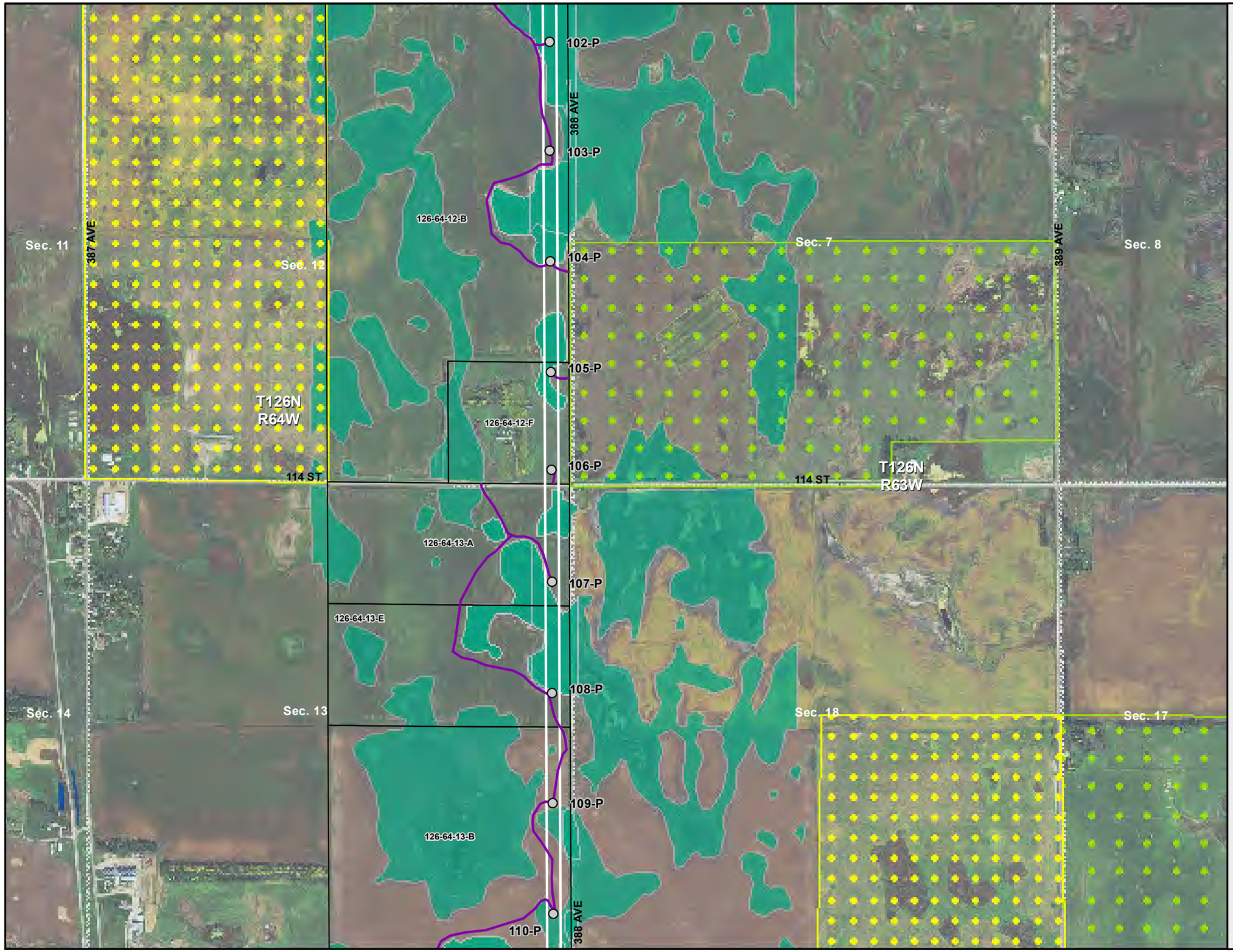

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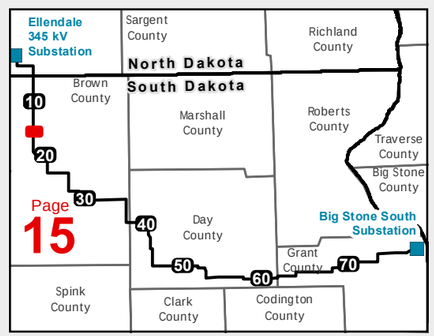

BSSE Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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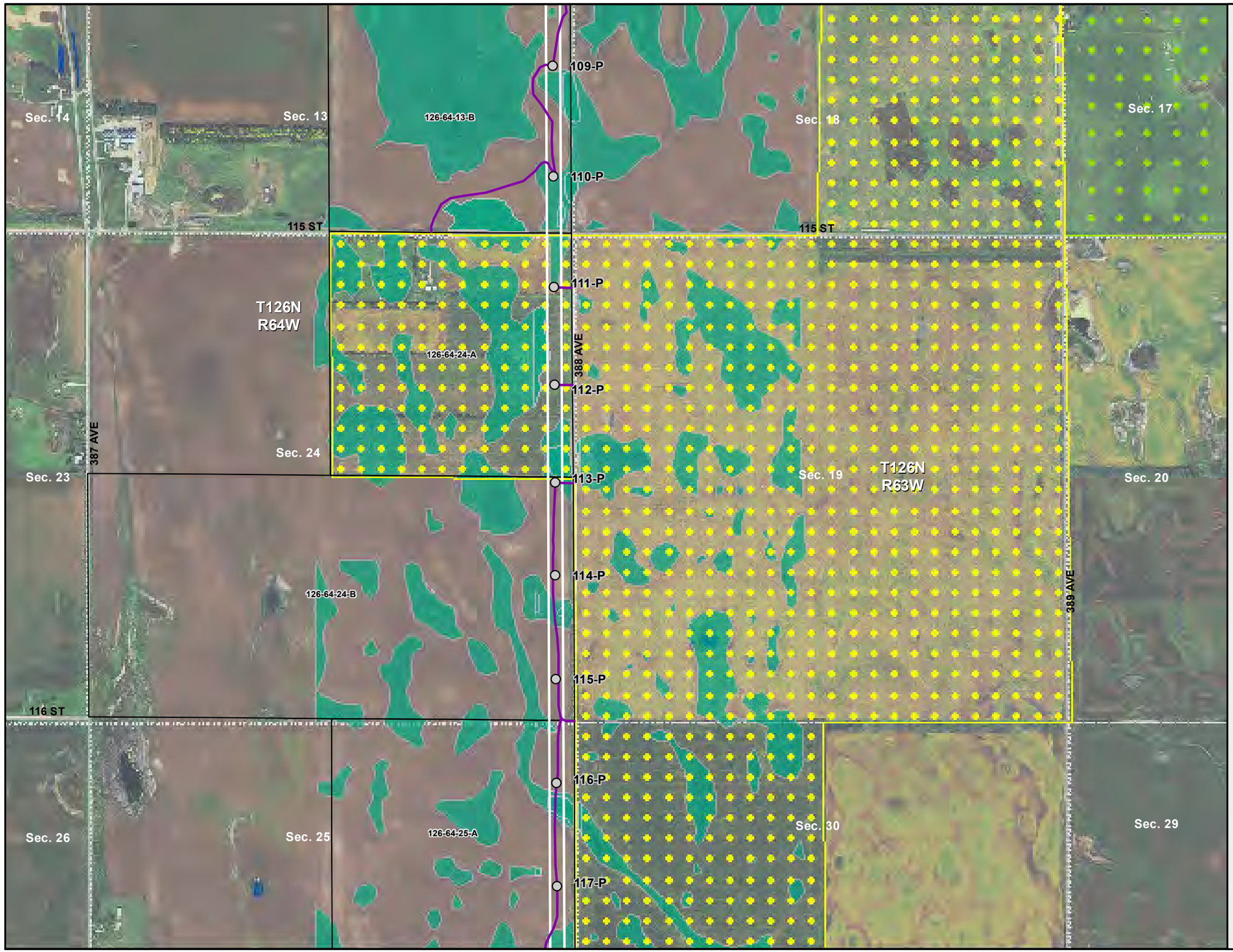

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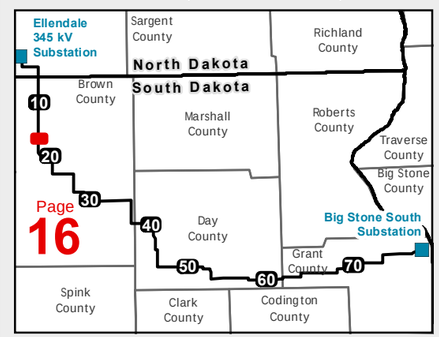

BSS+E Big Stone South to Ellendale

U.S. Fish & Wildlife Service

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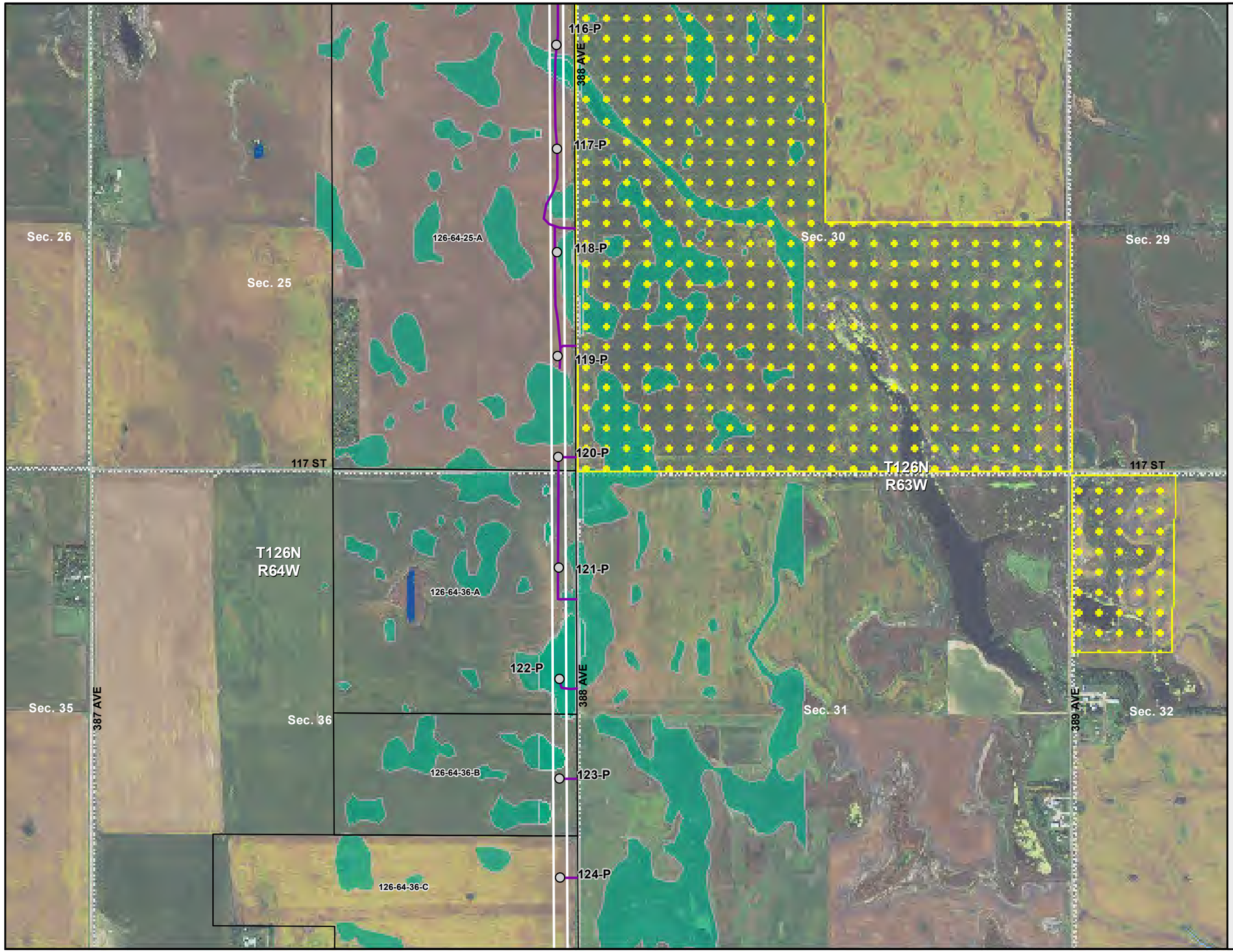
Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015



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- Parcels
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- NHD Waterbody
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- USFWS Wetland Easement
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- Township
- County Boundary
- State Boundary

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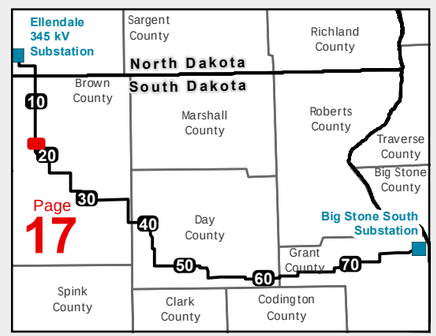

BSS+E Big Stone South to Ellendale

U.S. Fish & Wildlife Service

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Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

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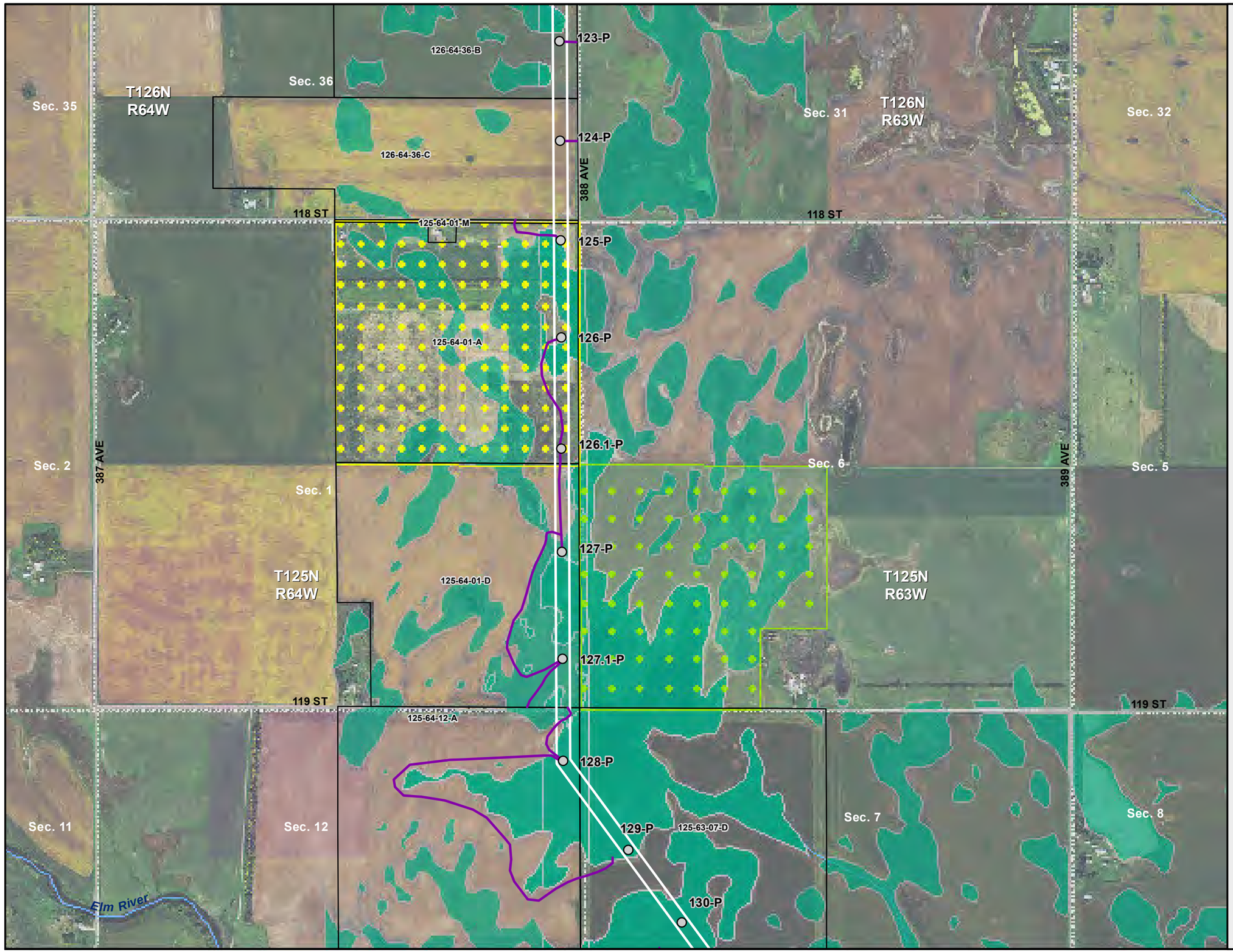

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- State Boundary

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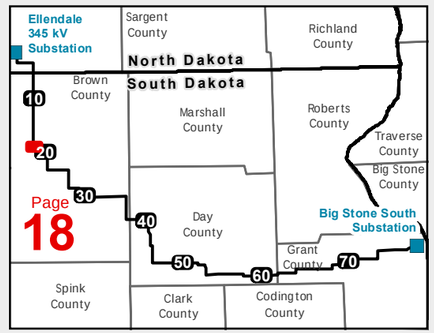

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- Township
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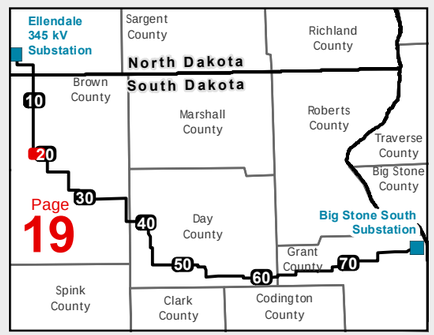

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Sec. 5 | 119 ST | Sec. 4 | Sec. 3 | 119 ST | Sec. 2

Sec. 8 | 390 AVE | Sec. 9 | 391 AVE | Sec. 10 | 392 AVE | Sec. 11

T125N
R63W

140-P | 141-P | 120 ST | 142-P | 143-P | 144-P | 145-P | 146-P | 120 ST | 147-P | 147.1-P

125-63-16-D | 125-63-16-A | 125-63-16-B | 125-63-15-A | Sec. 15 | 148-P | 149-P

125-63-17-A | Sec. 17 | 125-63-16-H | Sec. 16 | 391 AVE | 125-63-15-C | Sec. 14 | 150-P | 151-P | 390 AVE

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- State Boundary

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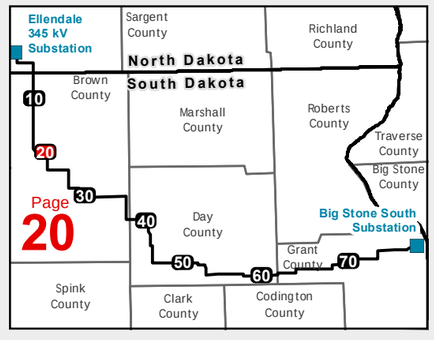

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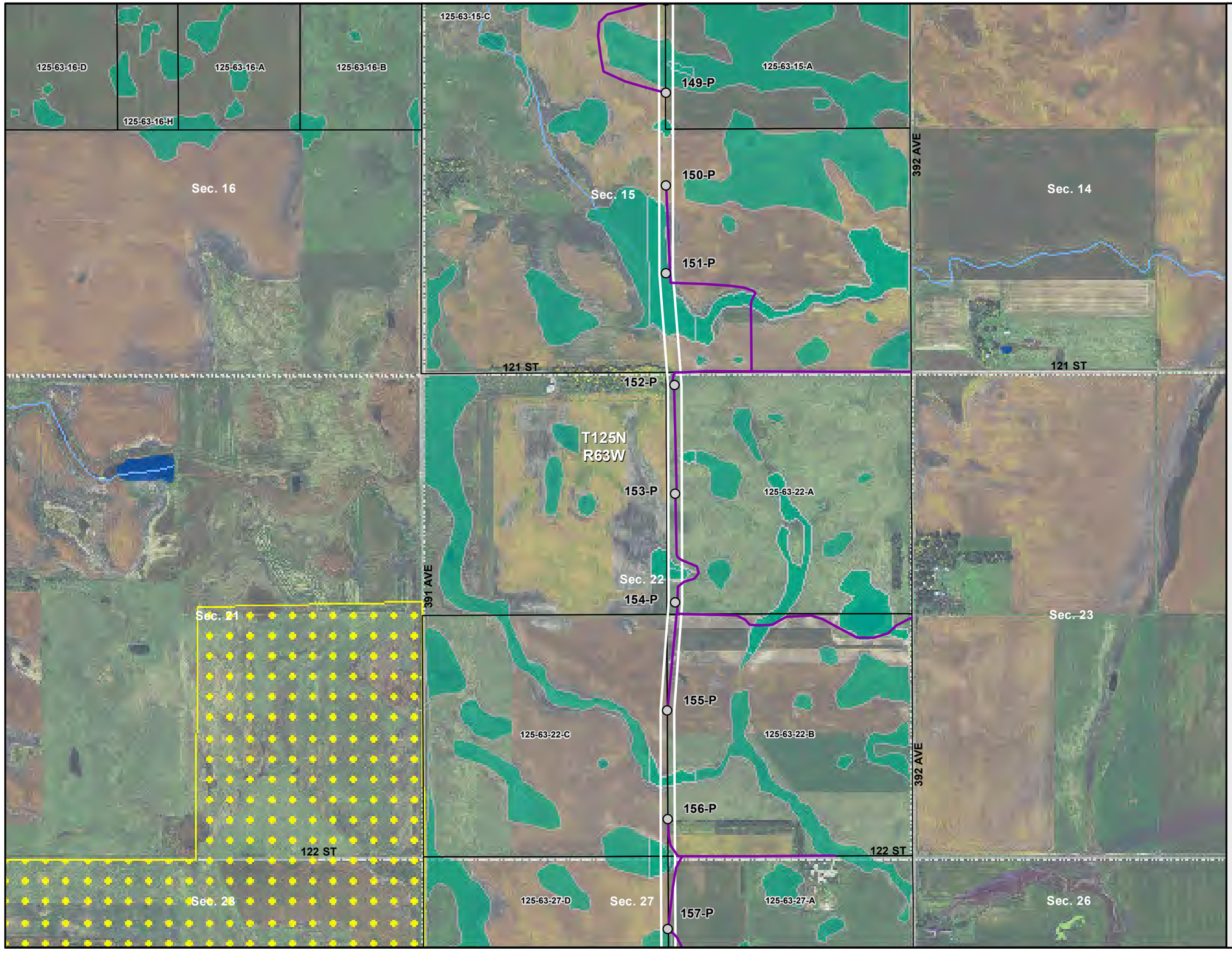
Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015



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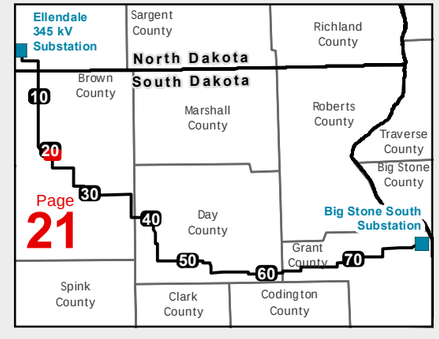

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U.S. Fish & Wildlife Service

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345 kV Transmission Line Project
North Dakota and South Dakota

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Sec. 21 | Sec. 22 | Sec. 23
Sec. 28 | Sec. 27 | Sec. 26
Sec. 33 | Sec. 34 | Sec. 35

122 ST
123 ST
391 AVE
392 AVE

125-63-22-C
125-63-22-B
125-63-27-D
125-63-27-A
125-63-27-C
125-63-27-B
125-63-34-D
125-63-34-A
125-63-34-C
125-63-34-B

156-P
157-P
158-P
159-P
160-P
161-P
162-P
163-P
164-P

T125N
R63W

- Project Start/End Point
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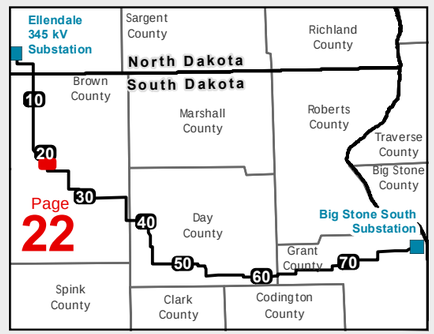

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345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

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Right-of-Way as of 11/13/2015
Access Roads as of 8/17/2015
Parcels
Desktop Delineated or Field Verified Wetlands
NHD Stream
NHD Waterbody
USFWS Grassland Easement
USFWS Wetland Easement
Section
Township
County Boundary
State Boundary

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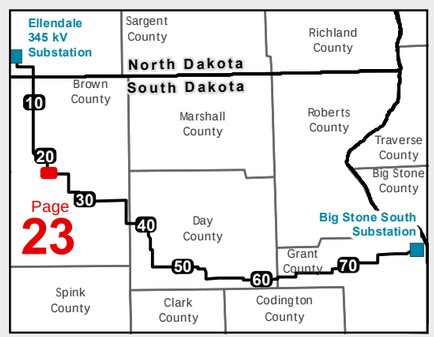

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Sec. 33
Sec. 34
Sec. 35
Sec. 36
Sec. 3
Sec. 4
Sec. 2
Sec. 9
Sec. 10
Sec. 11
T125N R63W
T124N R63W
391 AVE
392 AVE
393 AVE
124 ST
125 ST
125-63-34-D
125-63-34-A
125-63-34-C
125-63-34-B
124-63-03-D
124-63-02-A
124-63-03-A
163-P
164-P
165-P
165.1-P
166-P
167-P
168-P
169-P
170-P
171-P
172-P
173-P
174-P
Elm River

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345 kV Transmission Line Project
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USFWS Grassland Easement
USFWS Wetland Easement
Section
Township
County Boundary
State Boundary

Sec. 35
T125N R63W
Sec. 36
Sec. 31
T125N R62W
Sec. 32
393 AVE
394 AVE
124-63-02-A
124-63-01-D
124-63-01-A
124-62-06-D
124-62-06-A
124-62-05-D
174-P
175-P
176-P
177-P
178-P
178.1-P
179-P
180-P
181-P
182-P
183-P
184-P
124 ST
Sec. 2
Sec. 1
Sec. 6
Elm River
Sec. 5
T124N R63W
T124N R62W
395 AVE
125 ST
Sec. 11
393 AVE
Sec. 12
Sec. 7
Sec. 8

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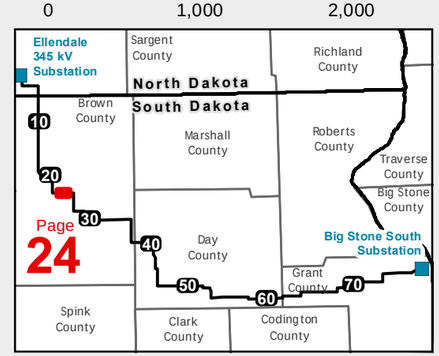

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345 kV Transmission Line Project
North Dakota and South Dakota

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Elm River
Sec. 31
Sec. 32
T125N
R62W
396 AVE
Sec. 33
Sec. 34
124 ST
124-62-06-A
124-62-05-D
124-62-05-A
124-62-04-D
124-62-04-A
Sec. 4
183-P
184-P
185-P
185.1-P
186-P
187-P
188-P
189-P
Sec. 6
Sec. 5
Sec. 3
190-P
124-62-04-B
124-62-04-C
191-P
124-62-04-F
397 AVE
125 ST
T124N
R62W
192-P
Sec. 7
395 AVE
Sec. 8
396 AVE
124-62-09-D
Sec. 9
193-P
124-62-09-A
Sec. 10
194-P
124-62-09-C
124-62-09-B

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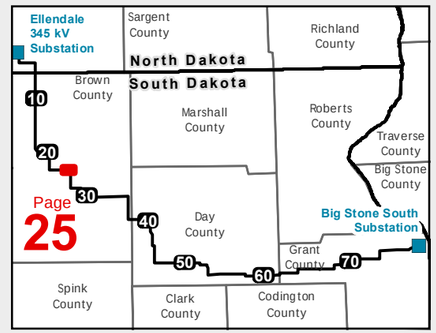

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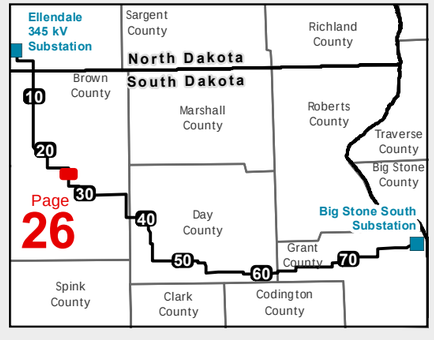

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Sec. 20 | Sec. 21 | Sec. 22
Sec. 29 | Sec. 28 | Sec. 27

127 ST | 128 ST | 396 AVE | 397 AVE

199-P | 200-P | 201-P | 202-P | 202.1-P | 203-P | 204-P | 205-P | 206-P

124-62-16-C | 124-62-16-B | 124-62-21-D | 124-62-21-A | 124-62-21-E | 124-62-21-C | 124-62-21-B | 124-62-28-D | 124-62-28-A | 124-62-28-B

T124N
R62W

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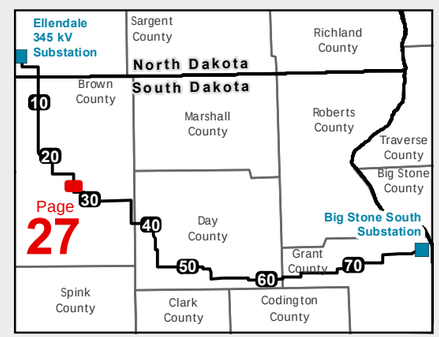

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210-P
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212-P
213-P
214-P
214.1-P
215-P
216-P
129 ST
130 ST
398 AVE
397 AVE
Sec. 28
Sec. 27
Sec. 26
Sec. 33
Sec. 34
Sec. 35
Sec. 4
Sec. 3
Sec. 2
T124N
R62W
T123N
R62W
James River
124-62-28-D
124-62-28-A
124-62-28-B
124-62-33-A
124-62-34-D
124-62-34-P
124-62-34-A
124-62-35-D
124-62-35-A

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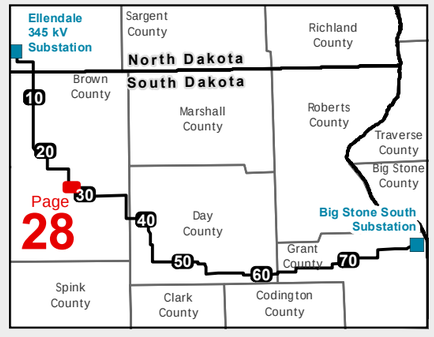

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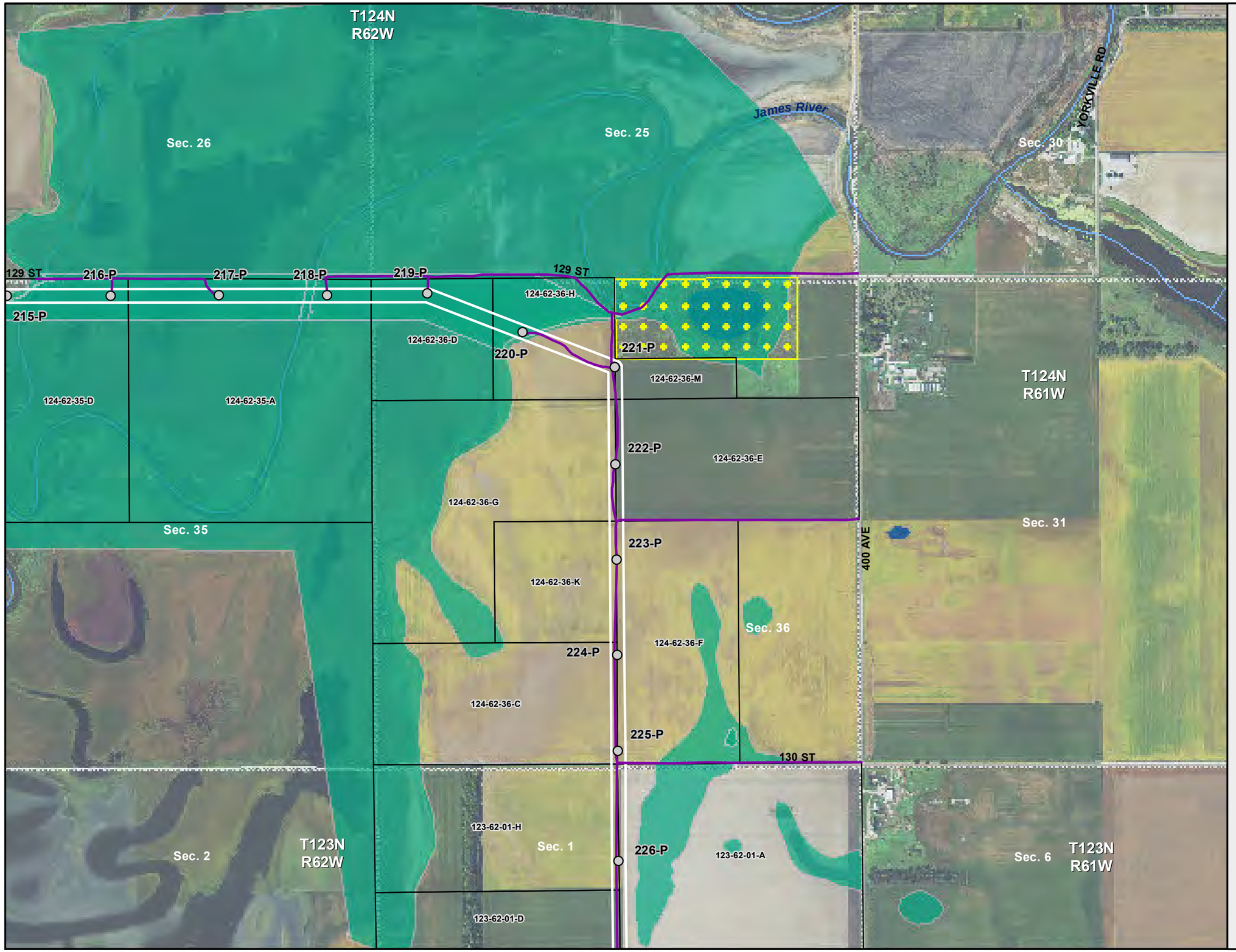

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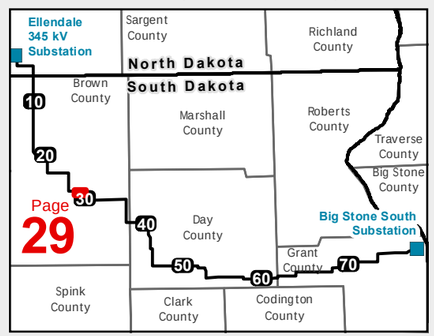

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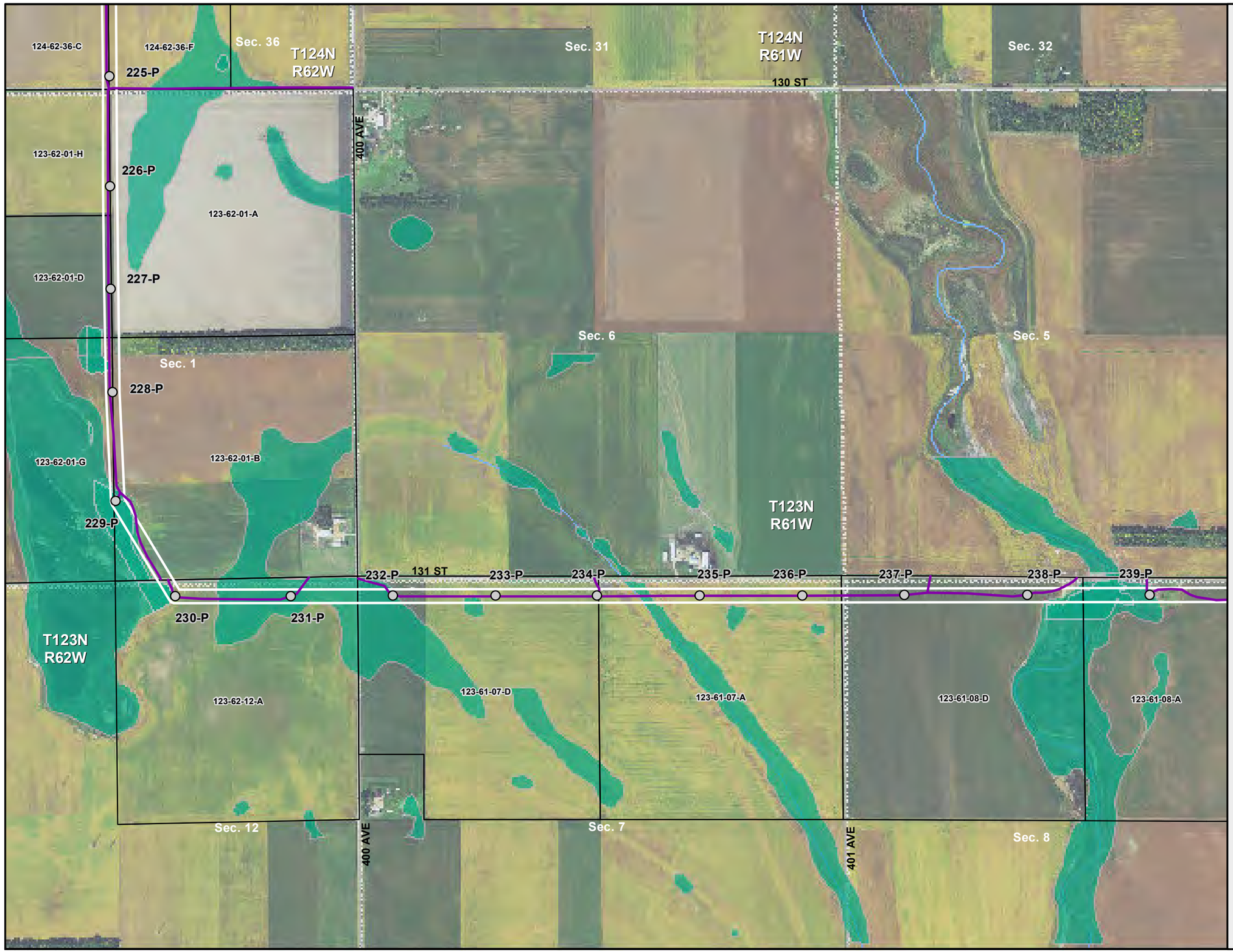

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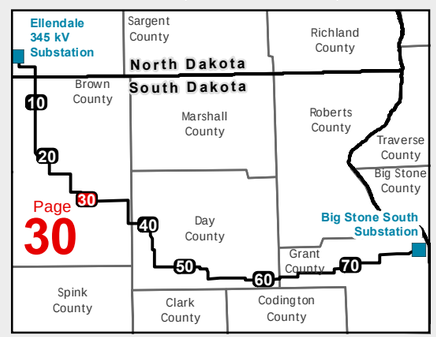

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North Dakota and South Dakota

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Sec. 5 | Sec. 4 | Sec. 3 | Sec. 2

240-P | 241-P | 242-P | 243-P | 244-P | 245-P | 246-P | 247-P | 248-P | 249-P | 250-P | 251-P

131 ST | 131 ST

T123N R61W

123-61-08-A | 123-61-09-B | 123-61-09-A | 123-61-09-D | 123-61-10-D | 123-61-10-A | 123-61-11-D

Sec. 8 | Sec. 9 | Sec. 10 | Sec. 11

402 AVE | 403 AVE | 404 AVE

132 ST | 132 ST

Sec. 17 | Sec. 16 | Sec. 15 | Sec. 14

- Project Start/End Point
- Structures as of 11/13/2015
- Right-of-Way as of 11/13/2015
- Access Roads as of 8/17/2015
- Parcels
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- NHD Stream
- NHD Waterbody
- USFWS Grassland Easement
- USFWS Wetland Easement
- Section
- Township
- County Boundary
- State Boundary

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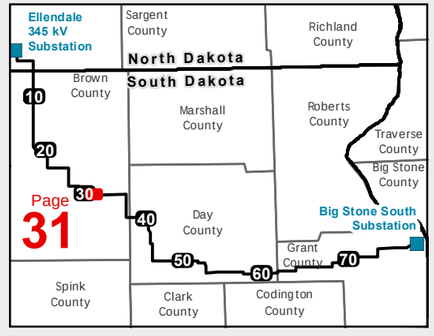

BSSE Big Stone South to Ellendale

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Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

Sec. 2
Sec. 1
Sec. 6
T123N R61W
T123N R60W
SD HWY 37
131 ST
123-61-11-D
123-61-11-A
123-61-12-D
123-61-12-A
123-60-07-B
123-60-07-D
123-60-07-A
251-P
252-P
253-P
254-P
255-P
256-P
257-P
258-P
259-P
260-P
261-P
262-P
Sec. 12
Sec. 11
405 AVE
123-61-12-B
Sec. 7
132 ST
Sec. 14
Sec. 13
Sec. 18

- Project Start/End Point
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- USFWS Wetland Easement
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- Township
- County Boundary
- State Boundary

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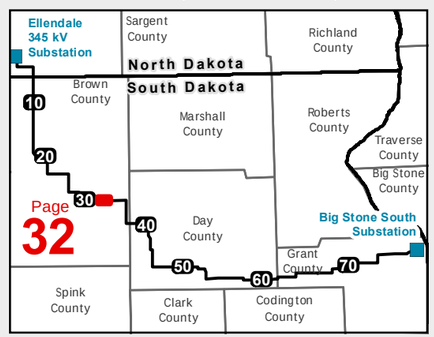

BSSE Big Stone South to Ellendale

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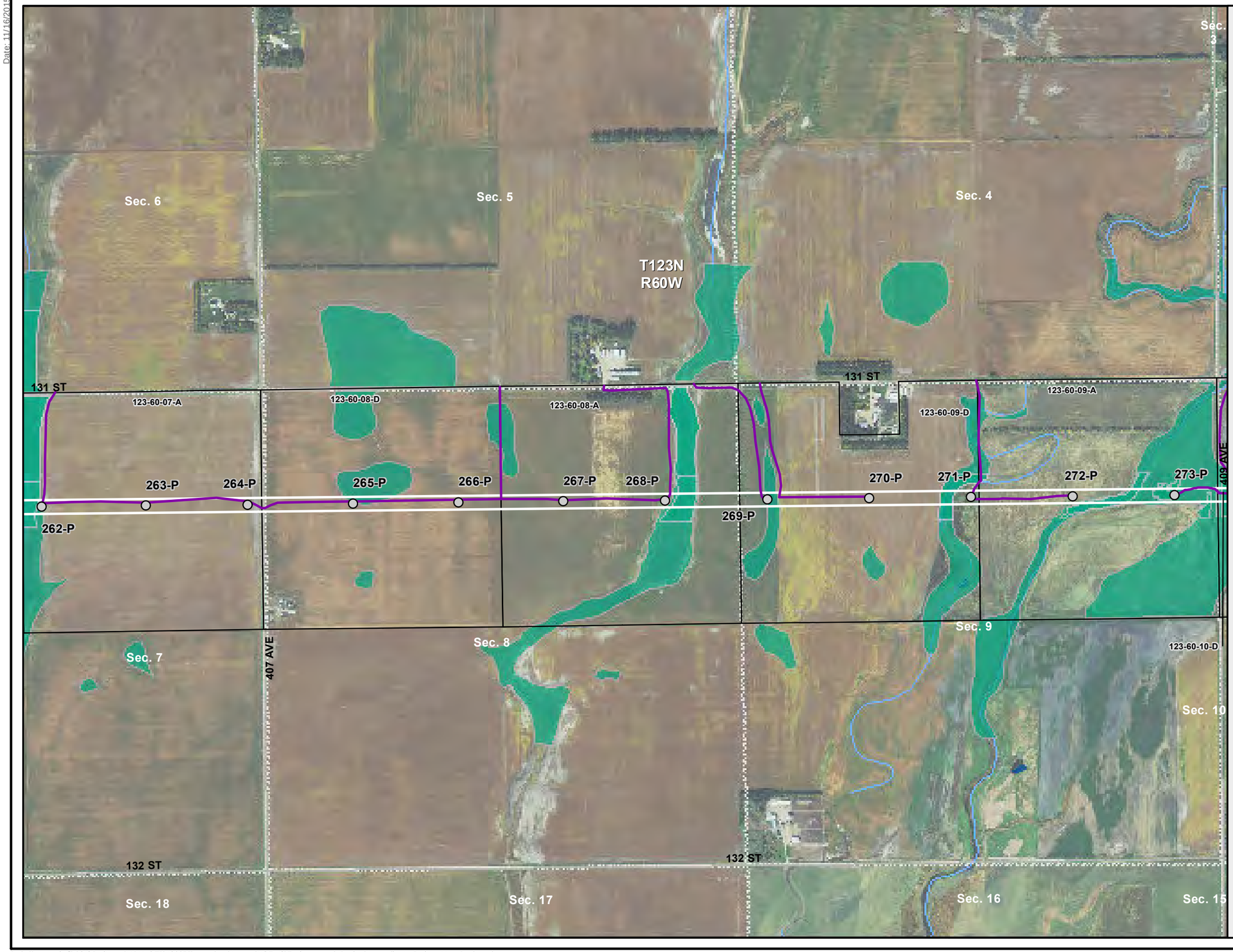
Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015



- Project Start/End Point
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- USFWS Wetland Easement
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- Township
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- State Boundary

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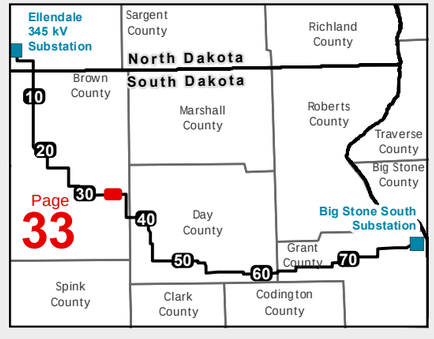

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Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

Project Start/End Point
Structures as of 11/13/2015
Right-of-Way as of 11/13/2015
Access Roads as of 8/17/2015
Parcels
Desktop Delineated or Field Verified Wetlands
NHD Stream
NHD Waterbody
USFWS Grassland Easement
USFWS Wetland Easement
Section
Township
County Boundary
State Boundary

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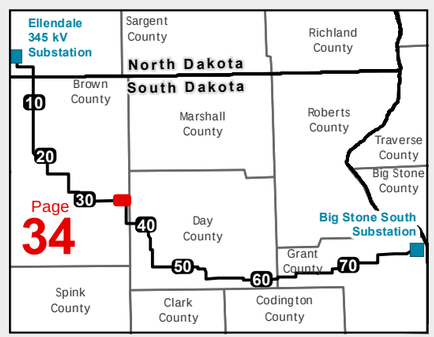

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Sec. 4 Sec. 3 Sec. 2 Sec. 1
Sec. 9 Sec. 10 Sec. 11 Sec. 12
Sec. 16 Sec. 15 Sec. 14 Sec. 13
T123N R60W
131 ST
132 ST
409 AVE
410 AVE
411 AVE
123-60-09-A
123-60-10-D
123-60-10-A
123-60-11-D
123-60-11-A
123-60-12-D
123-60-12-C
123-60-13-D
273-P 274-P 275-P 276-P 277-P 277.1-P 278-P 279-P 280-P 281-P 282-P 283-P 284-P 285-P 286-P

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Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

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284-P
285-P
286-P
287-P
288-P
289-P
290-P
291-P
292-P
Sec. 11
Sec. 12
Sec. 7
Sec. 14
Sec. 13
Sec. 18
Sec. 15
Sec. 22
Sec. 23
Sec. 24
Sec. 19
132 ST
133 ST
410 AVE
411 AVE
412 AVE
Brown County
Day County
T123N
R60W
T123N
R59W
123-60-12-C
123-60-13-D
123-60-13-C
123-60-24-D
123-60-24-C

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- USFWS Wetland Easement
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- Township
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- State Boundary

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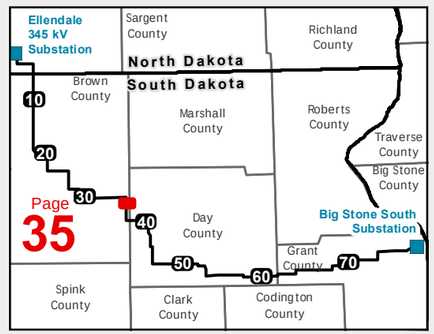

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Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

T123N R60W
T123N R59W
291-P
292-P
293-P
294-P
294.1-P
295-P
296-P
297-P
298-P
123-60-24-D
123-60-24-C
123-60-25-D
123-60-25-C
123-60-25-M
123-60-36-E
Sec. 22
Sec. 23
Sec. 24
Sec. 19
Sec. 25
Sec. 26
Sec. 27
Sec. 30
Sec. 34
Sec. 35
Sec. 36
Sec. 31
134 ST
135 ST
410 AVE
411 AVE
412 AVE
Brown County
Day County
US HWY 12 E
US HWY 12 W

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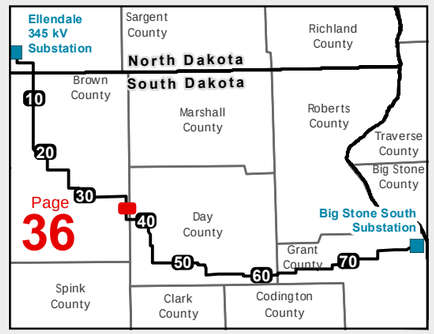

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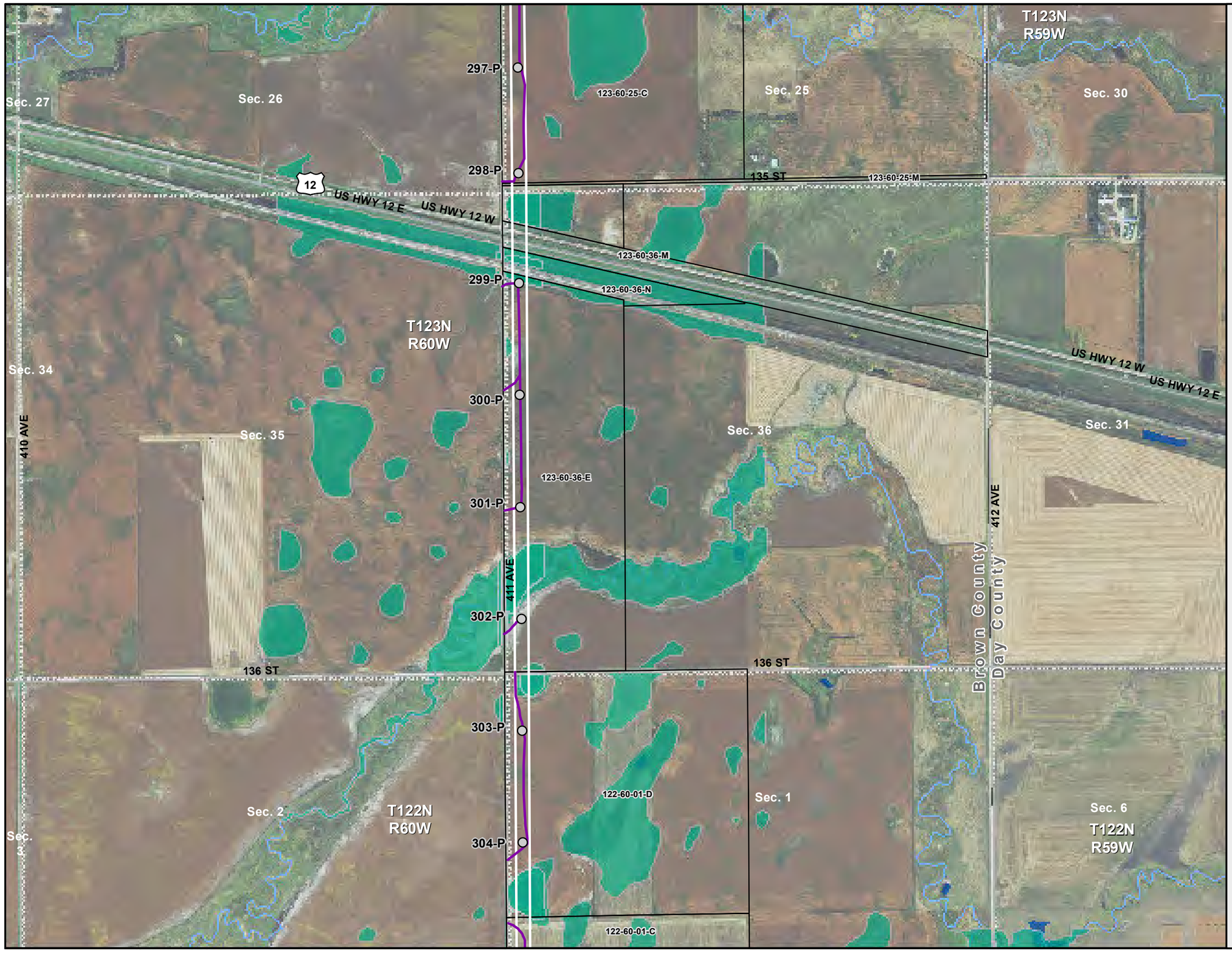
Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015



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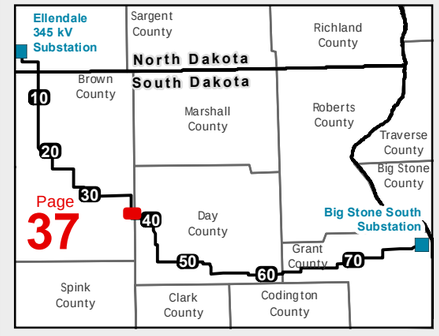

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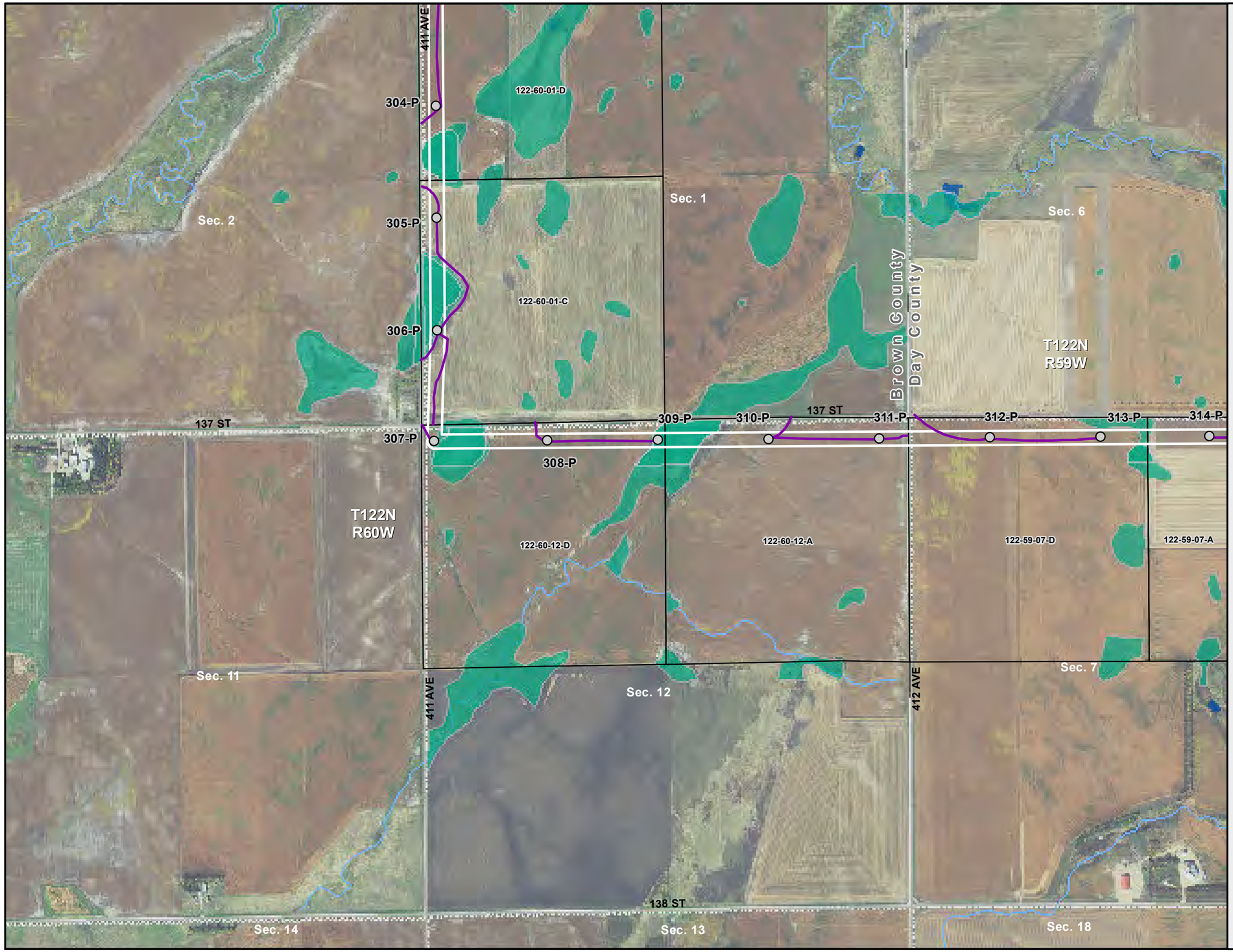
Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015



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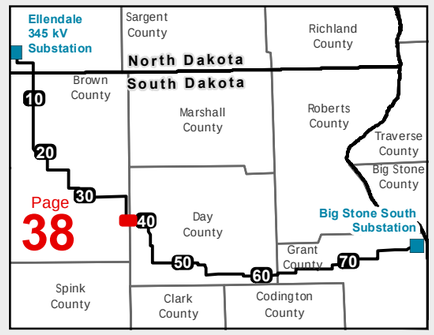

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Big Stone South to Ellendale

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Sec. 6 | Sec. 5 | Sec. 4

T122N
R59W

314-P | 315-P | 316-P | 317-P | 137 ST | 319-P | 320-P | 321-P | 322-P | 323-P | 324-P

318-P

122-59-07-A | 122-59-08-D | 122-59-08-A | 122-59-09-D

122-59-07-D

Sec. 7 | Sec. 8 | Sec. 9

413 AVE | 414 AVE

138 ST

Sec. 18 | Sec. 17 | Sec. 16

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Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

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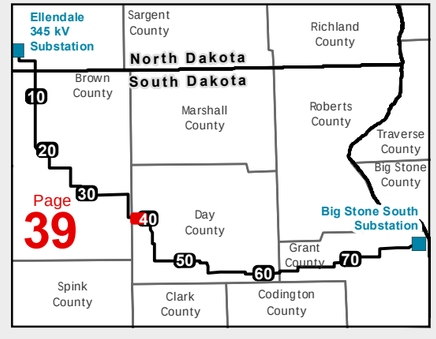

BSSE Big Stone South to Ellendale

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Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

Andover
3RD AVE
2ND ST
PEW ST
FINCH ST
COUNTY 41
416 AVE
415 AVE
417 AVE
137 ST
138 ST
Sec. 4
Sec. 3
Sec. 2
Sec. 1
Sec. 9
Sec. 10
Sec. 11
Sec. 12
Sec. 16
Sec. 15
Sec. 14
Sec. 13
T122N
R59W
122-59-09-D
122-59-10-D
122-59-11-D
122-59-11-A
122-59-11-P
122-59-11-Q
122-59-14-D
122-59-14-A
122-59-10-E
324-P
325-P
326-P
327-P
328-P
329-P
330-P
331-P
332-P
333-P
334-P
335-P
336-P
337-P

- Project Start/End Point
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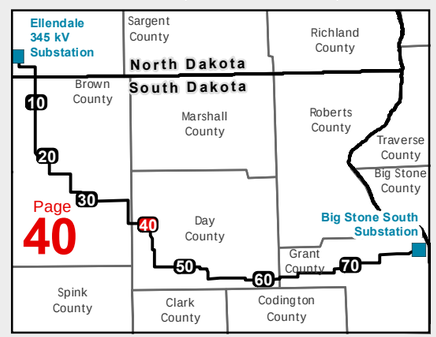

BSSE Big Stone South to Ellendale

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Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

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Sec. 10
138 ST
122-59-11-P
336-P
Sec. 11
122-59-11-Q
Sec. 12
Sec. 7
138 ST
337-P
122-59-14-D
122-59-14-A
338-P
Sec. 14
416 AVE
Sec. 15
339-P
Sec. 18
Sec. 13
T122N
R58W
122-59-14-C
340-P
122-59-14-B
T122N
R59W
417 AVE
341-P
139 ST
139 ST
Sec. 19
342-P
122-59-23-D
122-59-23-Q
Sec. 22
Sec. 23
Sec. 24
343-P
122-59-23-C
344-P
122-59-23-P

Project Start/End Point
Structures as of 11/13/2015
Right-of-Way as of 11/13/2015
Access Roads as of 8/17/2015
Parcels
Desktop Delineated or Field Verified Wetlands
NHD Stream
NHD Waterbody
USFWS Grassland Easement
USFWS Wetland Easement
Section
Township
County Boundary
State Boundary

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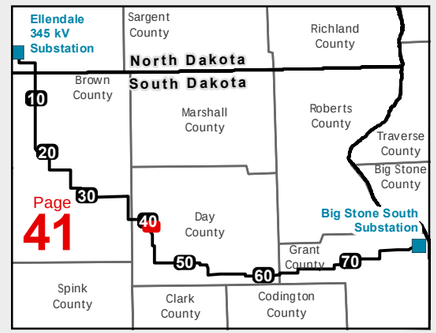

BSSE Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

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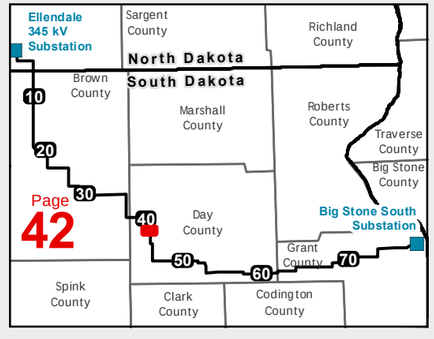

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Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

Sec. 26 | Sec. 25 | Sec. 30
Sec. 27 | Sec. 36 | Sec. 31
Sec. 34 | Sec. 35
Sec. 3 | Sec. 2 | Sec. 1 | Sec. 6

141 ST | 142 ST | 416 AVE | 418 AVE

351-P | 352-P | 353-P | 354-P | 355-P | 356-P | 357-P | 358-P | 359-P

122-59-26-P | 122-59-25-C | 122-59-36-L | 122-59-36-H | 122-59-36-C | 121-59-01-A

T122N R59W | T122N R58W | T121N R59W | T121N R58W

Mud Creek

- Project Start/End Point
- Structures as of 11/13/2015
- Right-of-Way as of 11/13/2015
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- NHD Waterbody
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- USFWS Wetland Easement
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- Township
- County Boundary
- State Boundary

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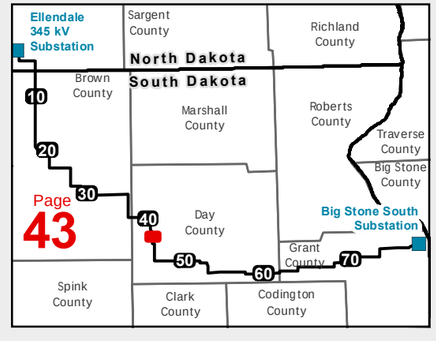

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345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

359-P
360-P
361-P
362-P
362.1-P
363-P
364-P
365-P
366-P
367-P
368-P
Mud Creek
Sec. 3
Sec. 2
Sec. 1
Sec. 6
Sec. 10
Sec. 11
Sec. 12
Sec. 7
Sec. 15
Sec. 14
Sec. 13
Sec. 18
121-59-01-A
121-59-12-D
121-59-12-A
121-59-12-M
121-59-12-C
121-59-12-B
121-59-13-D
121-59-13-A
143 ST
144 ST
416 AVE
417 AVE
418 AVE
T121N
R59W
T121N
R58W

- Project Start/End Point
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- Right-of-Way as of 11/13/2015
- Access Roads as of 8/17/2015
- Parcels
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- NHD Waterbody
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- USFWS Wetland Easement
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- State Boundary

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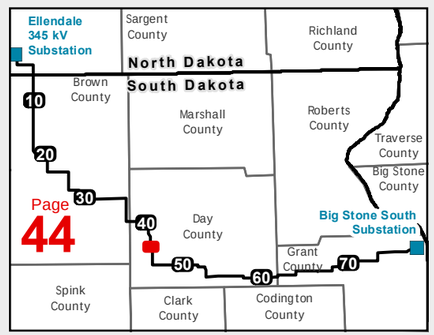

Big Stone South to Ellendale

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Sec. 11
144 ST
Mud Creek
Sec. 14
T121N
R59W
145 ST
Sec. 23
Sec. 12
121-59-12-M
121-59-12-C
121-59-12-B
367-P
144 ST
368-P
121-59-13-D
369-P
Sec. 13
121-59-13-A
370-P
417 AVE
121-59-13-C
371-P
372-P
121-59-24-D
373-P
Sec. 24
121-59-24-A
374-P
121-59-24-C
375-P
Sec. 7
418 AVE
Sec. 18
T121N
R58W
145 ST
Sec. 19

- Project Start/End Point
- Structures as of 11/13/2015
- Right-of-Way as of 11/13/2015
- Access Roads as of 8/17/2015
- Parcels
- Desktop Delineated or Field Verified Wetlands
- NHD Stream
- NHD Waterbody
- USFWS Grassland Easement
- USFWS Wetland Easement
- Section
- Township
- County Boundary
- State Boundary

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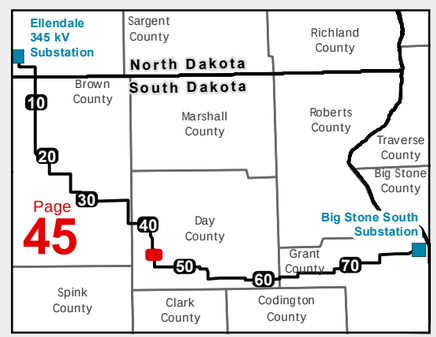

BSS+E Big Stone South to Ellendale

U.S. Fish & Wildlife Service

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Exhibit A-ii.

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T121N
R59W

Sec. 23

Sec. 24

Sec. 19

Sec. 26

Sec. 25

Sec. 30

Sec. 35

Sec. 36

Sec. 31

T121N
R58W

121-59-24-D

121-59-24-A

121-59-24-C

121-59-25-A

121-59-25-D

121-59-25-B

121-59-25-C

121-59-36-A

374-P

375-P

376-P

377-P

377.1-P

378-P

379-P

380-P

381-P

146 ST

147 ST

417 AVE

418 AVE

Mud Creek

- Project Start/End Point
- Structures as of 11/13/2015
- Right-of-Way as of 11/13/2015
- Access Roads as of 8/17/2015
- Parcels
- Desktop Delineated or Field Verified Wetlands
- NHD Stream
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- Township
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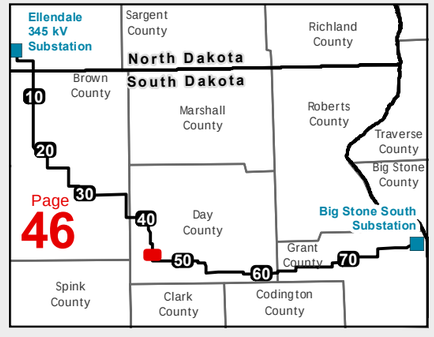

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Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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Exhibit A-ii.

Appendix A – Project Map Book

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North Dakota and South Dakota

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Sec. 25 | 121-59-25-C | 121-59-25-B | 380-P | 147 ST | 418 AVE | Sec. 30 | Sec. 29
121-59-36-A | 381-P | Sec. 36 | T121N R59W | 382-P | T121N R58W | Sec. 31 | 419 AVE | Sec. 32
383-P | 121-59-36-C | 384-P | 121-59-36-B
148 ST | 389-P | 390-P | 391-P | 392-P | 393-P | 394-P | 395-P
385-P | 386-P | 387-P | 388-P | 120-58-06-A
417 AVE | 120-59-01-D | 120-59-01-A | Sec. 6 | T120N R58W | 120-58-06-D | 120-58-05-D | 120-58-05-E
Sec. 1 | T120N R59W | Mud Creek | 419 AVE | Sec. 5

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- USFWS Wetland Easement
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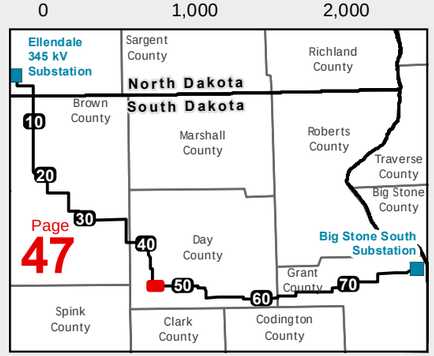

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North Dakota and South Dakota

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Sec. 29 | Sec. 28 | Sec. 27
147 ST
421 AVE
T121N R58W
Sec. 33 | Sec. 34
420 AVE
Sec. 32
121-58-33-B | 121-58-34-C | 121-58-34-G | 121-58-34-B
394-P | 395-P | 396-P | 397-P | 398-P | 148 ST | 399-P | 400-P | 401-P | 402-P | 403-P | 148 ST | 404-P | 405-P
120-58-05-E | 120-58-05-A | 120-58-04-D | 120-58-04-A | 120-58-03-D
421 AVE
T120N R58W
Sec. 4 | Sec. 3
Sec. 5
120-58-05-D
420 AVE

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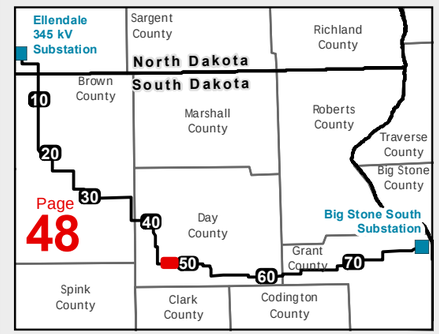

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Sec. 27 | Sec. 26 | Sec. 25 | Sec. 30
147 ST | 147 ST | 424 AVE
T121N R57W
Sec. 34 | 422 AVE | Sec. 35 | T121N R58W | 423 AVE | Sec. 36 | 121-57-31-C | Sec. 31
121-58-34-B | 121-58-35-C | 121-58-35-B | 121-58-36-C
404-P | 405-P | 406-P | 407-P | 408-P | 148 ST | 409-P | 410-P | 411-P | 412-P | 413-P | 414-P | 148 ST | 415-P
Sec. 3 | Sec. 2 | T120N R58W | Sec. 1 | 424 AVE | Sec. 6 T120N R57W

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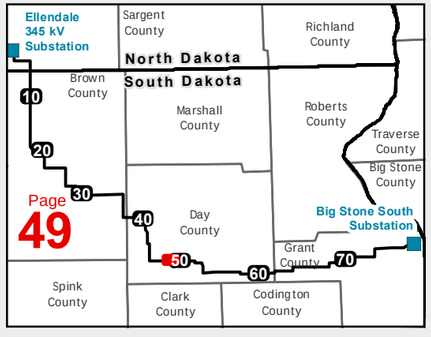

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Sec. 25 | Sec. 30 | Sec. 29 | Sec. 28 | 147 ST | 424 AVE | Butler | 425 AVE | 426 AVE | Sec. 33 | T121N R58W | Sec. 31 | T121N R57W | Sec. 32 | Sec. 36 | 121-57-31-C | 121-57-31-B | 121-57-32-B | 121-57-33-C | 121-58-36-C | 417-P | 415-P | 416-P | 148 ST | 418-P | 419-P | 420-P | 421-P | 422-P | 423-P | 424-P | 425-P | 426-P | T120N R57W | Sec. 6 | Sec. 5 | Sec. 4 | 424 AVE | 425 AVE | 426 AVE

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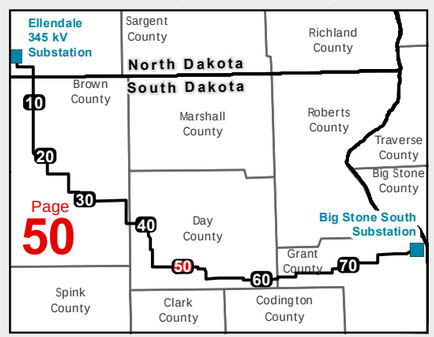

BSSE Big Stone South to Ellendale

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Sec. 28 | Sec. 27 | 147 ST | Sec. 26

T121N
R57W

Sec. 34 | Sec. 35

428 AVE | 428A AVE

Sec. 33

121-57-34-A | 121-57-35-A | 121-57-33-C | 121-57-33-B | 121-57-34-C | 121-57-35-C

426-P | 427-P | 148 ST | 428-P | 429-P | 430-P | 431-P | 432-P | 433-P | 148 ST | 434-P | 435-P | 436-P | 437-P

Sec. 4 | Sec. 3 | Sec. 2

T120N
R57W

427 AVE | 428 AVE

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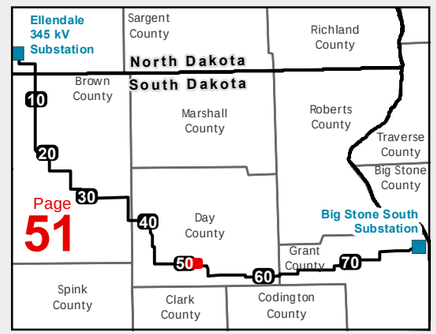

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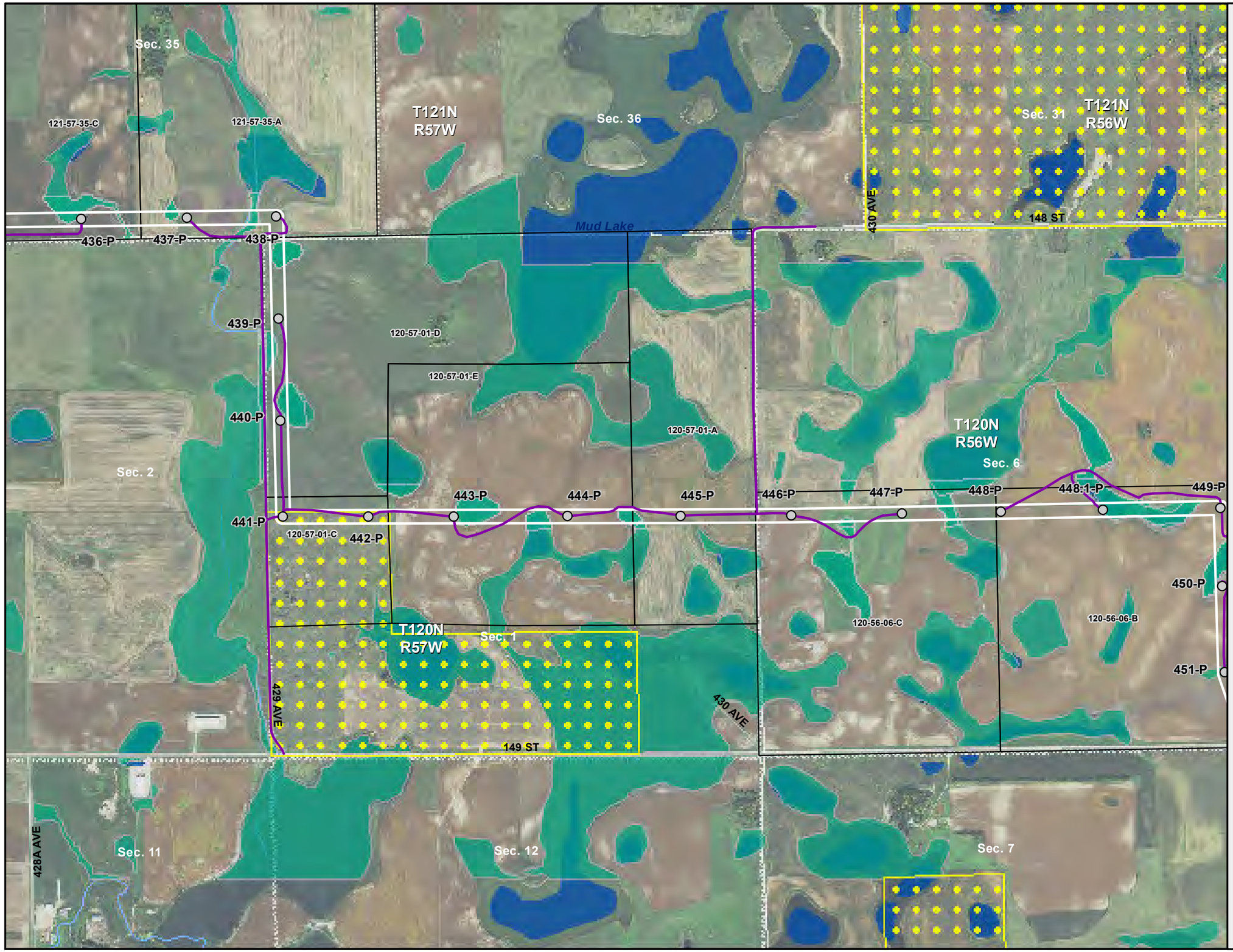
Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015



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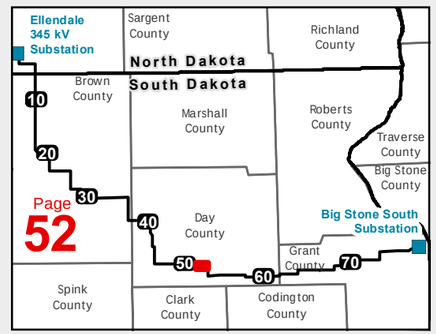

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445-P
446-P
447-P
Sec. 6
448-P
448.1-P
449-P
120-57-01-A
450-P
Sec. 5
Sec. 4
120-56-06-C
120-56-06-B
Sec. 1
120-57-01-E
451-P
120-56-05-C
430 AVE
149 ST
149 ST
452-P
120-56-08-H
431 AVE
453-P
T120N
R57W
T120N
R56W
120-56-08-D
454-P
Sec. 8
432 AVE
Sec. 9
Sec. 12
Sec. 7
455-P
456-P
120-56-08-G
150 ST
457-P
120-56-17-D
Sec. 16
Sec. 13
Sec. 18
Sec. 17
458-P

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Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

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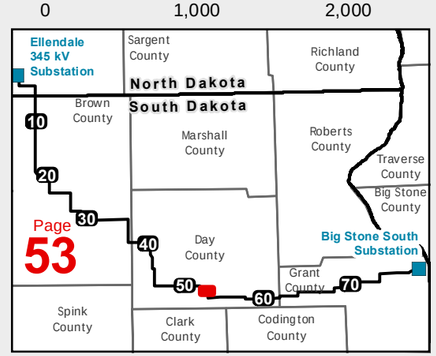

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Sec. 7 | Sec. 8 | Sec. 9 | Sec. 16 | Sec. 17 | Sec. 18 | Sec. 19 | Sec. 20 | Sec. 21

120-56-08-G | 120-56-17-D | 120-56-17-C | 120-56-17-B | 120-56-16-C | 120-56-16-B

150 ST | 151 ST | 431 AVE | 432 AVE

457-P | 458-P | 459-P | 460-P | 461-P | 462-P | 463-P | 464-P | 465-P | 466-P | 467-P | 468-P | 469-P

T120N
R56W

- Project Start/End Point
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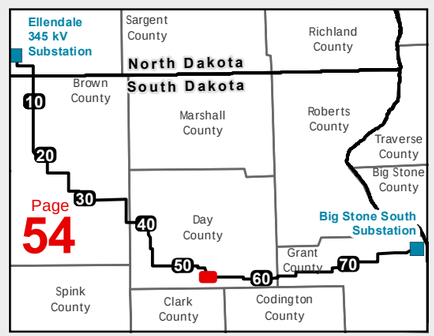

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Sec. 9 | Sec. 10 | 150 ST | Sec. 11 | Sec. 12
433 AVE
Sec. 15 | 120-56-15-S | 120-56-14-S | Sec. 13
Sec. 16 | Sec. 14 | 120-56-14-B
120-56-15-C | 120-56-15-B | 120-56-14-C | 120-56-13-C
120-56-16-B
475-P | 476-P | 477-P | 478-P | 479-P
469-P | 469.1-P | 470-P | 471-P | 472-P | 473-P | 474-P
T120N
R56W
25
SD HWY 25
Sec. 21 | Sec. 22 | Sec. 23 | Sec. 24
435 AVE

- Project Start/End Point
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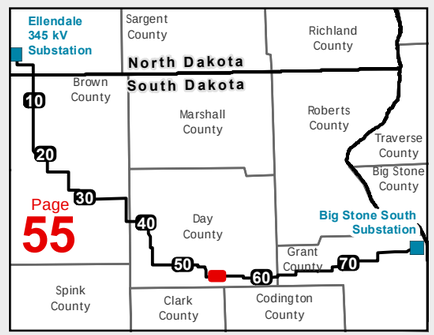

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Sec. 11 Sec. 12
Sec. 14
Sec. 13
Sec. 18
Sec. 17
Sec. 19
Sec. 20
Sec. 23
Sec. 24

120-56-14-B
120-56-13-C
120-56-13-B
120-55-18-A
120-55-17-C

479-P
480-P
481-P
482-P
483-P
484-P
485-P
151 ST
486-P
487-P
488-P
489-P

T120N R55W
T120N R56W

436 AVE
437 AVE
435 AVE

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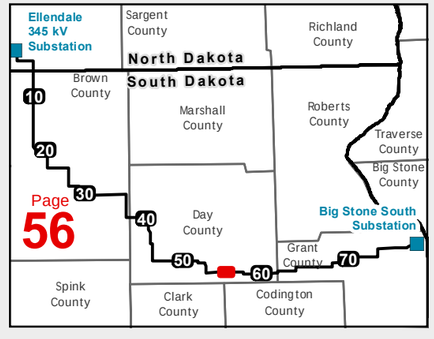

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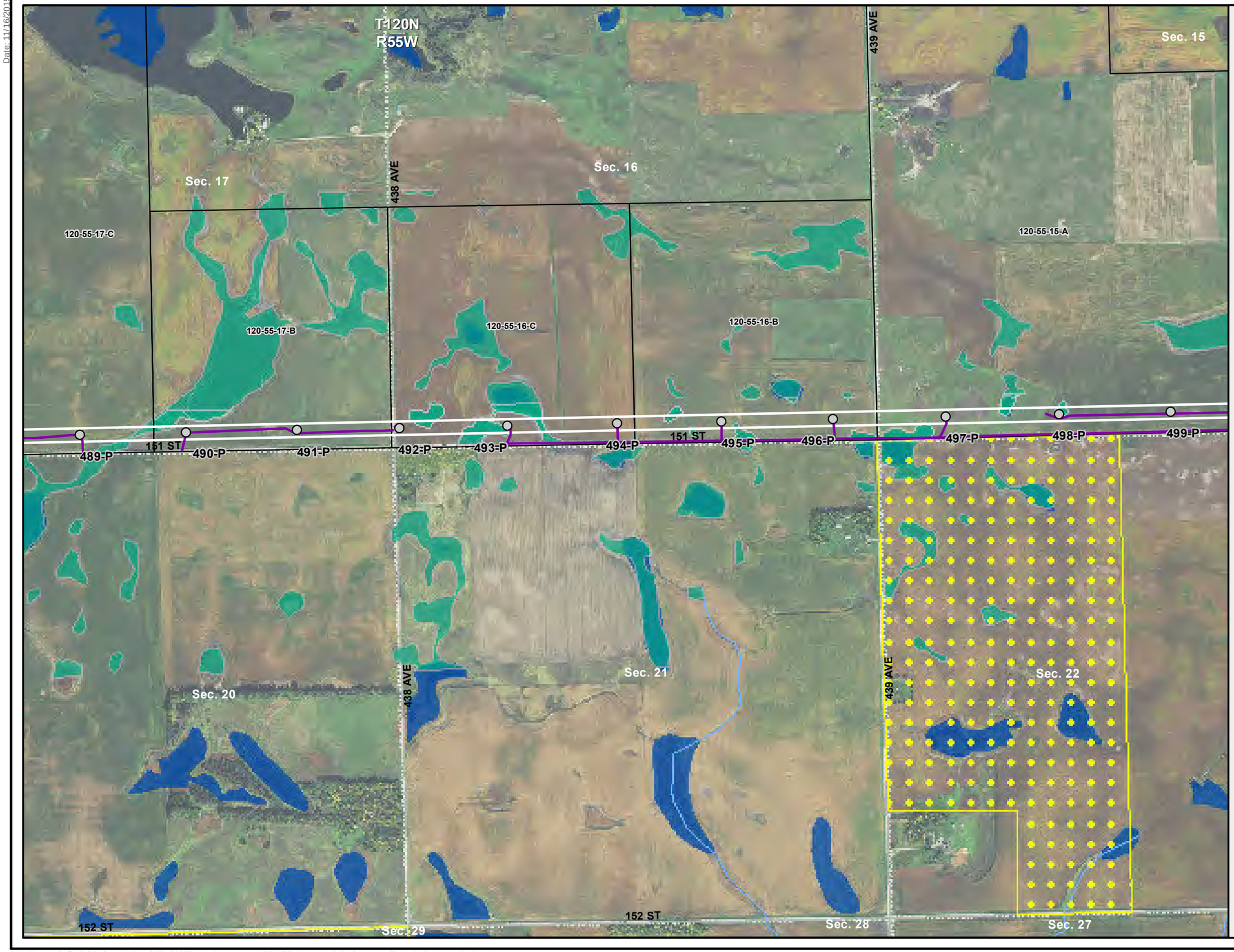
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015



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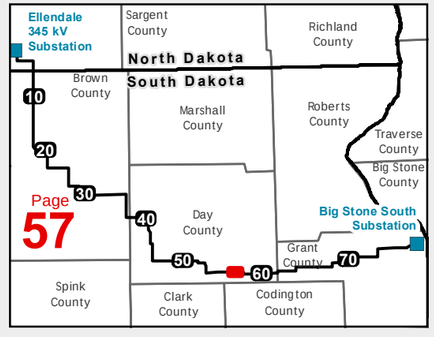

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345 kV Transmission Line Project
North Dakota and South Dakota

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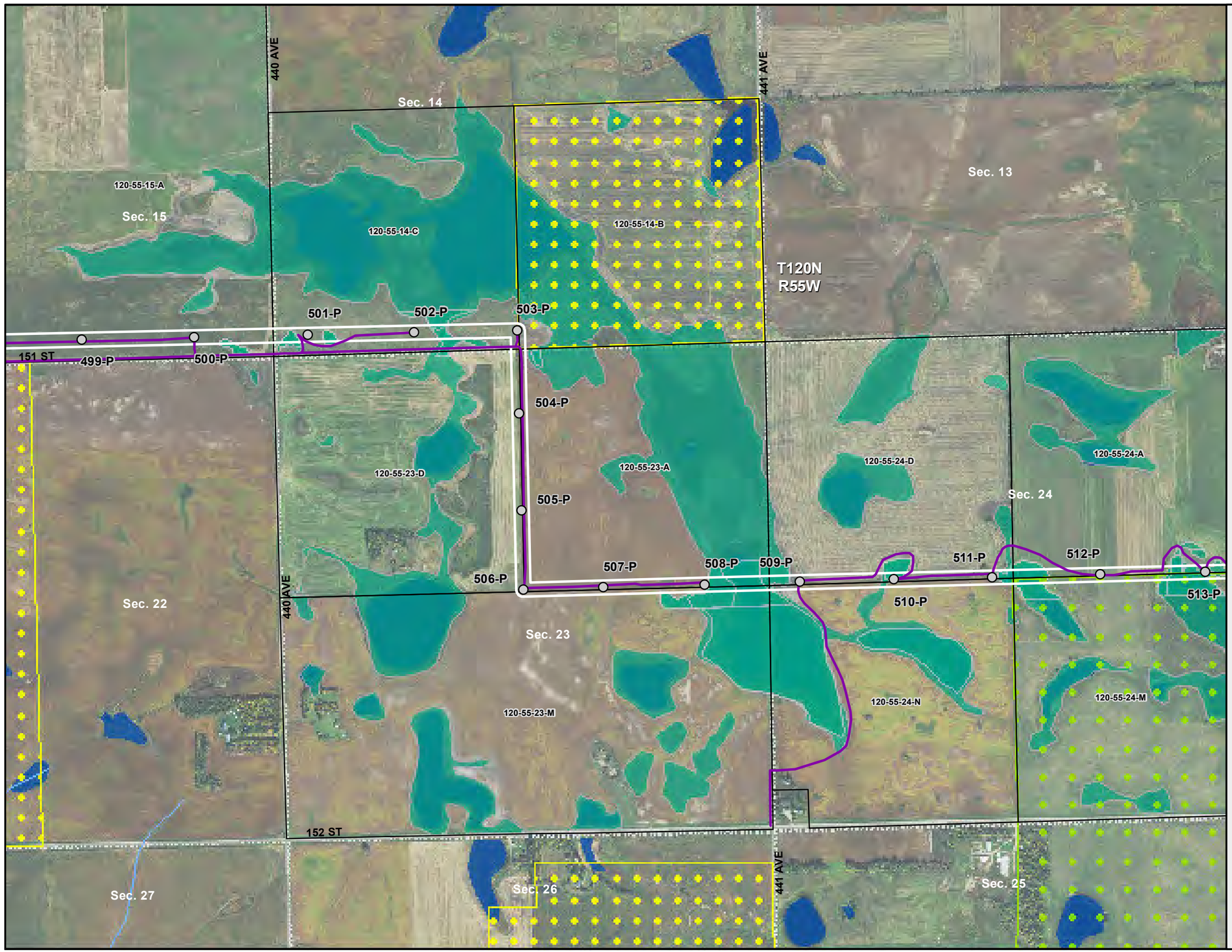

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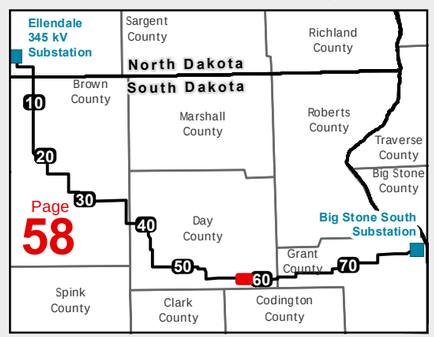

Big Stone South to Ellendale

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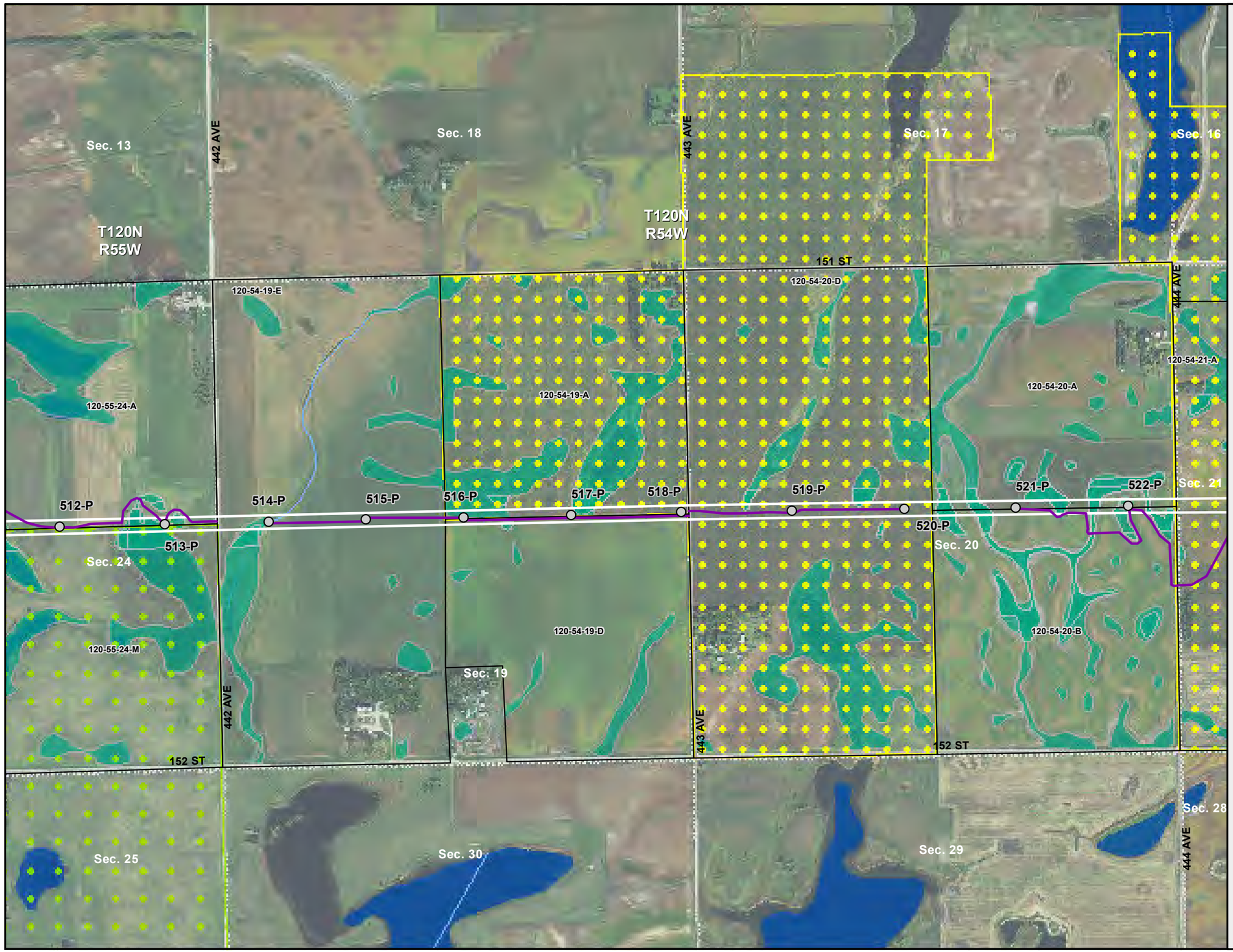
Date: 11/16/2015

Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015



- Project Start/End Point
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- USFWS Wetland Easement
- Section
- Township
- County Boundary
- State Boundary

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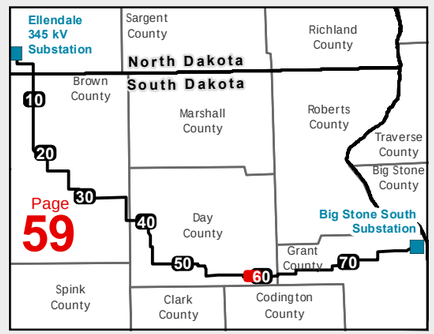

BSSE Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

Foldager Slough
Sec. 17
Sec. 16
Sec. 15
Sec. 14
446 AVE
T120N
R54W
151 ST
444 AVE
Sec. 21
120-54-21-A
120-54-23-C
120-54-20-A
120-54-22-D
120-54-22-A
Sec. 22
523-P
524-P
525-P
526-P
527-P
529-P
530-P
531-P
Sec. 23
533-P
522-P
528-P
532-P
Sec. 20
120-54-20-B
120-54-22-C
120-54-22-B
152 ST
Sec. 29
444 AVE
Sec. 28
445 AVE
Sec. 27
Sec. 26

- Project Start/End Point
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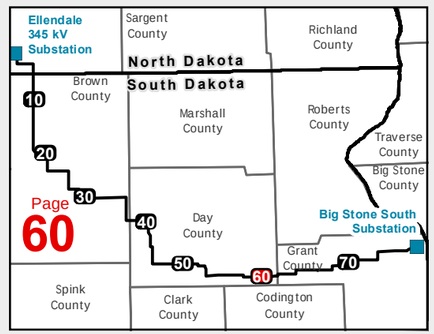

BSSE Big Stone South to Ellendale

U.S. Fish & Wildlife Service

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Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

Sec. 14 | Sec. 13 | Sec. 2 | Sec. 1
T120N R54W | T120N R53W
447 AVE | 448 AVE
151 ST | 152 ST
120-54-23-C | 120-54-24-A | 120-53-12-M | 120-53-12-B
120-54-23-A | 120-54-23-B | 120-53-11-A
533-P | 534-P | 535-P | 536-P | 537-P | 538-P | 538.1-P | 539-P | 540-P | 541-P | 542-P | 543-P
Sec. 23 | Sec. 24 | Sec. 11 | Sec. 12
Sec. 26 | Sec. 25 | Sec. 19 | Sec. 14 | Sec. 13 | Sec. 30
Lonesome Lake

- Project Start/End Point
- Structures as of 11/13/2015
- Right-of-Way as of 11/13/2015
- Access Roads as of 8/17/2015
- Parcels
- Desktop Delineated or Field Verified Wetlands
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- USFWS Wetland Easement
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- Township
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- State Boundary

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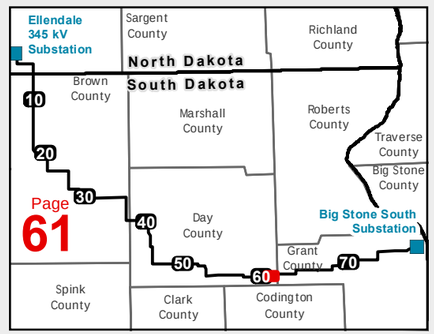

BSS+E Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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345 kV Transmission Line Project
North Dakota and South Dakota

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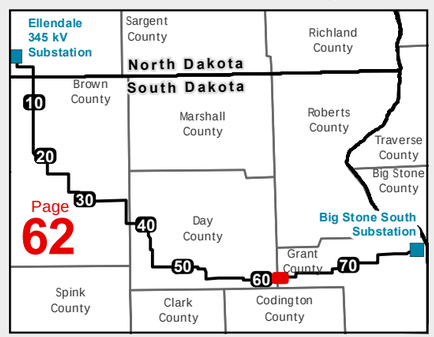

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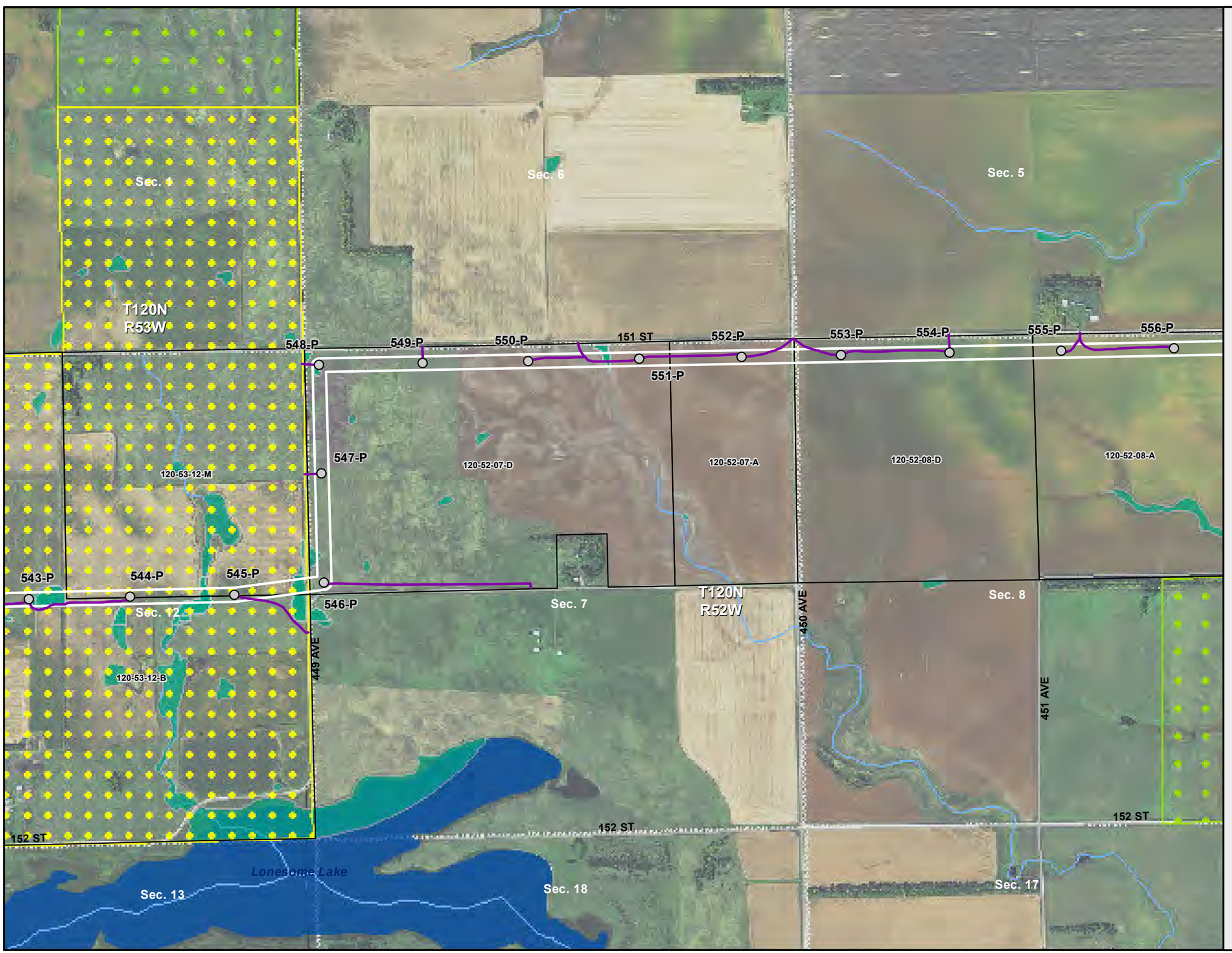

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Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

T120N
R52W

Sec. 5
Sec. 4
Sec. 3
Sec. 2
Sec. 8
Sec. 9
Sec. 10
Sec. 11

451 AVE
452 AVE
453 AVE

151 ST

556-P
557-P
558-P
559-P
560-P
561-P
562-P
563-P
564-P
565-P
566-P

120-52-02-D
120-52-02-C
120-52-11-D
120-52-10-D
120-52-10-E
120-52-10-A
120-52-09-A
120-52-09-D
120-52-08-A

Big Sioux River
Indian River

- Project Start/End Point
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- County Boundary
- State Boundary

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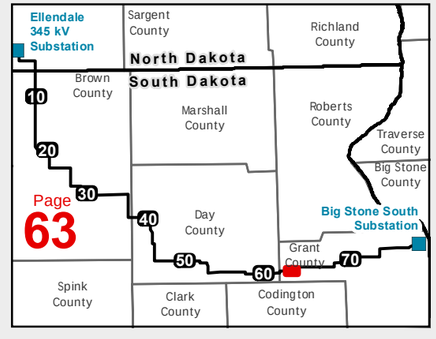

BSS-E Big Stone South to Ellendale

U.S. Fish & Wildlife Service

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Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

Sec. 34 | Sec. 35 | T121N R52W | Sec. 36 | Sec. 31 | T121N R51W

150 ST | 573-P | 574-P | 575-P | 576-P | 150 ST | 577-P | 578-P | 579-P | 580-P | 581-P | 150 ST

455 AVE

572-P | 571-P | 570-P | 569-P | 567-P | 566-P | 568-P

120-52-02-D | 120-52-02-A | 120-52-01-D | 120-52-01-A | 120-51-06-E | 120-52-02-C | 120-52-02-B | 121-52-25-M | 120-52-11-D | 120-52-10-A | 120-52-11-A

Sec. 3 | Sec. 2 | Sec. 1 | Sec. 6 | Sec. 11 | Sec. 12 | Sec. 7 | Sec. 10

453 AVE | 454 AVE | 455 AVE

Indian River

T120N R52W | T120N R51W

151 ST

Legend

- Project Start/End Point
- Structures as of 11/13/2015
- Right-of-Way as of 11/13/2015
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- USFWS Wetland Easement
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- Township
- County Boundary
- State Boundary

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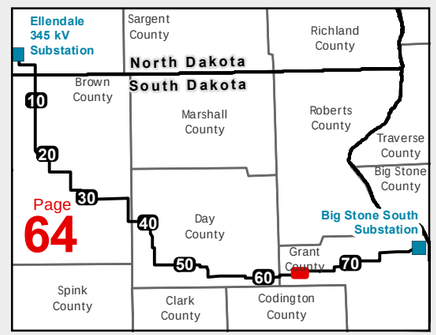

BSS+E Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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Appendix A – Project Map Book

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345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

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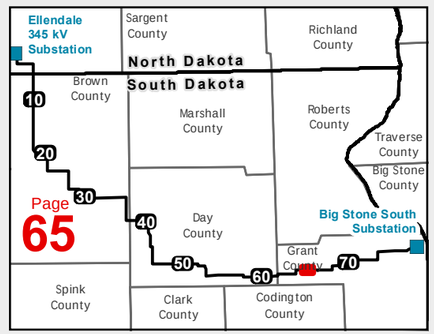

BSSE Big Stone South to Ellendale

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345 kV Transmission Line Project
North Dakota and South Dakota

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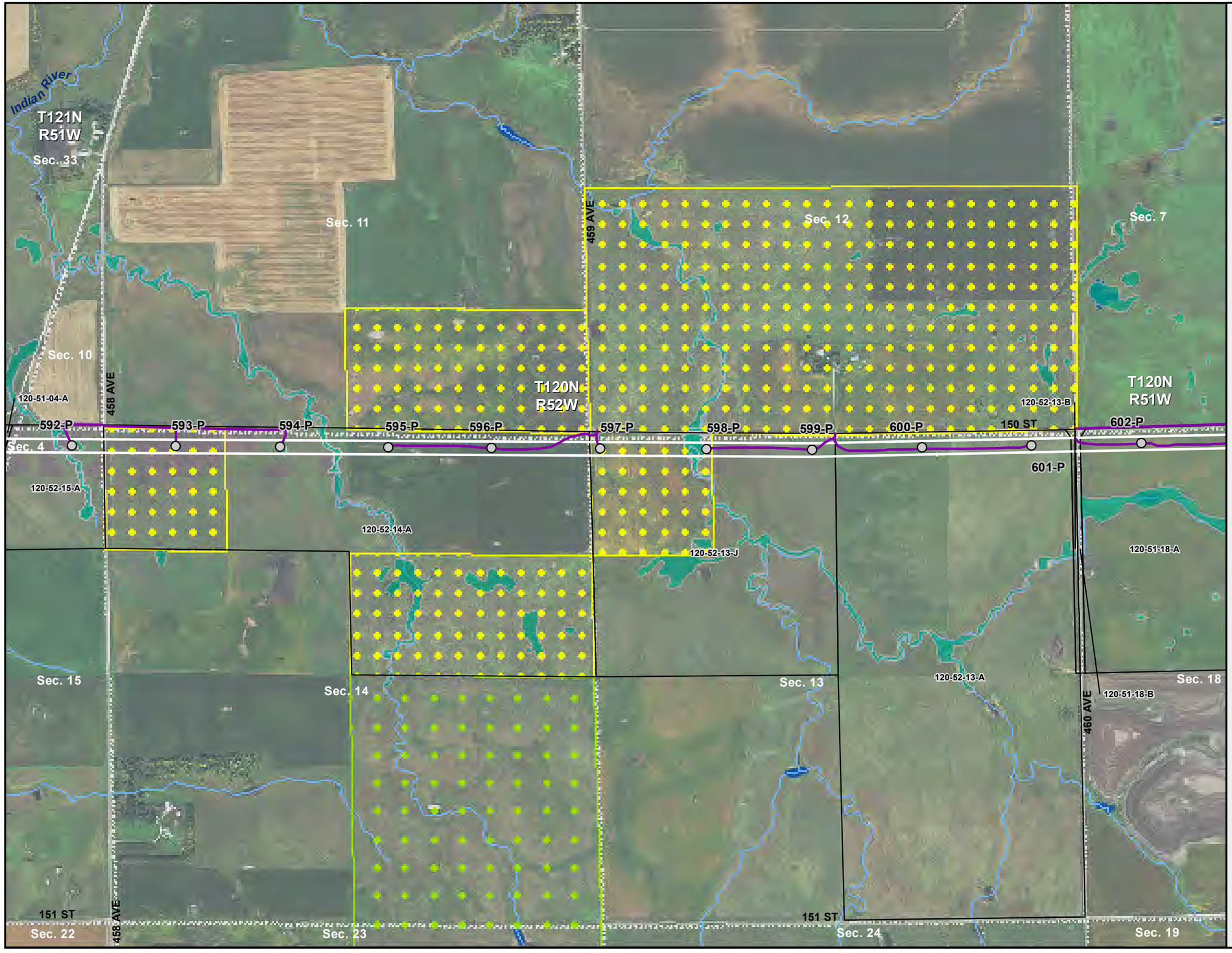

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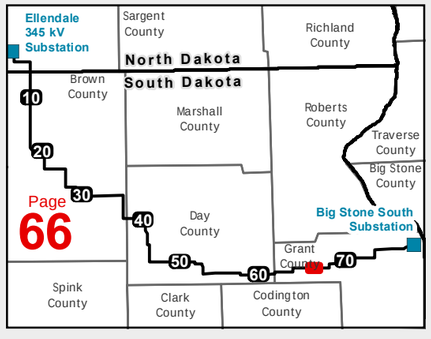

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Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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345 kV Transmission Line Project
North Dakota and South Dakota

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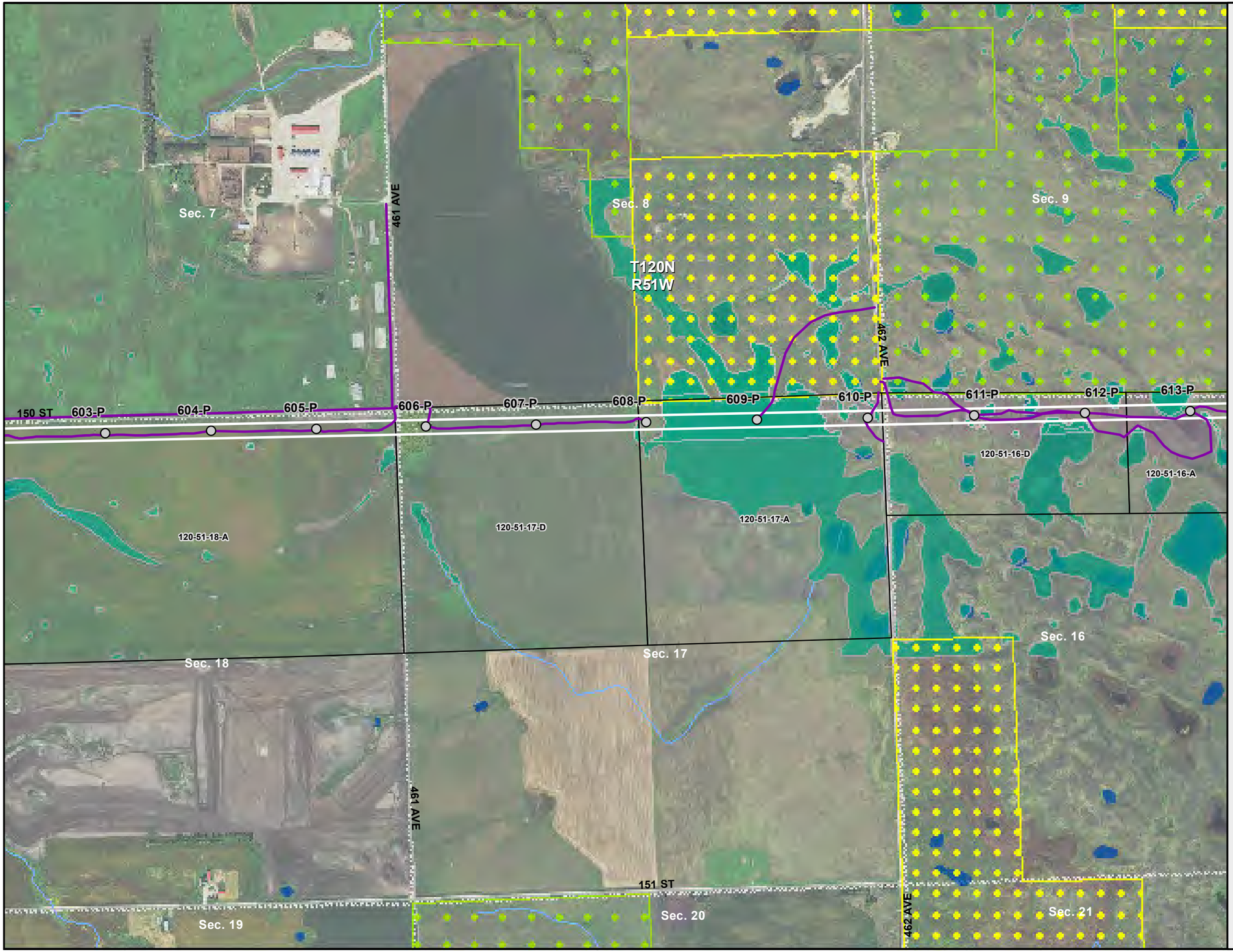

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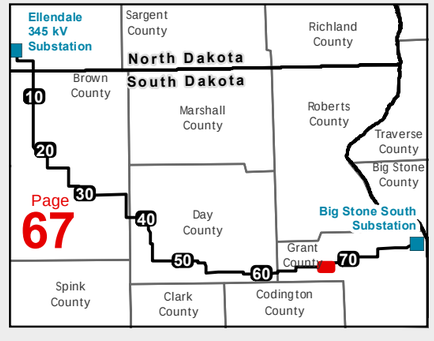

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Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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345 kV Transmission Line Project
North Dakota and South Dakota

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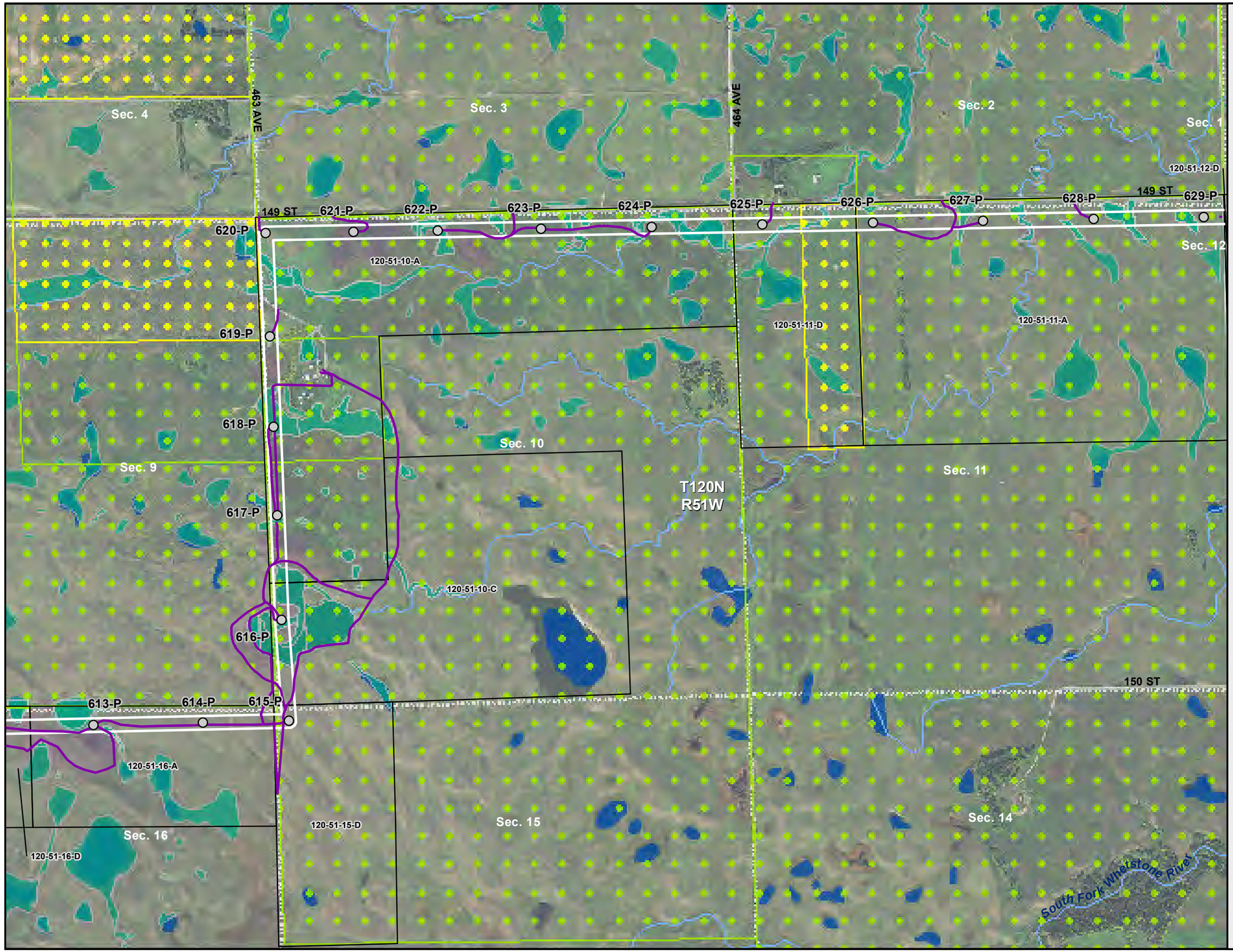

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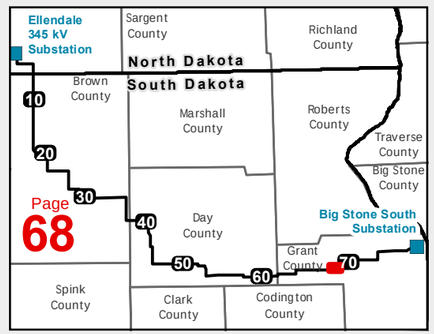

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U.S. FISH & WILDLIFE SERVICE

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Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

T120N
R51W

T120N
R50W

Sec. 1
Sec. 2
Sec. 5
Sec. 6
Sec. 7
Sec. 8
Sec. 11
Sec. 12
Sec. 13
Sec. 14
Sec. 17
Sec. 18

642-P
641-P
640-P
639-P
638-P
637-P
636-P
635-P
634-P
633-P
632-P
631-P
630-P
629-P

120-50-06-A
120-50-06-C
120-50-06-B
120-50-07-A
120-51-11-A
120-51-12-D
120-51-12-A

149 ST
150 ST
465 AVE
466 AVE
467 AVE

South Fork Whetstone River

- Project Start/End Point
- Structures as of 11/13/2015
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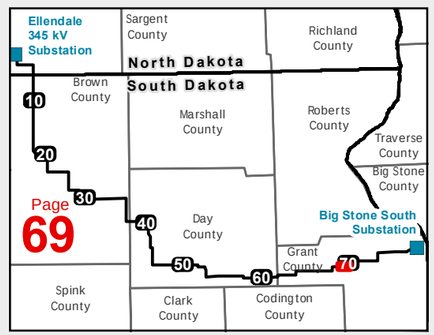

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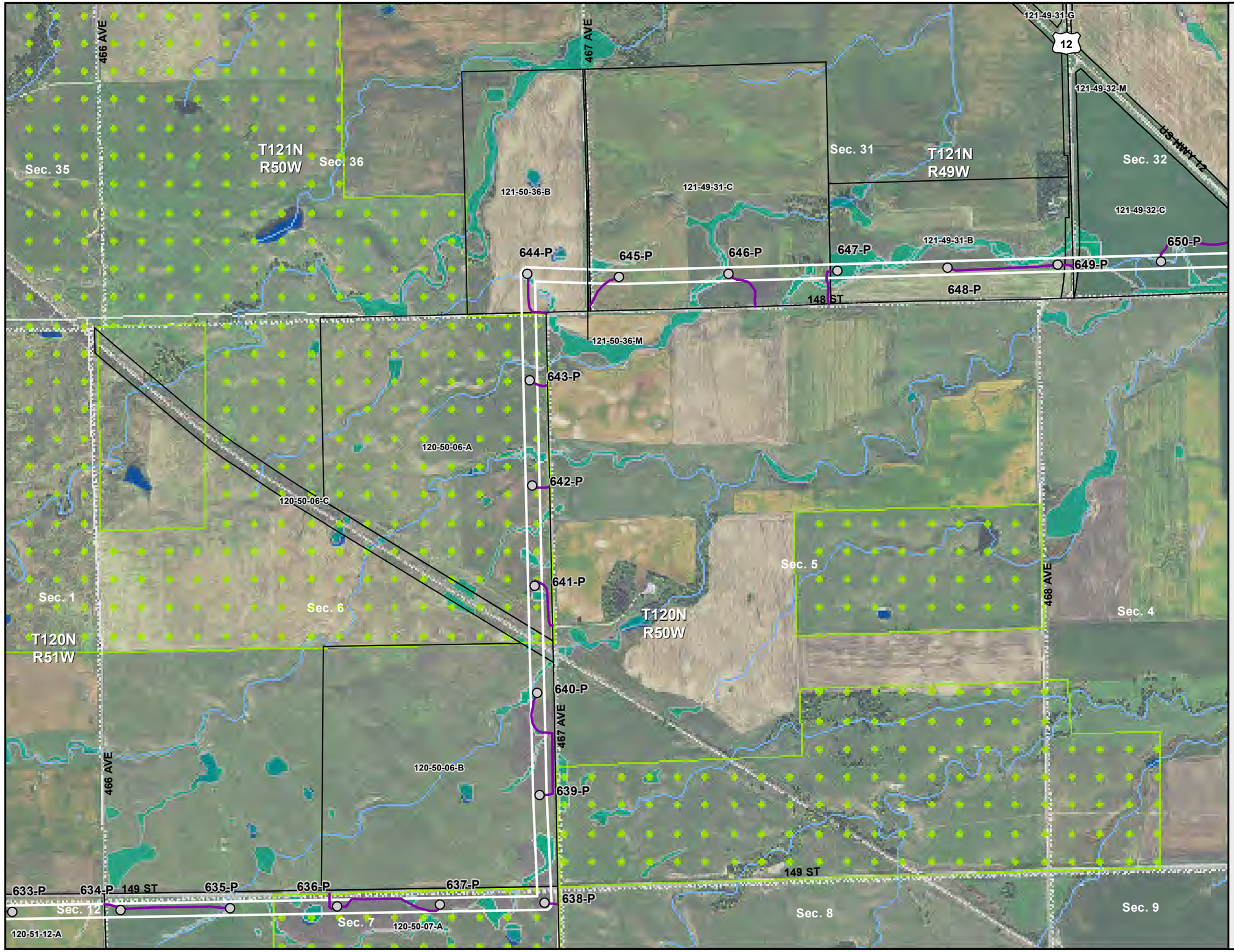

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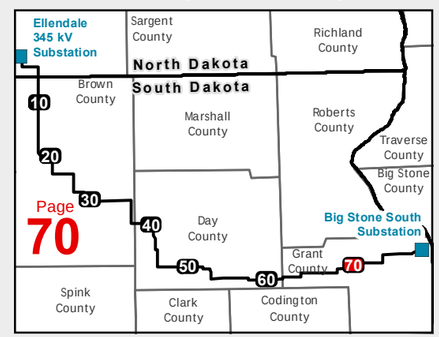

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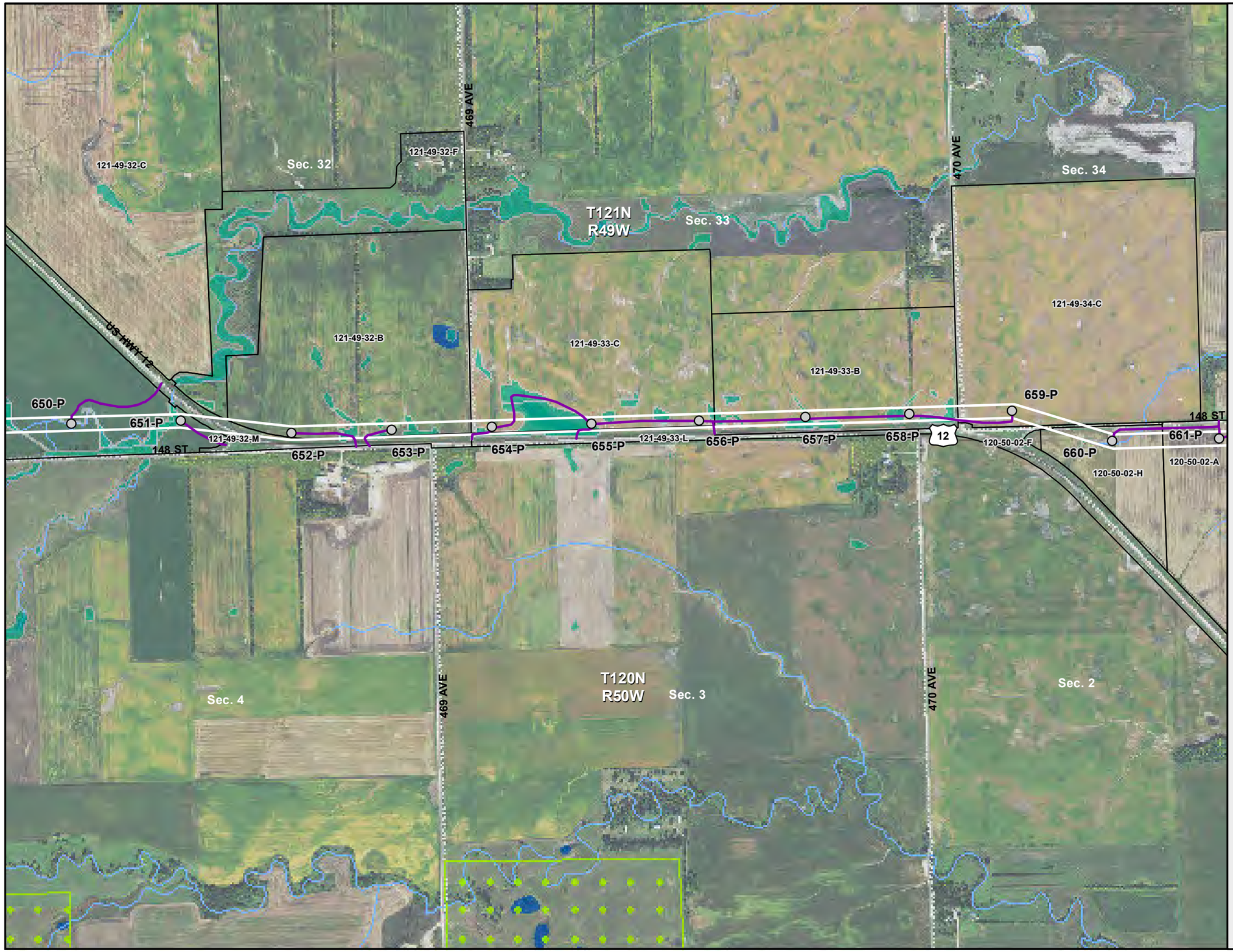

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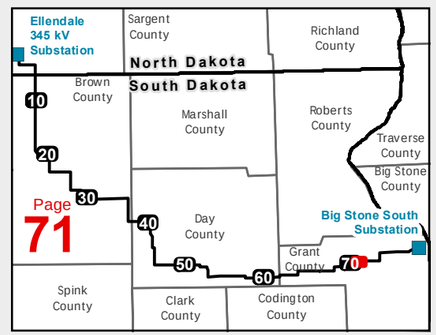

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345 kV Transmission Line Project
North Dakota and South Dakota

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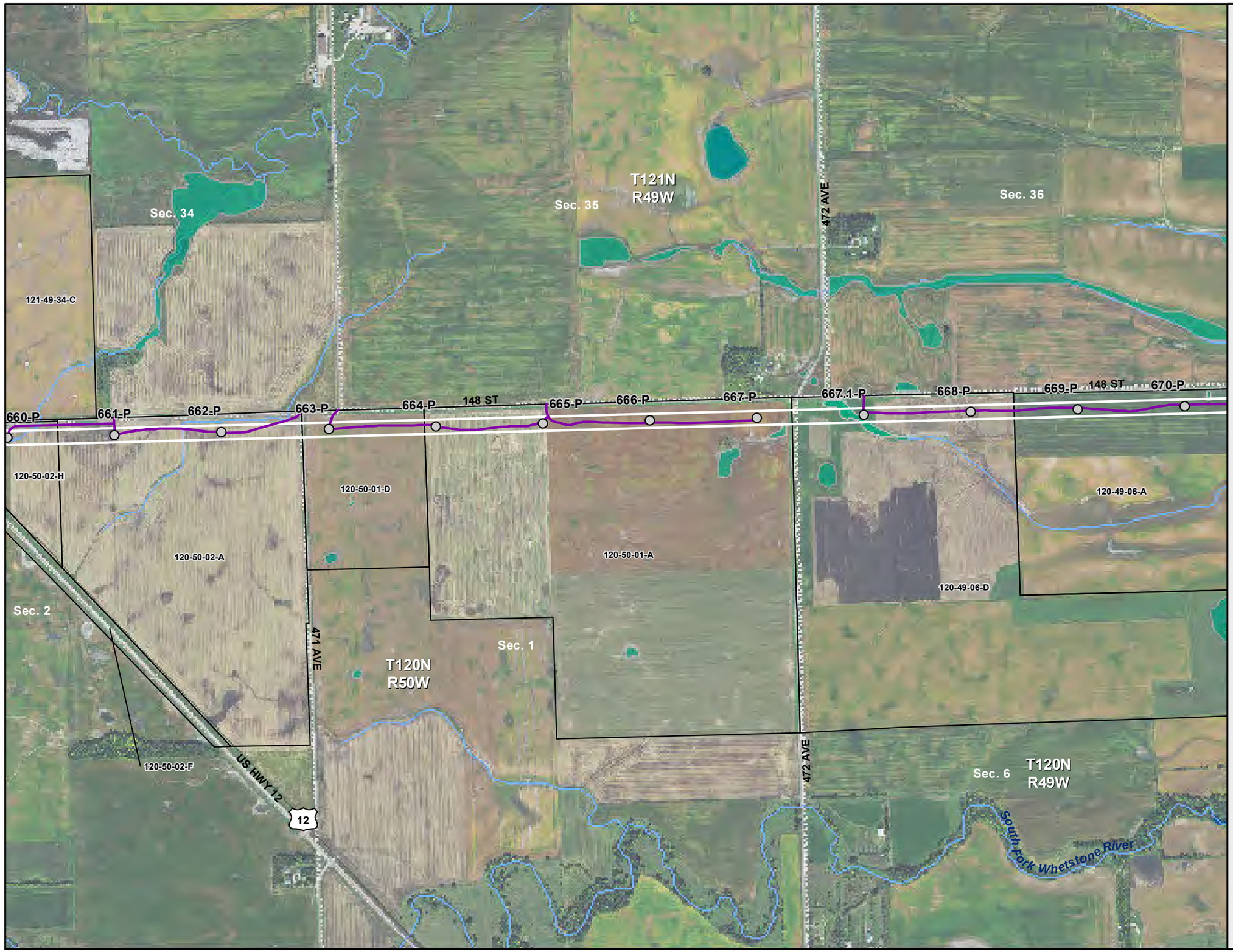

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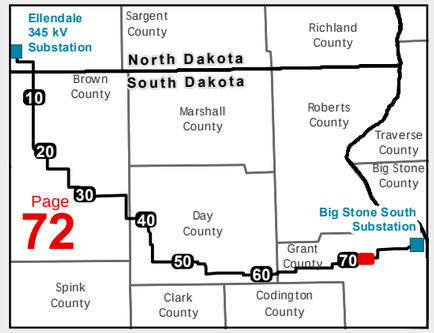

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Big Stone South to Ellendale

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Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

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Right-of-Way as of 11/13/2015
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Desktop Delineated or Field Verified Wetlands
NHD Stream
NHD Waterbody
USFWS Grassland Easement
USFWS Wetland Easement
Section
Township
County Boundary
State Boundary

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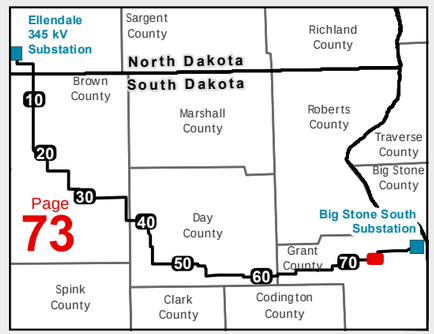

BSS+E Big Stone South to Ellendale

U.S. Fish & Wildlife Service

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Date: 11/16/2015

Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

Sec. 19
Sec. 20
Sec. 21
Sec. 28
Sec. 29
Sec. 30
Sec. 31
Sec. 32
Sec. 33
T121N
R48W
475 AVE
474 AVE
146 ST
147 ST
121-48-20-B
121-48-20-C
121-48-20-H
121-48-21-B
121-48-21-C
121-48-21-M
121-48-29-B
121-48-29-C
121-48-29-D
121-48-29-E
121-48-29-G
121-48-32-A
121-48-32-D
688-P
689-P
690-P
691-P
692-P
693-P
694-P
687-P
686-P
685-P
684-P
683-P
682-P

- Project Start/End Point
- Structures as of 11/13/2015
- Right-of-Way as of 11/13/2015
- Access Roads as of 8/17/2015
- Parcels
- Desktop Delineated or Field Verified Wetlands
- NHD Stream
- NHD Waterbody
- USFWS Grassland Easement
- USFWS Wetland Easement
- Section
- Township
- County Boundary
- State Boundary

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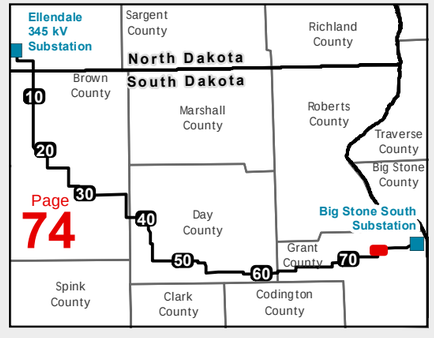

BSS+E
Big Stone South to Ellendale

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Date: 11/16/2015

Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

T121N
R48W

Sec. 16 | Sec. 15 | Sec. 14
145 ST
Sec. 21 | Sec. 22 | Sec. 23
476 AVE | 477 AVE
121-48-21-M | 121-48-22-C | 121-48-22-B | 121-48-23-B
121-48-21-C | 121-48-21-B
692-P | 693-P | 694-P | 695-P | 696-P | 697-P | 698-P | 699-P | 700-P | 701-P | 702-P | 703-P
146 ST
Sec. 28 | Sec. 27 | Sec. 26

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- Township
- County Boundary
- State Boundary

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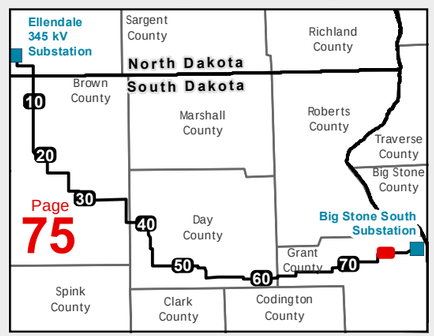

BSS-E Big Stone South to Ellendale

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Date: 11/16/2015

Exhibit A-ii.

Appendix A – Project Map Book

Big Stone South to Ellendale
345 kV Transmission Line Project
North Dakota and South Dakota

Map Book Issued November 16, 2015

Sec. 14 | Sec. 13 | Sec. 18 | Sec. 17 | Sec. 20
121-48-24-M
145 ST
121-48-23-C
Sec. 24
Sec. 23
479 AVE
Sec. 19
480 AVE
121-48-24-B
121-48-24-C
121-48-23-B
706.1-P
707-P
708-P
709-P
710-P
711-P
146 ST
703-P
704-P
705-P
706-P
712-P
T121N
R47W
T121N
R48W
121-47-29-D
121-47-30-A
121-47-30-D
SD HWY 15
15
121-48-25-FF
Sec. 25
COUNTY CLUB RD
Sec. 26
Sec. 29
Sec. 30
479 AVE
480 AVE

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- Section
- Township
- County Boundary
- State Boundary

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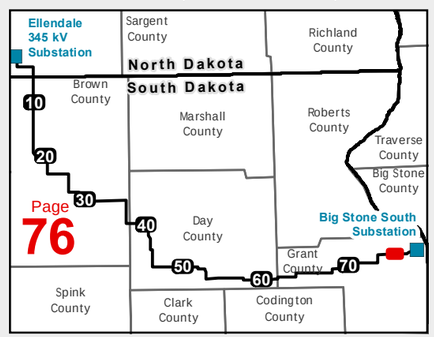

Big Stone South to Ellendale

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Date: 11/16/2015

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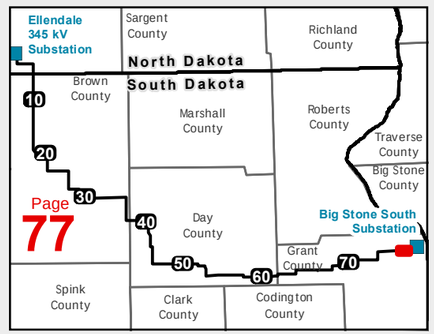

BSSE Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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Date: 11/16/2015

Exhibit A-ii.

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North Dakota and South Dakota

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Page 78 of 78

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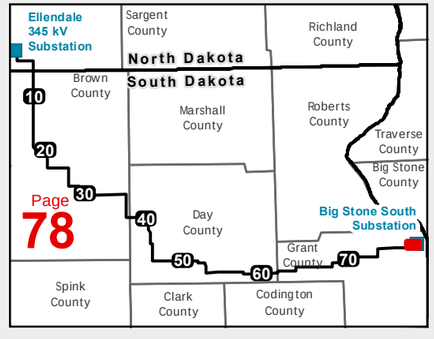

BSS-E Big Stone South to Ellendale

U.S. FISH & WILDLIFE SERVICE

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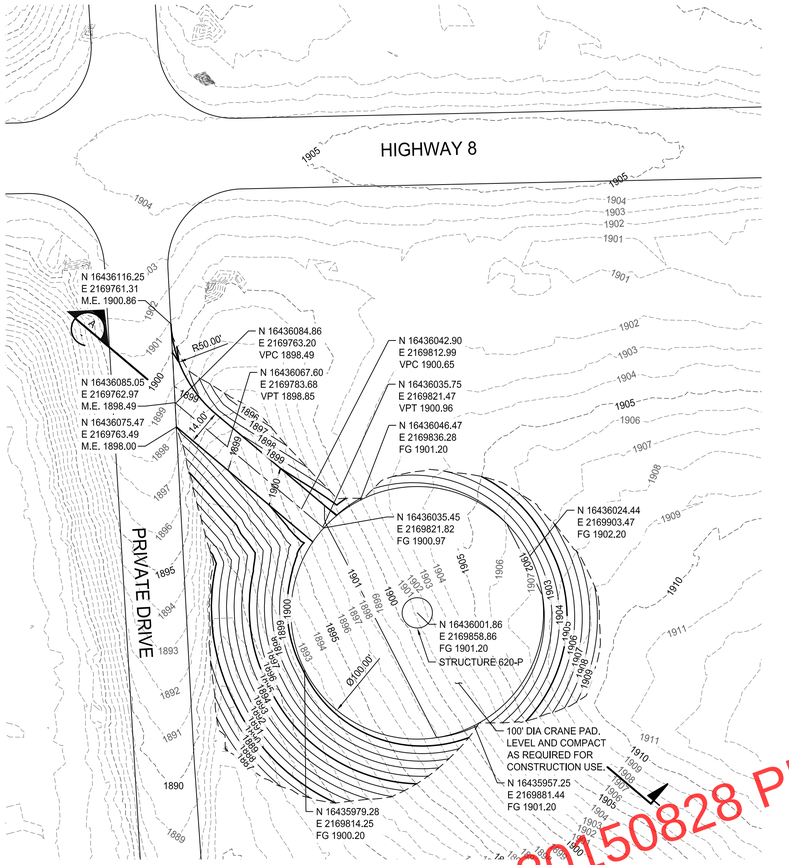
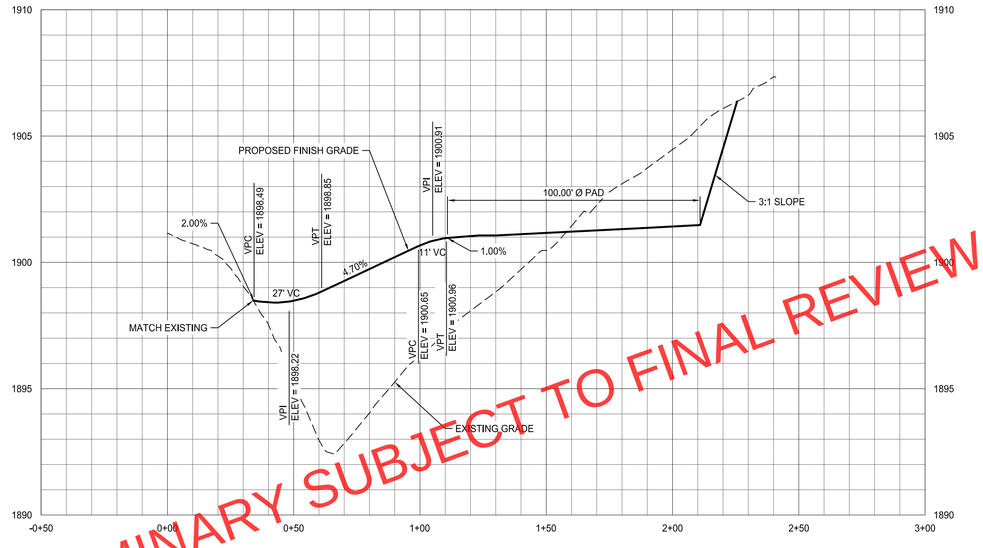
Appendix B





STRUCTURE 620-P PROFILE
SCALE (VERT) 1" = 3'-0" (HORZ) 1" = 30'-0"

ESTIMATED QUANTITIES:

EARTHWORK QUANTITIES SHOWN ARE ESTIMATES ONLY AND ARE IN BANK CUBIC YARDS WITH NO ALLOWANCE FOR SHRINK OR SWELL. THE CONTRACTORS SHALL CALCULATE THEIR OWN ITEMIZED EARTHWORK AND MATERIAL QUANTITIES FOR THIS PROJECT.

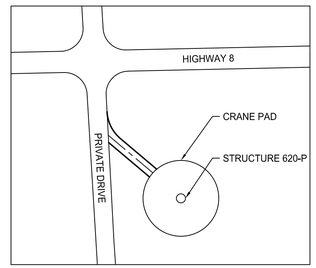
CUT MATERIAL	615	C.Y.
FILL MATERIAL	1,550	C.Y.
TOTAL NET MATERIAL	935	C.Y. (FILL)
TOTAL DISTURBED AREA	0.42	ACRES

NOTES

1. ALL ELEVATIONS SHOWN ARE FINISHED GRADE UNLESS OTHERWISE NOTED.
2. ALL CUT/FILL SLOPES ARE 3:1 UNLESS OTHERWISE NOTED.
3. EROSION CONTROL TO BE DONE BY OTHERS.
4. EDGE OF ROAD WAS ASSUMED BASED ON SURVEY INFORMATION. ACCESS ROAD IS TO TIE INTO EDGE OF EXISTING ROAD.

LEGEND / ABBREVIATIONS

	EXISTING EDGE OF ROAD
1910	EXISTING MAJOR CONTOURS (5FT)
1911	EXISTING MINOR CONTOURS (1FT)
	PROPOSED EDGE OF PAD
	PROPOSED EDGE OF ROAD
	PROPOSED CENTERLINE OF ROAD
1905	PROPOSED MAJOR CONTOURS (5FT)
1904	PROPOSED MINOR CONTOURS (1FT)
	PROPOSED GRADING LIMITS
N	NORTHING
E	EASTING
FG	FINISH GRADE
M.E.	MATCH EXISTING
Ø	DIAMETER
VPC	VERTICAL CURVE POINT OF CURVE
VPI	VERTICAL CURVE POINT OF INTERSECTION
VPT	VERTICAL CURVE POINT OF TANGENT



KEY PLAN
SCALE: NTS

0 15 30 60 90 FEET
1" = 30'

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
B	ISSUED FOR REVEW	08/27/15	JAS	WBG	JL		
A	ISSUED FOR REVIEW	8/21/15	JAS	WBG	JL		

DSGN	WBG	08/21/15
DRN	JAS	08/21/15
CKD	JL	08/21/15
SCALE:	1" = 30'	
FOR 22x34 DWG ONLY		

POWER ENGINEERS

BIG STONE SOUTH - ELLENDALE
345 KV TRANSMISSION LINE
AREA PLAN STR 620-P CUT & FILL

JOB NUMBER 136508
REV B
DRAWING NUMBER BSSE-AP-103-01

C1-1.dwg