



October 16, 2023

VIA HAND DELIVERY

Mr. Steven Kahl, Executive Director  
North Dakota Public Service Commission  
600 E. Boulevard Avenue, Dept. 408  
Bismarck, ND 58505-0480

Re: Basin Electric Power Cooperative, Pioneer to Judson 345-kV transmission facility siting application

Dear Mr. Kahl:

Enclosed please find an original and seven (7) copies of Basin Electric Power Cooperative's Consolidated Application for a Certificate of Corridor Compatibility and Route Permit for the Pioneer to Judson 345-kV transmission facility. A USB flash drive containing the application in electronic format and corresponding GIS shapefiles is also enclosed. A check for the application filing fee of \$100,000 as well as a check for \$25,000 for administrative fees have previously been submitted.

For inquiries regarding the application, please contact Ms. Erin Fox Dukart, Director, Environmental Services, at [edukart@becp.com](mailto:edukart@becp.com) or at (701) 557-5557 with copy to Ms. Anine Merkens, Senior Staff Counsel, at [amerkens@becp.com](mailto:amerkens@becp.com) or (701) 557-5080. If preferable, correspondence can be sent to their physical address of 1717 East Interstate Avenue, Bismarck, ND 58503.

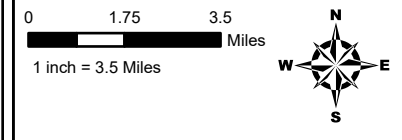
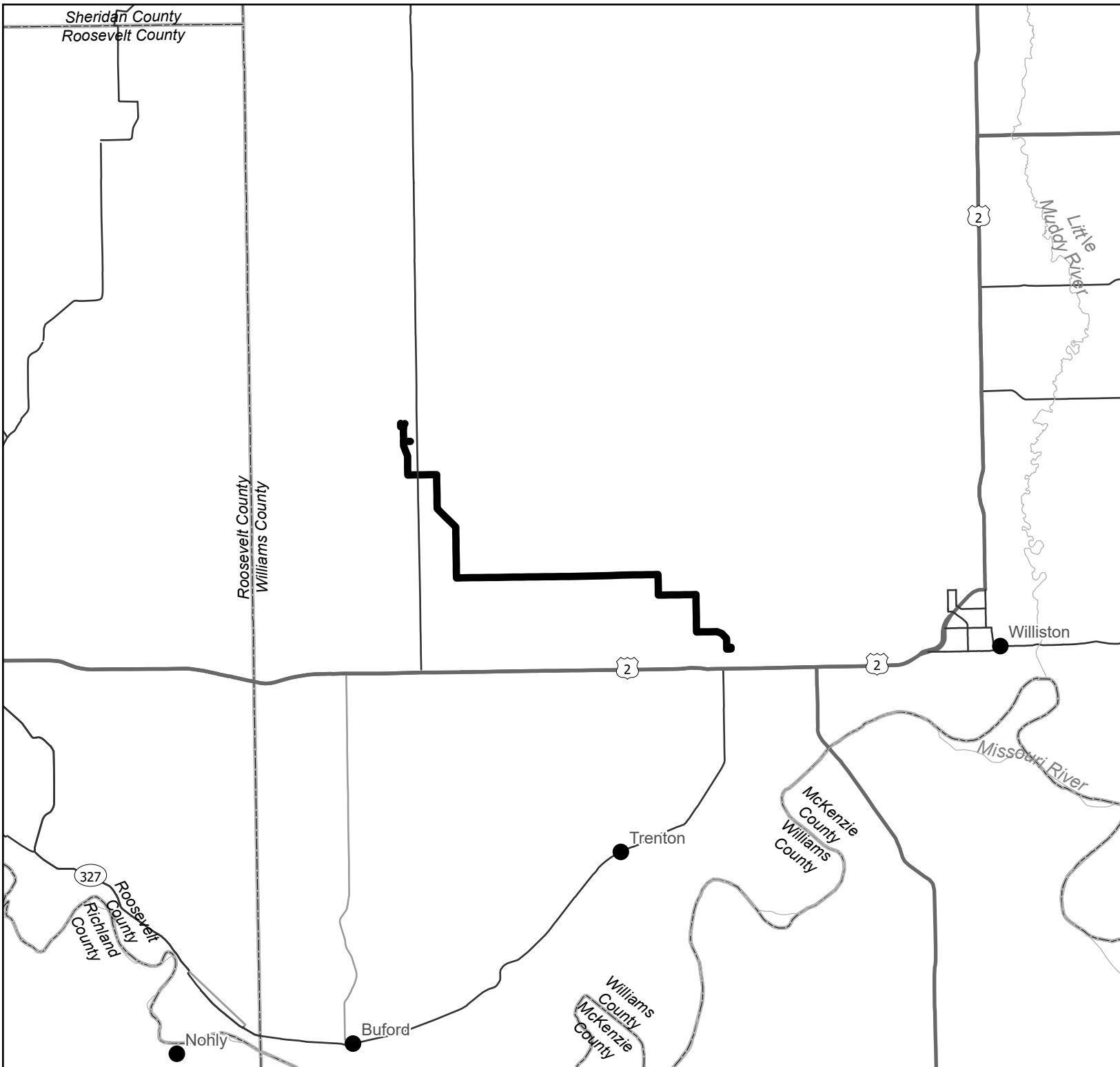
Sincerely,

A handwritten signature in blue ink, appearing to read "Todd Brickhouse", with a horizontal line extending to the right.

Todd Brickhouse  
Interim CEO & General Manager

Enclosures

cc: Erin Fox Dukart, Bobby Nasset, Anine Merkens, Jim Lund



**Preferred Route**

**Pioneer to Judson 345-kV  
Transmission Line Project  
Basin Electric Power Cooperative  
Project Location Map  
Williams County, North Dakota**



Date: (9/3/2023) Source: Z:\Clients\VA\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGI\PGS\_b\_Judson\_Webviewer

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

## **Pioneer to Judson 345-kV Transmission Line Basin Electric Power Cooperative Williams County, North Dakota**

Prepared for:

**Basin Electric Power Cooperative**  
1717 East Interstate Ave.  
Bismarck, North Dakota 58503



**BASIN ELECTRIC  
POWER COOPERATIVE**

A Touchstone Energy® Cooperative



Prepared by:

**Merjent, Inc.**  
1 Main Street SE, Suite 300  
Minneapolis, MN 55414

October 2023

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## 1.0 INTRODUCTION

Pursuant to North Dakota Century Code (NDCC) Section 49-22-08.2, Basin Electric Power Cooperative (Basin Electric) submits this consolidated application for a North Dakota Public Service Commission (Commission) Certificate of Corridor Compatibility (Certificate) and Transmission Facility Route Permit (Route Permit) to construct the Pioneer to Judson 345-kilovolt (kV) Transmission Project (Project) in Williams County, North Dakota.

The Project is an approximately 14.6-mile-long electric transmission line built within a 150-foot-wide easement connecting Basin Electric's Pioneer 345-kV Switchyard (Pioneer Switchyard), located within the Pioneer Generation Station (PGS), to the existing Judson 345-kV Substation (Judson Substation) (see **Figure 1-1** through **Figure 1-3**). A single-circuit connection will run from the Pioneer Switchyard to the Judson Substation. Within the PGS property, the Project includes approximately 0.5-mile of 345-kV double-circuit configuration transmission line connecting to natural gas reciprocating internal combustion engines (RICE). In addition, two combustion turbine generators (CTGs) within the PGS will be connected to the Pioneer Switchyard via 345-kV transmission lines. The Pioneer Switchyard, CTGs and the RICE were previously certified by the Commission as part of Basin Electric's PGS Phase IV expansion (see Case PU-22-380). No other facilities will be constructed as part of the Project (see **Figure 1-4**).

The Project is needed to connect the PGS Phase IV facilities to electrical grid resources. Basin Electric identified the need for PGS Phase IV and subsequently the Project through its power supply planning process. As a result of this process, it became apparent there was a need for additional capacity in the region to meet the growing demand and provide an adequate supply of electrical power, specifically the area in northwestern North Dakota within the Williston Basin. The Project is required to meet reliability standards and projected electrical demands.

Basin Electric is an electric power generation and transmission cooperative, headquartered in Bismarck, North Dakota. Basin Electric is a regional wholesale electric generation and transmission cooperative owned and controlled by the 141 member cooperatives it serves. It was created in May 1961 as a result of regional efforts by electric distribution cooperatives. Basin Electric serves approximately three million customers in 550,000 square miles covering portions of nine states: Colorado, Iowa, Minnesota, Montana, Nebraska, New Mexico, North Dakota, South Dakota, and Wyoming. Basin Electric currently operates within the Southwest Power Pool (SPP). SPP is the regional transmission organization that administers bulk electric transmission system reliability upgrades and generation interconnections. The Generator Interconnection Agreement with SPP is expected to be signed in the summer of 2025 allowing for the newly generated power to connect to the grid through the Project transmission lines. An Interim Generator Interconnection application was issued to SPP on September 11, 2023.

### 1.1 Compliance with the Energy Conversion and Transmission Facility Siting Act

The North Dakota Energy Conversion and Transmission Facility Siting Act requires an application for a Certificate to meet the criteria set forth in NDCC Section 49-22 and the North Dakota Administrative Code (NDAC) Article 69-06. The siting of a transmission facility is to be made in an orderly manner compatible with environmental preservation and the efficient use of resources (NDCC Section 49-22-02).

As outlined in this application, Basin Electric will comply with the exclusion and avoidance areas and selection and policy criteria set forth in NDAC Section 69-06-08-02 in the design of the Project. In addition, sufficient Project design and technical information have been provided for a

thorough evaluation. **Table 1.0-1** below outlines the requirements to fulfill a Certificate and Route Permit application and the application section that addresses the requirement.

TABLE 1.0-1		
Certificate of Corridor Compatibility and Route Permit Criteria Checklist		
Description	Section(s) Addressed	
<b>NDAC 69-06-05-01 - Transmission Facility Permit</b>		
<b>Subsection 2 - Contents</b>		
a.	A description of the following:	
a. (1)	The type of facility proposed	1.0, 2.1, 4.1.1, 4.1.2, 4.1.3
a. (2)	Purpose of the facility	1.0, 2.1
a. (3)	The technology to be used	1.0, 4.1.1, 4.1.2, 4.1.3
a. (4)	The type of product to be transmitted	1.0, 4.1.1, 4.1.2
a. (5)	The source of the product to be transmitted	1.0, 1.3, 2.1
a. (6)	The final destination of the transmission line	1.0, 1.3, 2.1, 4.1.2
a. (7)	The proposed size and design and any alternate size or design that was considered, including: (a) The width of right of way (ROW); (b) The approximate length of the facility; (c) The estimated span length for electric facilities; (d) The anticipated type of structure for electric facilities; (e) The voltage for electric facilities; and (f) The requirement for and location of any new associated facilities	1.0, 1.2, 1.3, 3.6, 4.1.1, 4.1.1
b.	The anticipated time schedule for accomplishing major events, including: (1) Obtaining the certification of corridor compatibility; (2) Obtaining the route permit; (3) Completing right-of-way acquisition; (4) Starting construction; (5) Completing construction; (6) Testing operations; and (7) Commencing operations.	1.5
c.	A copy of each evaluative study or assessment of the environmental impact of the proposed facility submitted to the agencies listed in section 69-06-01-05 and each response received.	6.0, Appendix C, Appendix F
d.	An analysis of the need for the proposed facility based on present and projected demand for the product transmitted, including the most recent system studies supporting the analysis of the need.	1.0, 2.1
e.	A description of any feasible alternative methods for serving the need	2.2
f.	The width of a corridor must be at least ten percent of its length, but not less than one mile [1.61 kilometers] or greater than six miles [9.66 kilometers] unless another appropriate width is determined by the commission.	1.2
g.	A study area that includes a proposed corridor of sufficient width to enable the commission to evaluate the factors addressed in North Dakota Century Code section 49-22-09.	1.2
h.	A discussion of the factors in North Dakota Century Code section 49-22-09 to aid the commission's evaluation of the proposed route.	3.5
i.	A discussion of the applicant's policies and commitments to limit the environmental impact of its facilities, including copies of board resolutions and management directives.	4.8, Appendix A
j.	Identification and map of the criteria that led to the proposed route location within the designated corridor, including exclusion areas, avoidance areas, selection criteria, policy criteria, design construction limitations, and economic considerations.	3.0, 3.1, 3.2, 3.3, 3.4, 3.6, 4.1.1, 4.1.2, 4.1.3, 5.1, Figure 3-1, Figure 5-4

Pioneer to Judson 345-kV Transmission Line  
 Certificate of Corridor Compatibility and Route Permit

TABLE 1.0-1		
Certificate of Corridor Compatibility and Route Permit Criteria Checklist		
Description	Section(s) Addressed	
k.	A discussion of the relative value of each criteria and how the applicant selected the proposed corridor location, giving consideration to all criteria and how the location, construction, and operation of the facility will affect each criteria.	1.3, 2.2, 3.1, 3.2, 3.3, 3.4, 5.1.2, 5.2.2, 5.3.2, 5.4.2, 5.5.2, 5.6.2, 5.7.2, 5.8.2
l.	A discussion of the general mitigative measures that the applicant will take to minimize adverse impacts that result from a route location in the proposed corridor and the construction and operation of the facility.	4.8, 4.9, 4.10, 4.11, 5.1.2, 5.2.2, 5.3.2, 5.4.2, 5.5.2, 5.6.2, 5.7.2, 5.8.2
m.	Qualifications of each person involved in the corridor location study.	8.0
n.	A map identifying the criteria that led to the proposed route location within the designated corridor and the location of any new associated facilities. Several different criteria may be shown on each map depending on the map scale and the density and nature of the criteria.	Figure 1-4, Figure 3-1, Figure 5-1, Figure 5-2, Figure 5-3, Figure 5-4
o.	An eight and one-half-inch by eleven-inch black and white map suitable for newspaper publication depicting the site area	Electronically submitted
p.	A discussion of present and future natural resource development in the area	3.1, 3.2, 3.3, 3.4, 3.5, 5.1, 5.5.2, 5.6.2, 5.7.2, 5.8.2, 6.0
q.	Map and geographic information systems (GIS) requirements. The applicant shall provide information that is complete, current, presented clearly and concisely, and supported by appropriate references to technical and other written material available to the commission.	Electronically submitted
<b>NDAC 69-06-08-02 - Transmission Facility Corridor and Route Criteria</b>		
The following criteria must guide and govern the preparation of the inventory of exclusion and avoidance areas, and the corridor and route suitability evaluation process:		
1.	Exclusion Areas	3.1, Figure 3-1
2.	Avoidance Areas	3.2, Figure 3-1
3.	Selection Criteria	3.3, Figure 1-4, Figure 5-4
4.	Policy Criteria	3.4
<b>NDCC 49-22-08 - Application for a certificate - Notice of filing - Amendment - Designation of a site or corridor.</b>		
<b>Section 1 - An application for a certificate must be in such form as the commission may prescribe, containing the following information:</b>		
a.	A description of the size and type of facility.	1.0, 4.1.1, 4.1.2
b.	A summary of any studies which have been made of the environmental impact of the facility.	5.4, 5.7, 5.8, Appendix C, Appendix E
c.	A statement explaining the need for the facility.	1.0, 2.1
d.	An identification of the location of the preferred site for any electric energy conversion facility	1.0, 2.1, 2.2
e.	An identification of the location of the preferred corridor for any electric transmission facility	1.0, 1.3, Figure 1-4, Figure 3-1
f.	A description of the merits and detriments of any location identified and a comprehensive analysis with supporting data showing the reasons why the preferred location is best suited for the facility	5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8
g.	A description of mitigative measures that will be taken to minimize all foreseen adverse impacts resulting from the location, construction, and operation of the proposed facility	4.8, 4.9, 4.10, 4.11, 5.1.2, 5.2.2, 5.3.2, 5.4.2, 5.5.2, 5.6.2, 5.7.2, 5.8.2
h.	An evaluation of the proposed site or corridor with regard to the applicable considerations set out in section 49-22-09 and the criteria established pursuant to section 49-22-05.1.	3.1, 3.5
i.	Such other information as the applicant may consider relevant or the commission may require.	4.2, 4.3, 4.4, 4.5, 4.6, 4.7
<b>NDCC 49-22-08.1 - Application for a permit - Notice of filing - Amendment - Designation of a route.</b>		
<b>Section 1 - An application for a route permit for a transmission facility within a designated corridor shall be filed no later than two years after the issuance of the certificate and shall be in such form as the commission may prescribe, containing the following information:</b>		
a.	A description of the type, size and design of the proposed facility.	1.0, 4.1.1, 4.1.2, 4.1.3
b.	A description of the location of the proposed facility.	1.0, 1.3

Pioneer to Judson 345-kV Transmission Line  
 Certificate of Corridor Compatibility and Route Permit

TABLE 1.0-1		
Certificate of Corridor Compatibility and Route Permit Criteria Checklist		
Description	Section(s) Addressed	
c.	An evaluation of the proposed route with regard to the applicable considerations set out in section 49-22-09 and the criteria established pursuant to section 49-22- 05.1.	3.1, 3.5
d.	A description of mitigative measures that will be taken to minimize all foreseen adverse impacts resulting from the location, construction, and operation of the proposed facility.	4.8, 4.9, 4.10, 4.11, 5.1.2, 5.2.2, 5.3.2, 5.4.2, 5.5.2, 5.6.2, 5.7.2, 5.8.2
e.	A description of the right-of-way preparation and construction and reclamation procedures.	4.2, 4.5
f.	A statement setting forth the manner in which: (1) The utility will inform affected landowners of easement acquisition, and necessary easement conditions and restrictions. (2) The utility will compensate landowners for easements, without reference to the actual consideration to be paid.	1.4, 4.4, Appendix G
g.	Such other information as the utility may consider relevant or the commission may require.	3.7
<b>NDCC 49-22-09 - Factors to be considered in evaluating applications and designation of sites, corridors, and routes.</b>		
<b>Section 1 - The commission shall be guided by, but is not limited to, the following considerations, where applicable, to aid the evaluation and designation of sites, corridors, and routes:</b>		
a.	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	5.0, Appendix C, Appendix E
b.	The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	4.8
c.	The potential for beneficial uses of waste energy from a proposed energy conversion facility.	N/A
d.	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	5.0
e.	Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.	To be determined
f.	Irreversible and ir retrievable commitments of natural resources should the proposed site, corridor, or route be designated.	3.5, 5.5.2, 5.6.2, 5.7.2, 5.8.2
g.	The direct and indirect economic impacts of the proposed facility.	5.1
h.	Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	3.5, 5.5, 6.0
i.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	3.1, 3.2, 5.0, Appendix C, Appendix E
j.	The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species.	3.1, 5.8.2, Appendix E
k.	Problems raised by federal agencies, other state agencies, and local entities.	6.0

## 1.2 Project Terms

Terms used in this application associated with the Project are defined in Table 1.2-1 below.

Pioneer to Judson 345-kV Transmission Line  
 Certificate of Corridor Compatibility and Route Permit

TABLE 1.2-1	
Project Terms	
Term	Definition/Description
Project Route	In accordance with NDCC Section 49-22-03(12), "Route" is defined as the location of an electric transmission facility within a designated corridor. The Project Route referred to herein is the approximately 14.6-mile-long transmission line centerline.
Project Corridor	In accordance with NDCC Section 49-22-03(4), "Corridor" is the area of land where a designated route may be established for a electric transmission facility. The Project Corridor is 150 feet wide, which is the easement size and Project width that will be used for construction and maintenance through the life of the Project. The Project Corridor encompasses the Project Route.
Study Area	The Study Area analyzed for the Project is one-mile wide (0.5 mile on either side of the Project Route) and encompasses approximately 9,418 acres. <sup>a</sup>
<sup>a</sup> NDAC 69-06-05-01(2)(f) states that the "width of the corridor must be at least ten percent of its length, but not less than one mile [1.61 kilometers] or greater than six miles [9.66 kilometers] unless another appropriate width is determined by the Commission." Basin Electric proposes a one-mile-wide Study Area, with a 150-foot-wide Project Corridor, the combination of which is sufficient for the Commission to evaluate the factors addressed in NDAC 49-22-09.	

### 1.3 Project Location

The Project is located in Williams County in northwestern North Dakota, a primarily rural, agricultural area approximately 3 miles west of the city of Williston at its southeastern end where the transmission line will connect to the Judson Substation. The Project runs in a northwest to southeast direction and is approximately 14.6 miles long, connecting to the Pioneer Switchyard within the PGS facility. The Project Route, Project Corridor, and Study Area are entirely within Williams County, North Dakota (see **Figure 1-1** through **Figure 1-3**). **Table 1.3-1** below shows the Township, Range, and Sections of the Project Route and Project Corridor. **Table 1.3-2** shows the Township, Range, and Sections of the Study Area.

TABLE 1.3-1				
Project Route and Project Corridor Public Legal Description				
County	Township Name	Township	Range	Sections <sup>a</sup>
Williams	Judson	154 N	102 W	7, 8, 9, 15, 16, 22, 23
	Round Prairie	154 N	103 W	4, 9, 10, 11, 12
	Hebron	155 N	103 W	20, 28, 29, 33
<sup>a</sup> Note that locations within the Project Route and Project Corridor do not encompass the entire Section.				

TABLE 1.3-2				
Study Area Legal Description				
County	Township Name	Township	Range	Sections <sup>a</sup>
Williams	Judson	154 N	102 W	3, 4, 5, 6, 7, 8, 9, 10, 14, 15, 16, 17, 18, 21, 22, 23, 26, 27
	Round Prairie	154 N	103 W	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16
	Hebron	155 N	103 W	17, 20, 21, 27, 28, 29, 32, 33, 34
<sup>a</sup> Note that locations within the Study Area do not encompass the entire Section.				

#### 1.4 Easement Acquisition

There are a total of 22 landowners within the Project Corridor. All the land located within the Project Corridor is privately owned (see **Figure 5-3**); the Judson Substation parcel is jointly owned by Basin Electric and Mountrail Williams Electric Cooperative. Basin Electric is in the process of securing easement agreements over the required parcels for the Project Corridor. As of September 2023, approximately 80 percent of landowner easements have been secured.

#### 1.5 Project Schedule

Basin Electric will commence construction in spring 2024 pending permit approvals. Construction is anticipated to be complete by the end of 2024, with restoration extending into 2025 as needed. Most activities will take place during the North Dakota construction season, usually beginning in March or April and ending in November or December. Depending on Project needs, winter construction may also be used. Private third-party contractors will construct the transmission line and haul away construction wastes associated with the Project. Basin Electric will ensure that any contractors hired will be familiar with and comply with mitigation measures and any agency or permit requirements.

Key schedule milestones include:

1. **Certificate and Route Permit:** Requested by 1<sup>st</sup> Quarter 2024.
2. **Right-of-Way (ROW) Acquisition:** Anticipated by 1<sup>st</sup> Quarter 2024.
3. **Equipment Procurement, Manufacture and Delivery:** Ordering of long-lead equipment is in progress.
4. **Construction:** Approximately 6 months of construction beginning in 2<sup>nd</sup> Quarter 2024 to 4<sup>th</sup> Quarter 2024, with restoration extending into 2025 as necessary.
5. **Test and Operations:** Anticipated in 3<sup>rd</sup> Quarter 2024.
6. **Commercial Operation:** Anticipated in 4<sup>th</sup> Quarter 2024.
7. **Expansions or Additions:** Basin Electric has no plans for expansions or additions to the Project.

#### 1.6 Project Ownership

Basin Electric will own the entire transmission line and will manage the construction of all equipment and associated facilities. Basin Electric will select a private third-party contractor to perform construction. The Judson Substation and Pioneer Generation Station are owned and operated by Basin Electric (see **Figure 1-4**).

#### 1.7 Future Associated Facilities

There are no proposed or future Basin Electric associated facilities, or upgrades or improvements associated with the Project.

## **2.0 NEED FOR FACILITY**

### **2.1 Need Analysis**

The Project is needed to connect the PGS Phase IV facilities to electrical grid connections servicing the territory. The need for an additional 345-kV transmission line is due to this load growth in the area. Basin Electric identified the need for PGS Phase IV and subsequently the Project through its power supply planning process. As a result of this process, it became apparent there was a need for additional capacity in the region to meet the growing demand and provide an adequate supply of electrical power, specifically the area in northwestern North Dakota within the Williston Basin, with the Project transmitting power from the generation station to facilities servicing the territory.

Basin Electric currently operates within the SPP which is the regional transmission organization that administers bulk electric transmission system reliability upgrades and generation interconnections. Basin Electric submitted an Interim Generator Interconnection Application for PGS Phase IV generation facilities with SPP in September 2023 and is expecting approval in 2024. The official Generation Interconnection Agreement is expected to be signed in 2025.

### **2.2 Alternatives**

Construction of the proposed Project will provide electrical grid connection between the PGS Phase IV generation facilities to electrical grid connections servicing the load growth in Basin Electric's territory. Basin Electric identified and evaluated several Project alternatives; however, none of these alternatives effectively satisfied the Project objective. These alternatives included:

- No Action Alternative;
- Route Alternatives;
- System Alternatives.

#### **2.2.1 No Action Alternative**

The primary objective of the Project is to provide electrical transmission connections between Basin Electric's facilities, transmitting power from the generation station to facilities servicing the territory. Under the No Action alternative, the Project would not be constructed, and the electrical transmission could not effectively service the region. As described under the Need Analysis section, there is a need for additional capacity in the region to meet the growing demand and provide an adequate supply of electrical power for Basin Electric's membership.

A No Action Alternative will leave the region constrained by limited transmission capacity. The No Action Alternative does not meet the commercial needs of Basin Electric and does not serve the load growth in the area and public at-large. For these reasons, Basin Electric rejected the No Action Alternative.

#### **2.2.2 Route or System Alternatives**

Expanding generation at the PGS was identified as an optimal site after considering the existing Lonesome Creek Generation Station and other greenfield options. Basin Electric identified the point of interconnection at the Judson Substation based on Basin Electric's interconnection studies. The existing 115-kV transmission lines from the Pioneer Generation Station do not have capacity to take on the load generated by PGS Phase IV. The Project Route is the most viable alternative based on landowner preferences, paralleling existing public roads and section lines, and it is the most direct route that also minimizes impacts on the exclusion, avoidance, selection, and policy criteria identified in NDAC Section 69-06-08-02.

### **2.2.3 Ten-Year Plan**

Basin Electric filed a Ten-Year Plan with the Commission in July 2022. This Project is consistent with the Ten-Year Plan on file with the Commission.

### 3.0 SITE SELECTION CRITERIA

The Project Corridor is based on landowner participation, field surveys, known environmentally sensitive areas, review of Williams County and state transmission line requirements, and communications with local, state, and federal agencies. North Dakota has several site selection criteria that are considered by the Commission to determine suitability of the transmission line. Basin Electric has reviewed the criteria in NDAC Chapter 69-06-08-02 and has considered these criteria in Project design. These criteria are discussed in this section.

#### 3.1 Exclusion Areas

In accordance with NDAC Section 69-06-08-02(1), which implements NDCC Section 49-22-05.1, the geographical areas listed in **Table 3.1-1** below must be excluded in the consideration of a transmission facility route. Exclusion and avoidance areas may be located within a corridor, but at no given point can such an area or areas encompass more than 50 percent of the corridor width unless there is no reasonable alternative. NDAC Section 69-06-08-02 further specifies that a buffer zone of a reasonable width to protect the integrity of the area must be included. Natural screening may be considered in determining the width of the buffer zone. **Figure 3-1** depicts the results of review for exclusion areas.

TABLE 3.1-1			
Exclusion Areas			
Exclusion Area	Present in Corridor/Route	Proposed Buffer	Section Addressed
Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; monuments; and wilderness areas.	Not present within Corridor/Route. The closest area is the Fort Union National Historic Site approximately 14 miles southwest of the Project.	No impacts are anticipated and no buffer is proposed.	NA
Designated or registered state: parks; historic sites; monuments; historical markers; archaeological sites; and nature preserves.	Not present within Corridor/Route.	No impacts are anticipated and no buffer is proposed.	5.4, 5.5
County parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions.	Not present within Corridor/Route. The closest County park or recreational area is the Lookout Park located in Williston, North Dakota which is located approximately 3 miles southeast of Judson Substation.	No impacts are anticipated and no buffer is proposed.	5.5
Areas critical to the life stages of threatened or endangered animal or plant species.	Not present within Corridor/Route. The closest area is piping plover designated critical habitat which is located approximately 3.5 miles southeast of the Project along the Missouri River.	No impacts are anticipated and no buffer is proposed.	5.8
Areas where animal or plant species that are unique or rare to this state will be irreversibly damaged.	Not present within Corridor/Route.	No impacts are anticipated and no buffer is proposed.	5.8
Areas within 1,200 feet of the geographic center of an intercontinental ballistic missile (ICBM) launch or launch control facility.	Not present within Corridor/Route. The closest ICBM launch or launch control facility is approximately 55 miles from the Project.	No impacts are anticipated and no buffer is proposed.	3.6, 6.0
Areas within 30 feet on either side of a direct line between ICBM launch or launch control facilities to avoid microwave interference.	Not present within Corridor/Route. The closest ICBM launch or launch control facility is approximately 55 miles from the Project.	No impacts are anticipated and no buffer is proposed.	3.6, 6.0

### 3.2 Avoidance Areas

In accordance with NDAC Section 69-06-08-02(2), approval of a transmission facility cannot be in the geographical areas listed in **Table 3.2-1** below unless the applicant shows that, under the circumstances, there is no reasonable alternative. NDAC Section 69-06-08-02(2) further requires a buffer zone of a reasonable width to protect the integrity of the area. Natural screening may be considered in determining the width of the buffer zone. **Figure 3-1** depicts the avoidance areas.

TABLE 3.2-1			
Avoidance Areas			
Avoidance Areas	Present in Corridor/Route	Proposed Buffer	Section Addressed
Designated or registered national: historic districts; wildlife areas; wild, scenic, or recreational rivers; wildlife refuges; and grasslands.	Not present within Corridor/Route. The closest area is a Waterfowl Production Area, which is located approximately 8 miles north of the Project.	No impacts are anticipated and no buffer is proposed.	5.8
Designated or registered state: wild, scenic, or recreational rivers; game refuges; game management areas; management areas; forests; forest management lands; and grasslands.	Not present within Corridor/Route. The closest area is a Wildlife Management Area, which is located approximately 4 miles southeast of the Project along the Missouri River.	No impacts are anticipated and no buffer is proposed.	5.5
Historical resources which are not specifically designated as exclusion or avoidance areas.	As identified through a Class I Literature Review and the Class III Cultural Resources Inventory conducted to-date, archaeological sites are outside the Project Corridor, or are found to be not significant. See Section 5.4.	No impacts are anticipated and no buffer is proposed.	5.4
Areas which are geologically unstable.	Not present within Corridor/Route. Landslide deposits as indicted by the North Dakota Geological Survey landslide mapping program are present within the Study Area near Painted Woods Creek; no mapped landslide deposits are located within the Corridor/Route. Geotechnical analyses have been performed and areas which are geologically unstable will be avoided and spanned as necessary.	No impacts are anticipated and no buffer is proposed.	5.6, Figure 1-4, Figure 3-1
Within 500 feet of a residence, school, or place of business.	One homestead is located within 500 feet of the Project Corridor, but is greater than 500 feet from the Route. Basin Electric has obtained a landowner waiver for this property, see Appendix H.	No impacts are anticipated and no buffer is proposed.	3.6, Figure 3-1, Appendix H
Reservoirs and municipal water supplies.	Not present within Corridor/Route. The closest municipal water supply reservoir is the Williams West 200K Tower reservoir, located 0.33 mile east of the Project Study Area.	No impacts are anticipated and no buffer is proposed.	5.2, Figure 3-1
Water sources for organized rural water districts.	Not present within Corridor/Route. The closest active rural water supply source is the Round Prairie School public water system and its associated Source Water Protection Area, located 2.3 miles southwest of Project Study Area.	No impacts are anticipated and no buffer is proposed.	5.2
Irrigated land.	Not present within Corridor/Route.	No impacts are anticipated and no buffer is proposed.	NA
Areas of recreational significance which are not designated as exclusion areas.	Not present within Corridor/Route. The nearest area of recreational significance is Trenton Lake, which is located approximately 6 miles south of the Project.	No impacts are anticipated and no buffer is proposed.	5.5

### 3.3 Selection Criteria

In accordance with NDAC Section 69-06-08-02(3), a site can be approved in an area only when the applicant demonstrates to the Commission that any significant adverse effects resulting from the location, construction, and operation of the facility in that area, as they relate to the criteria listed in **Table 3.3-1** below, will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum.

TABLE 3.3-1		
Selection Criteria		
Selection Criteria	Potential Effects	Section Addressed
The impact upon agriculture:		
Agricultural production.	Negligible/minimal effect anticipated. Where practical, construction activities will be scheduled during periods when agricultural activities will be minimally affected, or the landowner will be compensated accordingly. Landowners would be compensated for crop and forage loss that occurs as a result of construction and maintenance activities, and damage to soils would be redressed.	5.1, 5.5
Family farms and ranches.	Negligible/minimal effect anticipated. Transmission lines are a compatible use with existing family farms and ranches, and the Project will not displace any farms or ranches.	5.1, 5.5
Land which the owner demonstrates has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation.	There is no known irrigation within the Study Area, thus, no effects are anticipated. Participating landowners have not expressed concerns related to economically suitable irrigation on their land.	NA
Surface drainage patterns and ground water flow patterns.	No impacts to surface drainage patterns or groundwater flow patterns are anticipated. The Project will be designed in such a manner that runoff from the upper portions of the watershed can flow unrestricted to the lower portion of the watershed.	5.7
The impact upon:		
Sound-sensitive land uses.	Negligible/minimal effect anticipated. Following construction, there will be a minimal amount of sound from the Project as a result of corona effects, which occur when air molecules near conducting wire are ionized due to changes in the electric field intensity at the conductor surface. The sound is most noticeable when conductors are wet as a result of precipitation.	5.3
The visual effect on the adjacent area.	Negligible/minimal effect anticipated. The Project will be visible to landowners and travelers along roadways. Existing transmission lines, oil and gas well pads, and roads are present in the viewshed.	Figure 1-4
Extractive and storage resources.	The Project would not directly affect any wells or drill rigs, because the Corridor/Route has been designed to avoid these areas and provide sufficient clearance for well maintenance and operation.	Figure 1-4
Wetlands, woodlands, and wooded areas.	Negligible/minimal effect anticipated. The Project will avoid permanent impacts to all wetlands. Temporary impacts to wetlands and waterbodies impacted during construction (e.g., access routes or workspaces) will be permitted under Nationwide Permit 57. Trees/shrubs will be replaced consistent with the Commission's Tree and Shrub Mitigation Specifications.	5.5, 5.7
Radio and television reception, and other communication or electronic control facilities.	No effect anticipated.	5.2
Human health and safety.	No effect anticipated based on compliance with sound standards and design and construction standards to meet or exceed the National Electrical Safety Code. Regular maintenance and inspections will be performed during the life of the Project to confirm its continued integrity.	5.3

Pioneer to Judson 345-kV Transmission Line  
 Certificate of Corridor Compatibility and Route Permit

TABLE 3.3-1		
Selection Criteria		
Selection Criteria	Potential Effects	Section Addressed
Animal health and safety.	No effect anticipated. Construction work will be coordinated with landowners to avoid impacts to livestock. Basin Electric is committed to mitigating potential impacts to wildlife as outlined in Section 5.8.	5.8
Plant life.	Negligible/minimal effect anticipated. The transmission line structures will result in less than one acre of permanent ground disturbance, including loss of the existing plant life. Trees and shrubs will be replaced consistent with the Commission's Tree and Shrub Mitigation Specifications. Temporarily disturbed areas will be restored as practicable.	5.5

### 3.4 Policy Criteria

In accordance with NDAC Section 69-06-08-02(4), the Commission may give preference to an applicant who will maximize benefits that result from the adoption of the policies and practices listed in **Table 3.4-1** below, and may require the adoption of such policies and practices as appropriate.

TABLE 3.4-1		
Policy Criteria		
Policy Criteria	Potential Benefits	Section Addressed
Location and design.	The location is based on landowner participation, field surveys, known environmentally sensitive areas, and state transmission line requirements. Project design will meet the requirements of the National Electrical Safety Code for the Heavy Loading District, Basin Electric, U.S. Department of Agriculture (USDA) Rural Utilities Service (RUS) design criteria, and other applicable local or national building codes.	1.4, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.0, 5.0, 6.0
Training and use of available labor in this state for the general and specialized skills required.	Basin Electric has used several local firms in developing the Project and compiling this application and will continue to use local labor to the extent practicable.	5.1
Economies of construction and operation.	Basin Electric will use local contractors to the extent practicable.	5.1
Use of citizen coordinating committees.	Not applicable.	NA
A commitment of a portion of the transmitted product for use in this state.	The Project will meet the need for additional electric transmission capacity in northwestern North Dakota as a result of increased load growth and will meet reliability and system stability requirements for the region.	1.0, 2.1
Labor relations.	No labor relations would be negatively affected by the Project.	NA
The coordination of facilities.	Existing facilities were considered in the location of the Project. Basin Electric will avoid impacts to existing infrastructure, other than the Judson Substation and PGS.	Figure 1-4
Monitoring of impacts.	Basin Electric and the contractor will employ Best Management Practices during construction to monitor soil impacts and segregate topsoil. A stormwater pollution prevention plan will be prepared for the Project.	4.2.2, 4.9, 4.10, 5.6
Use of existing and proposed rights of way and corridors	Basin Electric has routed the Project parallel to existing roadways and section lines to the extent practicable and in consideration of preferences from landowners crossed by the Project.	Figure 1-4
Other existing or proposed transmission facilities.	Basin Electric has paralleled the Project with existing utility corridors as practicable.	Figure 1-4

### 3.5 Factors to be Considered

The North Dakota Energy Conversion and Transmission Facility Siting Act NDCC Section 49-22-09 lists the factors to be considered in evaluating applications and designation of sites (see **Table 3.5-1** below).

Factors to be Considered	Evaluation	Section(s) Addressed
Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	Effects of the location, construction, and operation of the Project on public health and welfare, natural resources, and the environment are described in Section 5.	5.0, Appendix C, Appendix E, Appendix F
The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	The Project has been designed to minimize adverse environmental effects including utilizing bird flight diverters to avoid and reduce bird mortality.	5.8.2
The potential for beneficial uses of waste energy from a proposed energy conversion facility.	Not applicable.	NA
Adverse direct and indirect environmental effects which cannot be avoided should the proposed site be designated.	Adverse direct and indirect environmental effects which cannot be avoided are described for each resource area in Section 5.	5.0
Alternatives to the proposed site which are developed during the hearing process and which minimize adverse effects.	Other alternatives were considered for the Project Route within the area between the Judson Substation and Pioneer Switchyard. Basin Electric believes that the Project Route is the most viable and most direct route alternative that also minimizes impacts on the exclusion, avoidance, selection, and policy criteria identified in NDAC Section 69-06-08-02.	2.2, 3.1, 3.2
Irreversible and irretrievable commitments of natural resources should the proposed site be designated.	There are few commitments of resources associated with this Project that are irreversible and irretrievable, but these include resources primarily related to construction.	NA
The direct and indirect economic impacts of the proposed facility.	Direct and indirect economic impacts of the Project include payments for participating landowners, employment, transmission line tax payment to the state of North Dakota based on mileage and voltage, and sales/use tax on materials.	5.1
Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	No conflicts are anticipated with existing state, local government, or private entities' development plans.	6.0, Appendix F
The effect of the proposed site on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	There are no designated scenic areas that will be affected by the Project. As identified through a Class I Literature Review and the Class III Cultural Resources Inventory conducted to-date, archaeological sites are outside the Project Corridor, or are found to be not significant. See Section 5.4.	3.1, 3.2, 5.4, Appendix C
The effect of the proposed site on areas which are unique because of biological wealth or because they are habitats for rare and endangered species.	The effect of the Project on areas which are unique because of biological wealth or because they are habitats for rare and endangered species are described in Section 5.	3.1, 3.2, 5.8
Problems raised by federal agencies, other state agencies, and local entities.	Basin Electric and its representatives contacted key local, state, and federal agencies per Section 69-06-01-05 of the NDAC for assistance in identifying concerns or issues within the Study Area.	6.0, Appendix F

### 3.6 Setbacks

The setbacks used in designing the Project comply with or exceed those required by the Commission. No additional setback criteria applicable to the Project were identified through consultation with Williams County. Setbacks were measured from the outermost portion of the transmission line facility to the nearest point of the applicable feature. The Project complies with

or exceeds the following transmission line corridor and route criteria exclusion and avoidance areas provided in NDAC Section 69-06-08-02(1)-(2). **Table 3.6-1** below lists the setbacks used in designing the Project.

TABLE 3.6-1 Setback Distances as Designated by the Commission	
Setback Type	Setback Distance
The geographic center of an ICBM launch or launch control facility.	1,200 feet <sup>a</sup>
Areas on either side of a direct line between ICBM launch or launch control facilities to avoid microwave interference.	30 feet <sup>a</sup>
Residence, school, or place of business.	500 feet <sup>b</sup>
<sup>a</sup> The nearest ICBM launch or launch control facility is approximately 55 miles.	
<sup>b</sup> Per NDCC 49-22-05.1(2), a residence setback may be waived in writing by the owner of the residence.	

### 3.7 County Criteria

The Project meets the Public Utilities, Minor category of Permitted Uses as defined in the Williams County Zoning Ordinance and Subdivision Regulations (Williams County 2022) and does not require a Conditional Use Permit from the county (see **Appendix F**).

## 4.0 DESIGN AND CONSTRUCTION

### 4.1 Project Design

#### 4.1.1 Transmission Line Design Parameters

The Project will consist of an approximately 14.6 mile-long, 345-kV single-circuit transmission line with approximately 81 single-pole transmission line structures. The exact quantity and distribution of structure types may change during detailed design and construction.

The Project will use galvanized steel monopoles with three steel davit arms for the conductor phases, one steel davit arm for overhead ground wire, and one steel davit arm for optical ground wire (OPGW). Double-circuit poles will use six steel davit arms for the conductor phases. The OPGW will provide lightning suppression and fiber optic communications between the Pioneer Switchyard and Judson Substation for systems control. The single-pole structures will range in height from approximately 105 feet to 165 feet with an average of 120 feet, depending on the required span distances between structures and area topography. The span between structures will typically range from 200 to 1,250 feet and average approximately 900 feet, depending on topography; taller structures could be used for crossing existing distribution and transmission lines or where unusual terrain exists. All structures, including tangent structures, angle structures (used where the transmission line changes direction) and dead-end structures (used to provide longitudinal stability along the length of the line), will be constructed on drilled concrete pier foundations. Guy wires will not be used. **Appendix B** provides diagrams of the single-pole structure configurations.

Project construction and design will meet the requirements of the National Electrical Safety Code (NESC) for the Heavy Loading District, Basin Electric, U.S. Department of Agriculture (USDA) Rural Utilities Service (RUS) design criteria, and other applicable local or national building codes. The Heavy Loading District refers to those areas (including North Dakota) that are subject to

severe ice and wind loading. Minimum conductor clearance is measured at the point of greatest conductor sag and closest proximity to the ground. The transmission line will be constructed with clearances that exceed standards set by NESC. Minimum conductor height under maximum sag conditions will exceed 30 feet for all ground surfaces. **Table 4.1-1** below includes a description of various Project design component characteristics.

TABLE 4.1-1 Transmission Line Design Components	
Description of Design Component	Values
Voltage (kV)	345-kV
Length of transmission line	14.6 miles
Approximate total number of single-pole structures	81
Conductor size	1.72 inches
Typical minimum and maximum span distances between structures	200-1,250 feet
Average span	Approximately 900 feet
Minimum and maximum structure height	105 – 165 feet
Average height of structures	120 feet
Average number of structures	5.5 per mile
Minimum conductor-to-ground clearance to agricultural land at 100 degrees Celsius (°C)	30 feet
Minimum conductor-to-ground clearance to rural roads at 100°C	30 feet
Minimum conductor-to-ground clearance to railroad at 100°C	30 feet
Minimum conductor-to-ground clearance to paved highways at 100°C	30 feet
Circuit configuration	Vertical for double-circuit; delta for single-circuit

#### 4.1.2 Substation Design Parameters

The existing Judson Substation includes an existing terminal for the new transmission line. Required Project activities at the Judson Substation include upgrading the existing line relays to match the new installation at the Pioneer Switchyard. The existing Judson Substation and transmission line take-off structure locations are shown on **Figure 1-4**.

The Pioneer Switchyard is located within the PGS owned by Basin Electric. The new four-terminal switchyard is under construction as part of the PGS Phase IV project and will provide a 345-kV connection for two combustion turbine generators (CTGs), and a reciprocating engine generation facility. The Pioneer Switchyard and transmission line take-off structure locations are shown on **Figure 1-4**.

#### 4.1.3 Supervisory Control and Data Acquisition System

A Supervisory Control and Data Acquisition (SCADA) system will interconnect the Pioneer Switchyard and Judson substations. Hard-wire system communications will use fiber optics within the OPGW between the two substations and existing microwave communications equipment will be used for SCADA redundancy and to facilitate voice and data communications by field personnel.

## **4.2 Construction Activities**

### **4.2.1 Pre-construction Surveying**

Basin Electric and/or its contractors will perform initial transmission line survey work, consisting of survey control, route centerline location, profile surveys, and access surveys prior to construction. These surveys will likely be conducted concurrently with other pre-construction tasks.

### **4.2.2 Site Preparation**

The Project Corridor is relatively flat and the need for structure site leveling is expected to be minimal. It is anticipated that at some structure locations, blading of small areas (up to 40 feet by 40 feet for crane and manlift landings) may be required to level the ground surface to allow the safe operation of the equipment. Blading will be confined to the Project Corridor and will be accomplished using bulldozers or front-end loaders. Soil removed during leveling will be stockpiled and replaced following construction; special emphasis will be placed on salvaging topsoil to be used for reclamation. The ground will be re-graded to the approximate original contour and revegetated (rangeland) or tilled (cropland) when the work is completed. Temporary disturbance to soils will be mitigated by returning the sites to grazing and farming unless other arrangements are made with the landowner in order to facilitate the long-term maintenance of the transmission line.

### **4.2.3 Foundation Installation**

Crews will use a truck-mounted auger or tracked vehicle equipped with a power auger to drill holes for foundations along the Project Corridor. Total disturbance at each structure location will vary depending on terrain and equipment; however, all disturbance will be confined to the Project Corridor.

All structures will require reinforced concrete drilled pier foundations. The pier diameters will range from 7 to 13 feet, and extend to depths from 20 to 40 feet, depending on structure loading and soil properties. Surplus material will be either spread in the vicinity of the structure or disposed of in accordance with landowner wishes. Large volumes of excess soil will be disposed of at local landfills. Landfills typically need additional fill as cover for waste material. Disposal of waste material, including concrete spoils, will be in compliance with applicable regulations and will not include placement in wetlands or aquatic sites. Site-specific foundation diameters and depth are determined based on geotechnical and engineering evaluations.

### **4.2.4 Structure Assembly and Erection**

Structure components (i.e., structure segments, davit arms, hardware, insulators, and related materials) will be trucked to structure work site locations and assembled. Davit arms, insulators, and other appurtenances will be attached to the poles while on the ground at each structure location within the Project Corridor. Erection crews will place the structure on drilled concrete pier foundations using cranes or large boom trucks.

### **4.2.5 Conductor Stringing and Tensioning**

Following structure construction, crews will install the conductors and OPGW using conductor stringing sheave blocks and line pulling and tensioning equipment. The conductor and OPGW

will be kept under tension during the stringing process to keep the conductor clear of the ground and obstacles that could damage the conductor and/or OPGW surfaces.

Pulling and tensioning sites are typically located at 10,000-foot intervals and at angle point structures. Pulling and tensioning sites along tangent structures are maintained within the Project Corridor, whereas those at angle points typically are partially outside of the Project Corridor. Stringing equipment generally consists of wire pullers, tensioners, conductor reels, OPGW wire reels, steel wire reels, and sheave blocks. About 10,000 feet of conductor, steel shield wire, and OPGW will be installed for each pull. After the conductor/ground wire is pulled for a section of line, it is tightened or sagged to the required design tension in compliance with the NESC. The process will be repeated until all conductor and OPGW are pulled through all sheaves. Conductor stringing will also require access to each structure for securing the conductor to the insulators or OPGW to each structure, once final line sag is established. A typical temporary pulling and tensioning work site and temporary splicing site are shown schematically in **Appendix B**.

For public safety and property protection, temporary wooden guard structures will be used to provide support when stringing conductor and OPGW across existing power lines, roads, highways, railroads, and other linear obstacles. The structures will be removed when stringing is complete; the pole borings will be backfilled, and the temporary support structure sites will be reclaimed. All temporary wooden guard structures will be installed within the Project Corridor.

### **4.3 Project Access**

#### **4.3.1 Transmission Structure Site Access and Traffic**

Construction access to transmission structures will involve the use of existing roads where available and temporary overland access trails, where necessary. The use of temporary overland access trails between structure sites will not require new construction but will result in temporary disturbance. Occasional access from section line trails could result in temporary disturbance along the Project Corridor; however, such disturbance will be limited to a 16-foot-wide track (approximately) and only long enough to provide vehicle access directly to structure locations. Some additional access disturbance could occur if truck or vehicle turnarounds are needed; however, the use of structure work sites will be encouraged.

Existing access roads (typically paved or maintained with a gravel or aggregate base) will be used in their original condition. Basin Electric will be responsible for reimbursing the appropriate public entity for the repair of any damage caused by construction equipment movement and will return existing roads to original or better condition following construction. Basin Electric will not be responsible for maintaining roads following construction. Basin Electric will not be responsible for maintaining fences and gates following construction and restoration; however, if necessary, access gates will be installed during construction will be left in place following construction in coordination with landowners.

Line segments that are parallel to section lines that do not have established roadways will use the 66-foot-wide public ROW to the extent practicable. Basin Electric will restore disturbed areas to pre-construction conditions, to the extent practicable, and will not be responsible for the long-term maintenance of such section line trails. As necessary, any fences, gates, or similar features that will be removed during construction will be replaced or rebuilt. Gates and fences that are installed during construction will be left in place for future use.

### 4.3.2 Temporary Overland Access and Land Requirements

Temporary impacts are those impacts that result during construction to accommodate equipment and temporary construction activities outside of the areas that will remain as the permanent Project footprint during operation. Temporary overland access will be used in areas without existing roads. Access through cultivated fields will be, to the extent practicable, during the non-growing season. Landowners will be compensated for loss of crops caused by construction activities. Gates may be installed to facilitate access to some structures and the Project Corridor. The gates will be left in place, following construction activities. Permanent access roads to the Project Corridor or structures will not be maintained post-construction.

Temporary access routes will result in a 16-foot-wide temporary disturbance and compaction of vegetation and soils. Natural vegetation along these temporary access routes will recover quickly, primarily because grading will not be required. Temporary overland access routes will be subject to the same cultural resource and vegetation surveys as the Project Corridor. Landowners will be compensated for access routes where public access does not exist.

An approximately 100-foot x 150-foot (15,000 square feet [ft<sup>2</sup>]) temporary work site will be located at each structure location and within the Project Corridor. The area will be graded, if required, to ensure safe movement and operation of heavy equipment. The Project will require approximately 27.5 acres of temporary impacts for structure installation, as shown in **Table 4.4-1**.

Pulling and tensioning sites and splicing sites will result in temporary disturbance to lands within and extending outside of the Project Corridor, as shown on **Figure 1-4** and the conceptual construction diagram in **Appendix B**. Pulling and tensioning sites will temporarily disturb a total of 90,000 ft<sup>2</sup> (2.07 acres) per site at angle and/or dead-end structure location. Approximately 10 to 15 pulling and tensioning sites will be needed at angle structure locations, totaling approximately 21 to 31 acres. Pulling and tensioning sites at the angle structures will extend beyond the Project Corridor. Pulling and tensioning along straight-line expanses of tangent structures will occur in splicing site workspaces.

Splicing sites, measuring approximately 15,000 ft<sup>2</sup> (0.34 acre), also will be required at approximately 10,000-foot-increments within the Project Corridor. Approximately 7 to 10 splicing sites will be required for construction, resulting in temporary impacts to 2.4 to 3.4 Project Corridor acres. The conceptual configuration of temporary work sites, 16-foot-wide access trail, structure locations, pulling and tensioning sites, and splicing sites is shown in **Appendix B**.

A temporary up to 20-acre laydown area will be located at the Pioneer Generation Station and would be used for the duration of construction. The Pioneer Generation Station site is shown on **Figure 1-4**. Alternate laydown areas may be used by the construction contractor, if necessary. To avoid or minimize impacts on sensitive resources, construction laydown areas are typically located at previously disturbed or developed locations, such as vacant lots, existing utility yards, or parking lots. Where existing yard locations are not available, preferred locations for yards are undeveloped areas, such as grazing land or cropland that are cleared and flat; have all-weather access; and do not contain streams, wetlands, or other environmentally sensitive resources. Laydown yards consist of flat or gently sloping lands where construction material would be placed on pallets or cribbing. No topsoil would be removed and minimal, if any, grading or re-grading is expected to take place at these facilities. Laydown areas would be returned to pre-construction conditions upon completion of the Project.

Estimated temporary land requirements associated with Project access and construction activities are identified in **Table 4.4-1** below. As noted in **Table 4.4-1**, temporary impacts associated with the Project will affect approximately 98 to 110 acres.

#### **4.4 Permanent Land Requirements**

Permanent impacts are those required for Project operation, consisting mostly of individual structure locations. Permanent land disturbance has been estimated for self-supporting single and double circuit tangent structures, self-supporting single and double circuit dead-end structures, and self-supporting angle (turning) structures. Each tangent structure will require 7- to 8-foot diameter drilled pier concrete foundations at each structure location, thus occupying a total of 7.07 to 14.13 ft<sup>2</sup> per structure. Angle structures and dead-end structures will be larger, with 10- to 13-foot diameter foundations, thus each occupying approximately 50.27 to 84.82 ft<sup>2</sup> per structure. Approximately 19 angle and dead-end structures will be required for the transmission line. Tangent, dead-end, and angle structures will be self-supporting, thus guy wires will not be required. Estimated Project permanent ground disturbance impacts are included in **Table 4.4-1** below.

Landowners are contacted several times throughout the routing process. Survey permissions are requested from each landowner along the route in order to allow access for engineering and environmental surveys. Once a route is finalized, Basin Electric conducts a series of steps throughout the process of acquiring the ROW easements for the transmission line. Title searches going back 50+ years are completed to identify current ownership and all encumbrances that need to be addressed. A market analysis was conducted by a third-party appraiser to identify the current land values, which was in turn used to establish monetary offers for the easements. Negotiations with landowners occur in an effort to acquire easements; these negotiations may take place over several visits.

Basin Electric's right-of-way group will work with Western Area Water Supply and other utility companies to identify crossings of their assets.

Table 4.4-1				
Estimated Project Ground Disturbance Impacts				
Project Component	Disturbance Assumptions	Impact Multiplier <sup>a</sup>	Temporary Impact (acres)	Permanent Impact (acres)
Judson Substation	Temporary: None Permanent: None	1 existing substation	0	0
Pioneer Switchyard	Temporary: None Permanent: None	1 switchyard (under construction)	0	0
Pole structures	Temporary: 100 ft x 150 ft area = 15,000 ft <sup>2</sup> = 0.34 acres	81 structures	27.5	0
	<u>Tangent</u> Permanent: 7-8 ft diameter = 50.3 ft <sup>2</sup> = 0.0012 acres	62 structures	-	0.07
	<u>Angle and/or dead-end</u> Permanent: 10-13 ft diameter = 132 ft <sup>2</sup> = 0.003 acres	19 structures	-	0.06
Pulling and tensioning areas	Temporary: 150 ft x 300 ft area x two/structure = 90,000 ft <sup>2</sup> = 2.07 acres Permanent: None	10-15 pulling and tensioning areas	20.7 - 31.1	0
Splicing sites	Temporary: 100 ft x 150 ft area = 15,000 ft <sup>2</sup> = 0.34 acre Permanent: None	7-10 splicing sites	2.4 - 3.4	0
	Temporary: 16 ft wide Permanent: None	14.3 miles of structure site access along Project Corridor	27.7	0
Laydown area(s)	Temporary: 20 acres Permanent: None	1 laydown yard	20	0
<b>TOTAL (acres) <sup>b</sup></b>			<b>97.8 – 109.7</b>	<b>0.13</b>

<sup>a</sup> Impact multipliers are based on preliminary engineering design and could change during final design.

<sup>b</sup> Total impact areas may overestimate actual impacts.

#### 4.5 Construction Waste Management

Typical waste materials generated from construction activities include miscellaneous lumber and shipping materials used to protect equipment during transportation, paper products, soda cans, food related materials, and sanitary waste. Waste from construction materials and rubbish from all construction areas will be collected, hauled away, and disposed of in an approved landfill. Sanitary waste will be disposed of through arrangements with local municipal sanitary waste treatment facilities.

Material staging areas and vehicle maintenance and refueling areas will not be located near waterways. If any of the material staging areas include vehicle and equipment refueling or storage of petroleum products in excess of 1,320 gallons, a Spill Prevention, Control, and Countermeasure (SPCC) plan will be implemented. The SPCC plan will address: 1) operating procedures to prevent spills; 2) control measures to prevent a spill from reaching navigable waters; and, 3) countermeasures to contain, clean up, and mitigate the effects of a spill that reaches navigable waters. Additionally, spill containment and clean up materials (e.g., absorbent material, shovels) will be available at every work site. The materials will be used to contain and clean up oil and hydraulic spills that may result from equipment leaks. Workers will be trained in procedures to follow to contain and clean up released hazardous materials.

#### 4.6 Construction Sequence, Work Force, and Equipment

Transmission line construction will generally follow a sequential set of activities performed by crews proceeding along the length of the line. **Table 4.6-1** lists the construction activities. The sequential nature of construction will minimize activities at a given work site.

TABLE 4.6-1 Conventional Personnel, Equipment, and Time Requirements for Construction			
Task	Number of Personnel	Equipment	Length of Time
Structure site clearing and vegetation management	4–6	Pickups, all-terrain vehicles (ATVs)	1 month
Gate installation	3	Flatbed and pickup trucks	1 month
Structure assembly	6–8	Pickups, cranes, material trucks, rubber-tired crane, 4x4 pickups	4 months
Foundation Installation	2–3	Rotary drilling rigs, backhoes, pickups, rubber-tired digging equipment, ATVs, portable compressors	4 months
Structure erection	6–8	Rubber-tired cranes, boom trucks, 4x4 pickups	5 months
Ground wire and conductor stringing	16–20	Pickups, manlifts/boom trucks, hydraulic tensioning machines, reel trailers	3 months
Cleanup	4	Pickups, dump trucks, flatbed trucks	Duration of Project
Concrete foundations	10	Excavators, concrete trucks, skid steer, cranes	1–2 months
Equipment installation	10	Cranes and trucks	3–4 months

#### 4.7 Worker Safety and Health Protocol

All construction and maintenance activities will be carried out in compliance with applicable federal and state worker safety regulations, as defined under the Occupation Safety and Health Administration Act of 1979. Worker safety and health is administered by Basin Electric’s Transmission Systems Maintenance Division, which is a member of the National Safety Council.

#### 4.8 Environmental Protection Measures and Policies

Project-specific mitigation measures have been developed to avoid or reduce the severity of environmental impacts. The measures are applicable to Project construction and operation. These measures are discussed under the Mitigation sections of each resource in Section 5.0, Environmental Analysis. Basin Electric’s Policies and Commitments to Limit Environmental Impacts are included in **Appendix A**.

#### 4.9 Reclamation

Following construction, disturbed areas will be graded and/or re-sloped to their approximate original contours to minimize erosion and visual alteration. In grassland or pasture areas, disturbed areas will be reseeded with native species unless an alternate seed mix is required by the landowner. Cultivated land will be tilled and returned to production. Fences and gates damaged as a result of the Project will be repaired.

Rangeland from which vegetation has been removed, destroyed, or damaged will be reclaimed and revegetated. Reclamation activities, weather permitting, will be ongoing throughout construction and will take place as soon as construction activities are completed in a particular area. Drainage structures and similar improvements will be removed from areas to be reclaimed,

where appropriate, and the area will be revegetated using a native seed mixture, as recommended by the County Agricultural Extension Service or the Natural Resources Conservation Service (NRCS) unless an alternate seed mix is required by the landowner.

Ruts and scars from overland travel will be leveled to break up compacted soils and aid in returning areas to approximate original contours. Cultivated areas disturbed by overland travel will be leveled and tilled to break up compacted soils (if necessary) and returned to production.

The optimal timing for revegetation success will be spring or fall to coincide with seasonal rains. Mulching may be required to protect seeded areas from erosion. Other erosion control devices, such as water bars, terracing, or water diversion structures will be constructed where needed. Follow-up inspections will be carried out during the next growing season. Areas that did not become revegetated will be reseeded again, as necessary.

The reclamation procedures described above will be applied to disturbed areas including temporary workspaces, access, staging areas, and other areas disturbed by Project activities.

#### **4.10 Operation and Maintenance**

The following operation and maintenance activities will be performed throughout the life of the Project.

- Basin Electric's preventive maintenance program for the transmission line includes aerial and ground inspections. Aerial inspections will be conducted at least two times each year. Ground patrols will be conducted annually for the first three or four years, and less frequently thereafter. Climbing inspections of structures will be conducted on a five-year cycle with every fifth structure inspected each year. Inspections and patrols will involve the use of vehicles in areas where there is suitable vehicle access.
- Maintenance activities will include repairing damaged conductors, inspecting and repairing structures, replacing damaged and broken insulators, and tightening hardware.
- Basin Electric will maintain any gates it initially installs if continually used for access.
- Basin Electric will remove trees that pose a clearance or safety problem to the operation of the transmission line. Specific requirements of the National Electric Reliability Council will be followed. This activity will be completed in accordance with the landowner easement.

Treatment of vegetation within the Project Corridor will include the selective removal of trees to prevent contact with the transmission line conductors. Disposal of cut trees and/or shrubs will be in a manner acceptable to the landowner and in accordance with applicable state waste management rules. The need for tree and/or shrub removal is expected to be minimal, as areas with trees and/or shrubs were generally avoided when possible during detailed routing.

#### **4.11 Decommissioning**

If the transmission line were to be abandoned or rebuilt, decommissioning and removal of structures, conductor, and ancillary equipment will be in accordance with applicable regulations in place at the time.

## **5.0 ENVIRONMENTAL ANALYSIS**

### **5.1 Local Economics**

#### **5.1.1 Description of Resources**

Williams County had a population of 22,398 in 2010, with an estimated 70 percent increase through 2022 for an estimated total population of 38,109 in 2022 (U.S. Census Bureau 2022). As of 2020, the county contains 2,078 square miles of land, with a density of approximately 19.7 persons per square mile. As of 2020, it is estimated that approximately 10.6 percent of the county population is 65 years or older, while approximately 9.2 percent of the population is under 5 years of age.

Recent oil and gas development activity has had a large impact on the local economy. Williams County ranks third in barrels of oil produced per county in North Dakota with 6,351,884 barrels produced in May 2023 (North Dakota Department of Mineral Resources [NDDMR] 2023b) and ranks second in cubic feet of gas produced with 19,537,367 thousand cubic feet produced in May 2023 (NDDMR 2023c).

Agriculture continues to play a significant role in the Williams County economy with 569 farms (USDA, National Agricultural Statistics Service 2017). According to the 2017 Census of Agriculture, total market value of agricultural products produced in Williams County was \$131,781,000 (89 percent crops and 11 percent livestock sales). Principal crops include wheat, lentils, peas, canola, and forage/hay; cattle are the primary livestock.

#### **5.1.2 Impacts/Mitigation**

The Project will have positive economic impacts for the local population, including payments for participating landowners, employment, and transmission line tax payment to the state of North Dakota based on mileage and voltage, and sales/use tax on materials. No residents will be displaced.

Landowner compensation has been established under individual easement agreements and includes compensation for loss of crops caused by construction activities. In general, agricultural areas surrounding each structure can still be farmed. Project construction will not cause additional impacts to leading industries within Williams County.

In addition, wages and salaries paid to local contractors and workers in Williams County will contribute to the personal income of the region. Additional personal income will be generated for residents in the county as well as the state by circulation and recirculation of dollars paid out by Basin Electric as business expenditures and state and local taxes. Expenditures made for equipment, energy, fuel, operating supplies, and other products and services will benefit businesses in the county and the state.

It is likely that general skilled labor is available either in the county or the state to serve the basic infrastructure and development needs of the Project. Specialized labor will be required for certain components of the Project. It is likely that this labor will be imported from other areas of the state or from other states, as the relatively short duration of construction does not warrant special training of local or regional labor. Balancing the use of local contractors and imported specialized contractors will likely alleviate any labor relations issues.

No effects on permanent housing are anticipated. During construction, out-of-town laborers will likely use lodging facilities in and around the city of Williston.

## **5.2 Public Services**

### **5.2.1 Description of Resources**

#### **Local Government Services**

Within the Study Area is a network of established roads and utilities that provide access and necessary services to cities, communities, homesteads, and farms. There are no incorporated or unincorporated cities within the Study Area. The southeastern end of the Project Corridor (Judson Substation) is located approximately 3 miles west of the city of Williston and the transmission line extends to the northwest. The Pioneer Switchyard will be located approximately 4 miles east of the Montana-North Dakota border. The county seat of Williams County is Williston.

#### **Transportation**

Roads located within the Study Area are US Highway 2, county roads (gravel graded and drained roads), private roads, section lines, and oil and gas access roads. Roads within the Study Area fall under the North Dakota Department of Transportation (NDDOT) District Boundary of Williston, North Dakota.

#### **Air Traffic**

There are no public airports or private airports/airstrips within the Study Area. The closest airport/airstrip is the Williston Basin International Airport northwest of Williston, North Dakota which is located approximately 5 miles northeast of the Project route. Spray planes used for aerial application of pesticides or fertilizer operated by local spray plane operators may occur within the Study Area.

#### **Water Supply**

The Western Area Water Supply Authority (WAWSA) (and its subset, Northwest Rural Water District), supplies potable water to communities near the Study Area. The WAWSA utilizes a combination of Missouri River water treated at the Williston Regional Water Treatment Plant, and groundwater treated by the R&T Water Supply Commerce Authority's Water Treatment Plant in the city of Ray, North Dakota. This water supply system meets the needs of municipal, rural and industrial users in five northwestern North Dakota counties, including Williams County and the city of Williston (WAWSA 2023b). The Williston Regional Water Treatment Plant is located at the south end of the city of Williston along the Missouri River, approximately 3 miles southeast of the southeast end of the Project Study Area. The Ray Water Treatment Plant is located approximately 30 miles northeast of the Project Study Area.

Water supplied by the WAWSA is distributed via a system of transmission and distribution pipelines as well as water towers or "reservoirs". Distribution pipelines are located within the Project Study Area and crossed by the Corridor (see **Figure 1-4**). Basin Electric will coordinate with WAWSA to ensure that there are no impacts to water distribution pipelines. According to publicly available information, there are two reservoirs located in the vicinity of the Project (WAWSA 2023a). The Williams West 200K Tower is located northeast of the Judson Substation,

approximately 0.33 mile east of the Project Study Area. The Williams West 500K Elevated Tower is located south of the Project, approximately 1.2 miles south of the Project Study Area. None of the water supply wells are located within the Project Corridor (see **Figure 3-1**).

In accordance with the federal Safe Drinking Water Act, the North Dakota Department of Environmental Quality (NDDEQ) has identified Source Water Protection Areas (SWPA) to protect local water programs. According to publicly available information, there are three SWPA in the general vicinity of the Project (NDDEQ 2023). The closest SWPA is the Round Prairie School SWPA, for a non-transient, noncommunity, inactive public water system (PWS) with a groundwater source, located approximately 0.83 mile southwest of the Project Study Area. The Nehring Lodge Well SWPA is for an active, noncommunity PWS with a groundwater source, located approximately 2.3 miles southwest of the Project Study Area. The city of Williston SWPA is for an active community PWS with a surface water source, located 2 miles south of the southern end of the Project Study Area.

Basin Electric will evaluate obtaining water for construction from the city of Williston and truck the water to the construction site. Basin Electric will consult with Williston to obtain the appropriate permits and/or approvals.

### **Telecommunications**

The corona-induced broadband electromagnetic radiation (EMR) from transmission lines can produce interference with some communications signals if there is an overlap in the signal and EMR frequencies. Broadband corona EMR discharge typically occurs in the frequency spectrum from below 100 kilohertz (kHz) to approximately 1,000 megahertz (MHz), which overlaps with the frequencies used for AM and FM radio and some television signals.

## **5.2.2 Impacts/Mitigation**

### **Local Government Services**

No impact is expected to local services.

### **Transportation**

The transportation of materials and equipment will be conducted in accordance with the NDDOT regulations. All necessary provisions will be made to conform to safety requirements for maintaining the flow of public traffic. Construction operations will be conducted to offer the least possible obstruction and inconvenience to public traffic. Public roads, section lines and existing trails will be used, to the extent practicable, to access the transmission line (see Section 4.3 above). Fugitive dust emissions generated as a result of surface disturbance activities and vehicle use of access roads will be controlled by the periodic application of water, if necessary. The speed of vehicles traveling on unpaved roads will be limited, to the extent practicable, to reduce the generation of fugitive dust. Vehicles and equipment will be properly maintained to avoid excessive emission of exhaust gases due to poor engine adjustments.

### **Air Traffic**

The Project will not be considered an obstruction to air navigation under Federal Aviation Administration regulations. No part of the Project will exceed 200 feet in height above ground level.

## **Water Supply**

Construction will not significantly impact local water supply. Basin Electric will coordinate with WAWSA to ensure that there are no impacts to water distribution pipelines crossed by the Project. Construction water estimates are subject to change due to final site investigation and weather. Water for construction will be brought on-site via trucks. The abandonment of existing wells is not required. The Project will not require appropriation of surface water or permanent dewatering. None of the identified water supply wells are located within the Project Corridor (see **Figure 1-4**). Temporary dewatering of groundwater (i.e., locally lowering groundwater levels in the vicinity of the excavation) may be required during construction of transmission structures.

## **Telecommunications**

Existing telephone and fiber optic cables within the Project Corridor will be located in the field by the respective utility companies prior to construction to ensure that impacts to telephone and fiber optic cables will be avoided.

With sufficient corona activity, some radio and television interference can be noticeable; however, the radio sound generated by a transmission line is very low in power and interference is generally only experienced in very close proximity to the transmission line. These effects are most pronounced directly underneath the line conductors and decrease with distance from the transmission line. The level of interference with reception of a radio signal also depends on the relative locations of the radio transmitter, the radio receiver, and the transmission line. A transmission line that is directly between a radio transmitter and a listener's receiver may be more likely to interfere with that listener's reception, whereas a transmission line behind or beside the listener in relation to the transmitter will not necessarily cause interference depending on the radio receiver's antenna.

As digital signal processing has been integrated into television and radio receivers, the potential interference impact of corona-generated radio sound has been further reduced. Moreover, the advent of cable and satellite television service, and the federally mandated conversion to digital television broadcast in June 2009 have greatly reduced the occurrence of corona-generated interference. Newer digital television receivers are equipped with systems to filter out interference.

## **5.3 Public Health, Welfare, and Safety**

### **5.3.1 Description of Resources**

#### **Audible Sound, Corona Discharge, and Aeolian Vibration**

Corona from transmission line conductors can generate electromagnetic "noise" at the same frequencies transmitted by radio and television signals. Corona consists of the breakdown or ionization of air within a few centimeters of conductors and hardware. Aeolian vibration is produced when a steady flow of wind interacts with an object such as a transmission line. Wind must blow steadily and perpendicular to the lines to set up oscillating forces.

The Study Area is primarily rural and agricultural. The boundary of the city of Williston is not within the Study Area nor are other populated towns within the Study Area; however, areas of developed land are present south and east of the Judson Substation within the Study Area and between the Study Area and the city of Williston. The southeast end of the Project (Judson

Substation) is located approximately 3 miles west of the municipal boundary for the city of Williston. The existing acoustic environment is defined primarily by distant traffic sound from the nearby arterial highways and will also include intermittent aircraft overflights and sound from agricultural operations. In addition to anthropogenic sound sources, the windy conditions of this site define a somewhat elevated ambient sound level, which increases with wind speed. Windy conditions can generate sound caused by the rustling of grass and tree leaves.

### **Electromagnetic Fields**

Power frequency electromagnetic fields (EMF) are created wherever electricity flows. Leading U.S. and international scientific organizations, such as the National Cancer Institute and the World Health Organization, have evaluated EMF research. These organizations generally conclude that overall, the body of scientific research does not show that exposure to EMF causes or contributes to any type of cancer or any other disease or illness (National Institute of Environmental Health Sciences [NIEHS] 1999).

### **Hazardous Materials/Hazardous Waste**

Fuels, hydraulic fluids, and other hazardous substances may be used during construction of the Project. Potentially hazardous materials may also be encountered if historical contamination exists within the Project Corridor (e.g., contamination associated with aboveground storage tanks or oil/gas development). Other potential hazards may exist in rural areas from farm dumps and agricultural chemicals.

## **5.3.2 Impacts/Mitigation**

### **Sound from Maintenance and Construction**

Project construction and maintenance may cause short-term but unavoidable sound impacts due to construction and equipment. Construction and maintenance activities will also generate traffic that will have potential sound effects, such as trucks travelling to and from the Project on public roads. Sound generated by construction activities is generally exempt from state and local noise regulation. Once the Project has been built, no significant construction sound impacts are anticipated. Project maintenance will occur periodically but is not expected to result in significant sound generation.

### **Corona Discharge**

Corona effects occur when air molecules near conducting wire are ionized due to changes in the electric field intensity at the conductor surface. Measures such as carefully handling the conductor during construction to avoid nicking or scraping or otherwise damaging the surface and using hardware with no sharp edges or points are typically adequate to control corona. Corona effects are expected to be low enough that no objectionable audible sound will result outside the Study Area. The sound is most noticeable when conductors are wet as a result of precipitation.

### **Aeolian Vibration**

Aeolian vibration is produced when a steady flow of wind interacts with an object such as a transmission line. Wind must blow steadily and perpendicular to the lines to set up oscillating forces. The resulting vibration can produce resonance if the frequency of the vibration matches

the natural frequency of the line. However, aeolian vibration is expected to be minimal outside of the Project Corridor.

### **Electromagnetic Fields**

Many studies of EMF have been conducted, but none has identified a cause-and-effect relationship between EMF exposure and health effects or a mechanism by which EMF could cause disease (NIEHS 1999). No impacts from EMF are expected.

### **Hazardous Materials/Hazardous Waste**

As with any construction activity, there is the possibility of accidentally spilling fuel, hydraulic fluid, or other hazardous substances or encountering unanticipated historical contamination during construction of the Project. The potential of such events will be minimized through implementation of a Spill Prevention, Control and Countermeasure (SPCC) plan, which will include the following:

- Construction equipment will be equipped with spill cleanup kits.
- Equipment refueling will take place at secure areas, away from wetlands or drainages.
- Workers will be trained in spill clean-up and the use of the spill cleanup kits.
- Burning waste materials within the Project Corridor will not be permitted and all waste materials will be disposed of at permitted waste disposal areas or landfills.

These measures will ensure that surface and groundwater quality will not be degraded through inadvertent spillage of contaminants.

## **5.4 Cultural Resources**

### **5.4.1 Description of Resources**

Metcalf Archaeological Consultants, Inc. (Metcalf) conducted a Class I Literature Review and Class III Cultural Resources Inventory for the Project. Because of crop cover, approximately 63 acres of the Project Corridor could not be inventoried during the May to July 2023 inventory events; an amendment to the Class III cultural resources inventory will be submitted to the State Historical Society of North Dakota (SHSND) for review following fall harvest when these sections will be inventoried. Due to sensitivity of the resources, a redacted report of the results of these studies are included in **Appendix C**. The cultural resources survey corridor is shown on **Figure 5-1**.

### **Class I Literature Review**

In April 2023, Metcalf conducted a Class I Literature Review through a file search of the North Dakota Cultural Resources Survey data files maintained by the SHSND to determine if any cultural resources have been recorded or if any cultural resource investigations have been conducted within the Project area and the surrounding 1-mile search area. The Project area during this study was defined as a 15-mile-long by 200-foot-wide corridor, including, encompassing the Project Corridor entirely.

The Class I Literature Review search revealed that 123 cultural resources have been recorded in the search area (see **Appendix C**, Table B1). The recorded resources consist of 94 sites, 28 isolated finds or site leads, and one Cultural Heritage resource in the search area. The majority of resources are Precontact and include stone circles, cairns, and cultural material scatters, and combinations of these. Historic resources include schoolhouses, bridges, and farmsteads, among others.

The manuscript files search revealed that 59 cultural resource projects have been conducted in the search area (see **Appendix C**, Table B2). Projects were associated with road and highway improvements, construction of transmission lines and utilities, and oil development and production.

### **Class III Cultural Resources Inventory**

Metcalf conducted a Class III Cultural Resources Inventory for the Project conforming to *North Dakota’s Guidelines for Cultural Resource Inventories* (SHSND 2020). The objective of the inventory was to locate any cultural resources located within the area of potential effects, to determine whether those resources qualify for inclusion on the National Register of Historic Places (NRHP) and assess the effect that the Project may have on those cultural resources that qualify for the NRHP. Fieldwork was conducted on May 25, 26, and 27; June 10; and July 28, 2023. All but approximately 2 miles of the route at various points along the Project Corridor were inventoried. Planted crops precluded inventorying these areas; the remaining approximately 63 acres will be inventoried in the fall after harvest. Finally, two shovel probes were dug on the west side of Painted Woods Creek; both shovel probes were negative for cultural materials.

Metcalf archaeologists identified five cultural resources – 32WI2482, 32WI2483, 32WIx837, and 32WIx838 and updated site lead forms for 32WIx103 and 32WIx154. On July 28, 2023, a short reroute was surveyed and found previously recorded site 32WI1201 for which the site form was updated. **Table 5.4-1** below summarizes the sites found, their significance and recommendations for any further steps necessary as it applies to the Project.

Site Number	Site Type	Significance	Recommendation
32WIx103	Cultural material scatter	Unknown	Not in project area
32WIx154	Cultural material scatter	Unknown	Not in project area
32WI1201	Farmstead	Not significant	Not in project area
32WI2482	Historic dump	Not significant	No further work
32WI2483	Historic dump	Not significant	No further work
32WIx837	Isolated find - flakes	Not significant	No further work
32WIx838	Site lead stone circles	Unknown	Not in project area

A cultural resources report for 477.1 of 540.5 acres of Project Corridor was submitted to the SHSND for review and concurrence was received on September 13, 2023 (see **Appendix C**). A second, addendum cultural resources report will be submitted to the SHSND for review and concurrence to accommodate the 63 acres of crop covered area in the Project Corridor. The addendum report and future correspondence with SHSND will be filed with the Commission to document that the Project will not adversely affect cultural resources.

## 5.4.2 Impacts/Mitigation

No significant sites or sites eligible for listing on the NRHP are in the Project Corridor; therefore, no impacts are anticipated to cultural resources. Basin Electric has routed the Project to avoid impacts to known cultural resources, and intends to avoid impacts to unanticipated cultural resources by implementing the following measures for the Project:

- If any previously unknown cultural resources are discovered during Project construction, all work within 100 feet of the discovery that might adversely affect the cultural resource will cease until the agencies, in consultation with the appropriate parties, can evaluate the discovery. The agencies will be notified and will have a qualified professional archaeologist and tribal representative (if necessary) with the proper expertise for the suspected resource type on-site as soon as possible. Construction in the immediate vicinity of the discovery will not proceed until authorized by the agencies.
- In the event that Project personnel identify what they believe to be human remains, construction will stop within 100 feet of the site and Basin Electric and their cultural resource specialist will be notified immediately to evaluate if the discovery contains human remains. The site will be protected, and as required by law, Basin Electric will notify the Williams County Sheriff within 24 hours of the discovery. Work cannot proceed until the stipulations of Protection of Human Burial Sites, Human Remains and Burial Goods in NDCC Section 23-06-27 and Protection of Prehistoric Sites and Deposits in NDAC Section 40-02-03 have been met.
- An Unanticipated Discoveries Plan has been prepared that outlines the procedure used to address any unanticipated discoveries of cultural resources, including possible human remains (see **Appendix D**). In the event that unanticipated discoveries are made during construction, the Unanticipated Discoveries Plan provides direction to on-site personnel and their consultants regarding proper procedures for addressing the discoveries.

## 5.5 Land Use, Vegetation, and Recreational Resources

### 5.5.1 Description of Resources

#### Land Cover

The Study Area is located in rural North Dakota in an area predominantly comprised of cultivated land, hayfields, pasturelands, and grasslands. Accordingly, much of the Study Area is used for agriculture supporting livestock grazing and crops. Wooded areas within the Study Area are limited to shelterbelts between fields, windbreaks surrounding farmsteads, along drainages, and near wetlands.

Land cover classifications, including acreage within the Study Area and Project Corridor, are shown in **Table 5.5-1** below and on **Figure 5-2**. The Project Corridor is comprised primarily of cultivated lands (75.9 percent) and herbaceous grasslands (11.1 percent).

TABLE 5.5-1		
Land Cover		
Land Cover	Acreage within Study Area	Acreage within Project Corridor
Cultivated Crops	7,045.5	201.4
Forested	147.4	1.2
Developed	389.5	11.7
Emergent Wetlands	139.6	4.2
Hay/Pasture	575.4	17.4
Grasslands/Herbaceous	1,090.2	29.3
Open Water	30.3	0.07
Shrub/Scrub	0.22	0

Source: National Land Cover Database (Homer et al. 2015)

### Managed Land Uses

Basin Electric reviewed publicly available data and consulted with agencies to determine if various managed lands (i.e., public lands, easements, and agreements) were crossed by the Project. Within the Study Area and along approximately one mile of the Route/Project Corridor are mineral trust lands which are managed by the North Dakota Department of Trust Lands (NDDTL); mineral trust lands are dedicated to producing income and dedicated trust funds for North Dakota (see **Figure 5-3**). Basin Electric consulted with NDDTL and will be considerate of oil and gas development when routing on these parcels. Construction and operation of the Project will not interfere with underground resources; therefore, no additional easements or agreements are required.

Conservation Reserve Program (CRP) lands are administered by the Farm Service Agency (FSA) through the USDA. In exchange for yearly compensation, CRP lands are removed from agriculture production and planted with species that will improve environmental quality and health, with a long-term goal of establishing valuable land cover to improve water quality, prevent soil erosion, and reduce the loss of wildlife habitat (USDA, FSA 2019). Specific CRP acres are subject to privacy laws between each landowner and the FSA; Basin Electric has consulted with landowners to determine if CRP lands are crossed by the Corridor and if any requirements (e.g., restoration) need to be considered during construction of the Project.

The Study Area is not located within any designated or registered national sites including: parks; memorial parks; historic sites and landmarks; natural landmarks; historic districts; monuments; civil works project lands; forests; wilderness areas; wild, scenic, or recreational rivers; wildlife refuges; wetland management areas; waterfowl production areas; grasslands; or, Conservation Reserve Program lands.

The Study Area is not located within any designated or registered state parks; trails; forests; forest management lands; historic sites; monuments; historical markers; archaeological sites; grasslands; wild, scenic or recreational rivers; game refuges or management areas; or, nature preserves. School trust properties, which are managed by the NDDTL, are not located within the Study Area.

### Noxious Weeds

There are 13 state-listed noxious weeds: absinth wormwood (*Artemisia absinthium*); Canada thistle (*Cirsium arvense*); dalmatian toadflax (*Linaria genistifolia*); diffuse knapweed (*Centaurea*

*diffusa*); houndstongue (*Cynoglossum officinale*); leafy spurge (*Euphorbia esula*); musk thistle (*Carduus nutans*); palmer amaranth (*Amaranthus palmeri*); purple loosestrife (*Lythrum salicaria*); Russian knapweed (*Acroptilon repens*); Saltcedar (*Tamarix chinensis*, *T. parviflora*, *T. ramosissima*); spotted knapweed (*Centaurea maculosa*); yellow toadflax (*Linaria vulgaris*). One additional noxious weed, narrowleaf hawksbeard (*Crepis tectorum*), is listed in Williams County (North Dakota Department of Agriculture 2023).

## Recreational Resources

Many recreational areas in Williams County can be associated with outdoor activities such as boating, fishing, hunting, and camping. Lookout Park, a park managed by the Williams County Park Board, offers a playground and picnic area and is located approximately 3 miles southeast of the Judson Substation. Trenton Lake Recreation Area offers a campground, boat dock/ramp and trails and is located approximately 6 miles south of the Project. The city of Williston offers parks and trails throughout the city, and the city boundary is approximately 3 miles east of the Judson Substation. Other private recreational businesses may exist, such as shooting ranges; however, no concerns from private recreational businesses have been identified.

### 5.5.2 Impacts/Mitigation

The Project will not result in a significant change in land use. No residences or farms will be displaced due to construction activities. Basin Electric will not place infrastructure or have any temporary impacts on any federal or state managed lands except NDDTL Mineral Trust Lands. As the Project is not extracting minerals on NDDTL lands, no impacts are expected and no agreements are necessary. Basin Electric will implement the following mitigation measures for the Project:

#### Land Use

- The movement of crews and equipment will be limited to Project Corridor and other areas that have been cleared for cultural, historical, and biological resources. The contractor will limit movement on the Project Corridor to minimize damage to rangeland, cropland, or property.

#### Managed Lands

- Basin Electric has not identified any CRP easements or other managed lands crossed by the Project that require special construction or restoration requirements.

#### Agricultural Practices

- Where practical, construction activities will be scheduled during periods when agricultural activities will be minimally affected, or the landowner will be compensated accordingly.
- Fences, gates, and similar improvements that are removed or damaged will be promptly repaired or replaced. New gates may be installed, if deemed appropriate.

- The ROW easement will be purchased through negotiations with each landowner affected by the Project and payment will be made of full value for crop damages or other property damage during construction or maintenance.
- When weather and ground conditions permit, all deep ruts that are hazardous to farming operations and to movement of equipment will be eliminated or compensation will be provided if the landowner desires. Such ruts will be leveled, filled, and graded, or otherwise eliminated in an approved manner. Ruts, scars, and compacted soils from construction activities in cropland or rangeland will be loosened and leveled by subsoiling, paraplowing, scarifying, harrowing, or disking, as appropriate. Damage to ditches, roads, and other features of the land will be corrected or payment will be made to Williams County per their specific rules and parameters to complete this type of work. The land and other features will be restored as nearly as practicable to their original conditions.

### **Vegetation**

- Where wooded areas cannot be avoided, the transmission line will be placed in areas with the lowest density of trees, whenever feasible, thereby reducing the number of trees that will require removal within the Project Corridor.
- All vegetative materials resulting from clearing operations will either be chipped on site or removed and disposed of in a permitted facility.
- Existing native vegetation within the Project Corridor will be preserved whenever feasible.
- Surface disturbance areas will be reclaimed using native species, as approved by the USDA NRCS, county extension agency, or other desired seed mix if required by landowners, and will be planted at the appropriate times in order to reestablish native vegetative cover and minimize the potential for invasion by non-native species.
- Wetland and riparian communities will be spanned by the transmission line, thereby avoiding impacts to these ecosystems. To the extent practicable, access routes and workspaces will be shifted to avoid impacts to wetlands and waterbodies. Approximately 11 wetlands, two intermittent streams, and ephemeral upland drains may be impacted by temporary workspace or access route crossings; all impacts will be temporary and permitted under Nationwide Permit 57.
- Erosion and sedimentation controls will be implemented to minimize indirect impacts to wetlands and riparian areas.
- If herbicides are used to remove woody species that become established in the Project Corridor and pose a hazard to the transmission line, they will be used in an appropriate manner.
- Mulch and seeds used for revegetation, erosion, and sediment control will be certified as weed-free.

## Noxious Weeds

- If noxious weeds are observed in the surface disturbance areas, populations will be controlled with the application of herbicides, which will be applied by a certified herbicide applicator in accordance with label instructions and State and local County Weed Board regulations. Biological control methods (i.e., use of spurge beetles) also may be considered for weed control, in consultation with appropriate agencies.
- Herbicides will not be used near surface water.
- Prior to the initiation of construction activities, construction vehicles and equipment will be thoroughly cleaned to prevent the possible spread of noxious weed seeds within the Project Corridor.
- The Project Corridor and other surface disturbance areas will be monitored annually for noxious weeds for a three-year period following construction and reclamation. Landowners will be consulted regarding all noxious weed control measures and issues.
- Herbicide applications will occur in late spring or early summer to eradicate or control noxious weeds before they mature.

## Recreational Resources

No impact is expected to recreational resources.

### 5.6 Soils and Geologic Resources

#### 5.6.1 Description of Resources

The Study Area is located in a Class IV ecoregion – one of more detailed ecoregions for state-level applications (Bryce et al. 1996). The ecoregion is the Glaciated Dark Brown Prairie region which has a well-defined drainage system and fewer wetlands compared to the more recently glaciated area to the east. Land use is cropland and rangeland.

There are approximately 28 active oil and gas wells within the Study Area (NDDMR 2020a). There are no active sand and/or gravel mines located within the Study Area (US-Mining 2023). There are no active or abandoned coal mines in the Study Area (ND GIS Hub 2023). Several landslide areas as indicated by the North Dakota Geological Survey landslide mapping program (Anderson et al. 2022) are present within the Study Area along Painted Woods Creek, with none present within the Project Corridor (see **Figure 3-1**).

#### 5.6.2 Impacts/Mitigation

The Project will not result in a significant change to soil and geologic resources. All active oil and gas wells will be avoided. A geotechnical analysis was performed and areas which are geologically unstable will be avoided and spanned as necessary. Basin Electric will implement the following mitigation measures for the Project:

- Excess subsoils and rock will be hauled off-site to an approved landfill.

- Erosion and sediment controls will be established prior to construction, then maintained and controlled through application of the Storm Water Pollution Prevention Plan (SWPPP).
- Sediment control measures (e.g., installation of silt fences) will be used, where appropriate, to prevent sediment from moving off-site and into waterbodies.
- Maintenance operations will be scheduled during periods of minimum precipitation to minimize the potential of surface runoff and to reduce the risk of erosion, rutting, sedimentation, and soil compaction. However, emergency repairs to the transmission line may occur during periods of inclement weather. Ruts, scars, and compacted soils resulting from emergency activities will be repaired by subsoiling, paraplowing, scarifying, harrowing, or disking, as appropriate.
- The Project will use existing laydown areas available at the PGS.

## 5.7 Surface Water and Groundwater Resources

### 5.7.1 Description of Resources

The Project is located within the Prairie Pothole Region. Prairie potholes (*i.e.*, emergent wetlands, freshwater ponds) are scattered throughout the Study Area. Intermittent drainages associated with the Little Muddy River and Missouri River are also present in the Study Area. Water supply wells located in the Project Study Area are discussed in Section 5.2 above.

Western EcoSystems Technology, Inc. (WEST) conducted a natural resource inventory of a 530-acre area (Survey Area) on May 2 – 4, August 1, and September 7, 2023 which included wetland and waterbody surveys in support of the Project. Prior to field surveys, a desktop assessment was completed to identify wetland and waterbody areas within the Survey Area, which fully encompasses the Project Corridor (see **Appendix E**). The data was used as a precursor for field delineations. Wetland identification utilized the presence of hydrophytic vegetation and landscape hydrology and/or topographic position. Waterbody boundaries were recorded utilizing the criteria and definitions provided by the US Army Corps of Engineers (USACE) Ordinary High Water Mark criteria and definitions provided by the US Environmental Protection Agency (USEPA) in *Draft Guidance on Identifying Waters Protected by the Clean Water Act* (WEST 2023). Wetlands and waterbodies were field classified in accordance with guidelines set forth in the *Classification of Wetlands and Deepwater Habitats of the United States* by the Federal Geographic Data Committee (WEST 2023). Painted Woods Creek, intermittent streams, ephemeral/upland drains, excavated ponds, and wetlands are found within the Survey Area. A total of 18 wetlands and 22 waterbodies were mapped through the field survey efforts (see **Figure 5-4**).

Due to the Project's rural location, the Federal Emergency Management Agency (FEMA) has not developed flood rating maps for the area (U.S. Department of Homeland Security, FEMA 2023). Aquifers present nearest the Study Area include the Fort Union bedrock aquifer, the Little Muddy surficial aquifer to the east, and the Missouri River-Lake Sakakawea surficial aquifer to the southeast (North Dakota Department of Water Resources [NDDWR] 2023).

### 5.7.2 Impacts/Mitigation

The Project will not result in a significant change to surface water and groundwater resources. The Project will avoid direct, permanent impacts to all wetlands and waterbodies. Wetlands and waterbodies within the Project Corridor will be spanned, and no transmission structures will be placed in a wetland or waterbody. Access routes and workspaces will be shifted to avoid impacts to wetlands and waterbodies as practicable. If not avoidable, approximately five wetlands, two intermittent streams, and ephemeral upland drains may be impacted by temporary workspace or access route crossings; all impacts will be temporary and permitted under Nationwide Permit 57. Basin Electric will implement the following mitigation measures for the Project:

- A pre-construction wetland and waterbody survey has been conducted to determine the location and spatial extent of wetlands and waterbodies within the Project Corridor (see **Appendix E**). All features will be mapped using a Global Positioning System device to enable feature avoidance and site-specific structure placement.
- A 100-foot buffer will be established adjacent to wetlands and streams, where practicable, to prevent or minimize impacts to those ecosystems.
- Transmission line structures will be sited so that streams and drainages are spanned and remain undisturbed. Temporary construction and maintenance impacts will be permitted under Nationwide Permit 57.
- Staging areas and refueling areas will not be located near surface waterbodies.
- Areas that need to be cleared during construction will be revegetated with an approved native seed mix as soon as technically feasible to minimize soil erosion and sediment runoff.
- A SPCC plan will be developed prior to the start of construction to prevent the potential for spills of hazardous substances into streams and drainages, and potential contamination of groundwater. The plan will include a procedure for storage of hazardous materials and refueling of construction equipment outside of riparian zones, spill containment and recovery plan, and notification and activation protocols.
- Refueling of construction vehicles will occur at commercial fueling facilities and staging areas, if on-site fuel storage is needed for refueling.
- A SWPPP will be developed and implemented prior to initial construction activities. The SWPPP will include an analysis of materials that will be used and site activities that could potentially impact storm water and the associated mitigation measures to minimize that potential. SWPPP implementation will include regular inspections of areas under construction, material storage and laydown areas, and structural devices for storm water management. All construction personnel will be trained and required to comply with SWPPP's requirements and the maintenance of all environmental protection measures. The SWPPP will be maintained until final stabilization of all disturbed areas has been completed.

## 5.8 Wildlife and Rare and Unique Natural Resources

### 5.8.1 Description of Resources

The USFWS administers the Endangered Species Act (ESA), which mandates protection of species federally listed as threatened and endangered and their associated habitats. An endangered species is a species that is in danger of extinction throughout all or a significant portion of its range. A threatened species is a species that is likely to become endangered in the foreseeable future. Critical habitat for these species can be designated if that habitat includes specific areas that are occupied by a species at the time of listing or unoccupied areas that are considered essential to the conservation of a species. Candidate species receive no statutory protection from the USFWS unless they are formally listed. North Dakota does not have a state threatened and endangered species list; however, it recognizes those federally listed under the ESA.

WEST conducted a natural resource inventory of a 530-acre area (Survey Area) which included an evaluation of habitat for federally listed species. Assessments for federally listed threatened and endangered species were conducted by evaluating historic accounts and reported occurrences of listed species within the area of the proposed Project. A desktop evaluation was conducted, which was augmented with a field evaluation to confirm the presence or absence of potentially suitable habitat for federally listed species within the Survey Area. The findings are summarized in the Natural Resource Inventory Report (see **Appendix E**).

Prior to field surveys, the USFWS Information for Planning and Conservation (IPaC) tool was reviewed and indicated that six threatened, endangered, and candidate species could potentially occur within the Survey Area and Williams County (WEST 2023) (see **Table 5.8-1** below).

Common Name	Scientific Name	Status
Northern long-eared bat	<i>Myotis septentrionalis</i>	Endangered
Piping plover	<i>Charadrius melodus</i>	Threatened, Critical Habitat Designated
Red knot	<i>Calidris canutus rufa</i>	Threatened
Whooping crane	<i>Grus americana</i>	Endangered
Dakota skipper <sup>a</sup>	<i>Hesperia dacotae</i>	Threatened, Critical Habitat Designated
Monarch butterfly	<i>Danaus plexippus</i>	Candidate

<sup>a</sup> Listed as occurring in Williams County; however, the Project is outside the current known species range.  
 Source: USFWS IPaC (WEST 2023)

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are protected under the Bald and Golden Eagle Protection Act (BGEPA). The BGEPA protects bald and golden eagles throughout their range in the United States. Although it does not designate critical habitat, BGEPA protects individual eagles and nests from disturbance. Project surveys conducted by WEST included surveying for raptor nests, including eagles.

Additionally, the North Dakota Parks and Recreation Department was consulted to determine if any current or historical plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the Project. Based on their review for the Project of the North Dakota Natural Heritage biological conservation

database, there is no known rare species or significant ecological communities documented within or immediately adjacent to the Project (see **Appendix F**).

### **Northern Long-Eared Bat**

The northern long-eared bat (NLEB) (*Myotis septentrionalis*) is a forest-dwelling mammal. In the summer, NLEBs roost under bark or in crevices of trees, preferring to roost in tall trees with greater than three-inch (eight centimeter) diameter at breast height, and under the exfoliating bark of dead or dying trees. In the winter, NLEBs hibernate in caves and mines (WEST 2023).

Field surveys conducted by WEST documented 186 trees that have the potential to provide summer roosting habitat for the NLEB in multiple locations within the Survey Area. No potential winter hibernacula were observed within the Survey Area and there are no known hibernacula in Williams County (WEST 2023).

### **Piping Plover**

The piping plover (*Charadrius melodus*) is a migratory shorebird that breeds in North Dakota. Suitable nesting habitat for piping plovers includes alkaline wetlands and the shoreline of the Missouri River system; this habitat has been characterized as sparsely vegetated channel sandbars, sand and gravel beaches on islands, temporary pools on sandbars and islands, and island margins that interface with the river channel. The piping plover feeds on worms, insects, and mollusks. The decline of piping plover populations is due to the loss of habitat from river impoundment(s), as well as the degradation of habitat related to the channelization river systems, nest predation, and human disturbance (WEST 2023).

Critical habitat for the Northern Great Plains piping plover has been designated on alkali lakes and wetlands, the Yellowstone River, and Missouri River in North Dakota. The physical and biological features that are essential to the conservation of the species, referred to as the primary constituent elements, require special consideration for protection. These include sparsely vegetated alkaline wetlands, sand and gravel beaches on islands, temporary pools on sandbars and islands, and island margins that interface with the river channel. This Project is approximately 3.4 miles (5.5 km) north of the nearest critical habitat, which is the Missouri River system. (WEST 2023).

The Survey Area is predominantly cropland and contains wetlands and waterbodies that are well vegetated and do not provide bare ground suitable for nesting habitat.

### **Red Knot**

The rufa red knot (*C. canutus rufa*) winters along the Atlantic coasts of Argentina and Chile (particularly the island of Tierra del Fuego), the north coast of Brazil, and further north into Mexico and the southeast United States. During migration, the rufa red knot primarily follows the Atlantic coastline to and from breeding and wintering grounds. However, geolocator results from red knots wintering in Texas showed that a comparatively small population of birds migrate using the Central Flyway across the Midwestern US and may have a northern Great Plains stopover. Rufa red knots spend two to three months annually on the breeding grounds located in northern Canada. The shoreline of the Missouri River provides stopover habitat for red knots using a midcontinental migratory route during annual migrations. However, the species is rare and is not reported in North Dakota every year. Reported historical sightings since 1900 are primarily composed of single individuals or relatively small flocks; however, on rare occasions, larger

flocks have been reported. Many of these sightings have been made in the prairie pothole region during the spring migration in late April through May. An increase in future sightings may result from an increase in public awareness (WEST 2023).

The red knot migrates twice annually from its breeding grounds in the Arctic to wintering habitat in southern climates. It does not nest in North Dakota but may use areas along the Missouri River as stopover habitat. The Project is located approximately 3.4 miles north of the Missouri River system and the Survey Area does not have suitable shoreline stopover habitat for the rufa red knot (WEST 2023). The Project is not expected to affect the rufa red knot.

### **Whooping Crane**

The whooping crane (*Grus americana*) is federally listed and has the potential to occur in all counties of North Dakota. A 200-mile-wide migration corridor has been delineated for this population that contains 95 percent of all verified sightings. Spring migration occurs primarily in April and May, whereas fall migration occurs primarily in October and November (Urbanek and Lewis 2015). Stopover habitat during migration includes a variety of croplands with roosting occurring in shallow, freshwater inland wetlands.

The Project is located within the migration corridor where 75 to 95 percent of whooping cranes travel. Land use within the Project is a mixture of cropland and rangeland, and oil/gas development. The USFWS Database shows Williams County has had 29 verified whooping crane sightings. The closest confirmed sighting to the Project was of two adults and one juvenile whooping crane in 1983, approximately 4.5 miles (7.2 km) northeast of the Project (WEST 2023).

### **Dakota Skipper**

The Dakota skipper (*Hesperia dacotae*), a prairie obligate species, requires nectar-producing native flowers and native grasses. WEST conducted a field habitat assessment and recorded approximately 4.6 acres of potentially suitable habitat within the Survey Corridor; however, the Project is located approximately 0.5 mile outside of the USFWS's known range of the Dakota skipper (WEST 2023). The USFWS range is the official legal definition for the species' extent.

The nearest USFWS designated critical habitat for the Dakota skipper is located approximately 36 miles east of the Project (WEST 2023).

### **Monarch Butterfly**

The monarch butterfly (*Danaus plexippus*) is currently a candidate for listing under the ESA, and a listing decision is currently anticipated in 2024. Candidate species do not receive statutory protections under the ESA, but are reevaluated annually for listing priority, and, therefore, are likely to be listed in the future.

The species occurs throughout the Great Plains and much of North America. Monarchs prefer open habitats with flowering plants and lay their eggs exclusively on milkweeds, which the larvae feed on until pupation. Monarch butterflies will breed in North Dakota during the summer and migrate south to Mexico for the winter; eventually, the butterflies will make their way back to North Dakota during spring migration. Suitable habitat, including wetlands, roadsides with common milkweed, and upland grassland habitat with flowering species, was observed during the field survey (WEST 2023). Much of the herbaceous habitat is rangeland used for livestock

grazing or grasslands in roadside ditches. Due to the presence of suitable habitat, it is possible for this species to occur within the Survey Area.

### **Bald Eagle**

Bald eagles may occur in North Dakota as breeders, winter residents, migrants or year-round residents. In North Dakota the key nesting areas and primary range are the Missouri River system including Lake Sakakawea, the Heart River, Cannonball River, Sheyenne River, Red River, Souris River, and the Devils Lake basin. Bald eagles can also nest in areas not considered traditional nesting habitat such as small stands of large cottonwood trees completely surrounded by cropland or grassland. The largest large body of water within the primary range nearest the Study Area is the Missouri River which is located approximately 3.5 miles south/southeast of the southern end of the Project.

WEST surveyed a 0.5-mile (0.8-km) line-of-sight for nesting raptors. The survey used 10x power magnification binoculars to scan tree lines and wooded areas from either the Survey Area or public roads. No active raptor nests were observed within 0.5-mile (0.8-km) of the Survey Area (WEST 2023).

### **Golden Eagle**

Golden eagles may occur in North Dakota as breeders, winter residents, migrants or year-round residents (North Dakota Game and Fish Department [NDGFD] 2015). Golden eagles are most commonly associated with open and semi-open habitats such as shrublands, grasslands, woodland-brushlands, and coniferous forests as well as in farmland and riparian habitats. In North Dakota the golden eagle primary range for nest site selection is along the badlands and Lake Sakakawea breaks.

## **5.8.2 Impacts/Mitigation**

In order to minimize impacts to threatened and endangered species, Basin Electric will implement mitigation measures in addition to the list below if requested by USFWS. No irreversible damage to rare or unique animal or plant species is anticipated. Individual species are discussed below. Basin Electric will implement the following mitigation measures for the Project:

- Prior to surface disturbance activities during the migratory bird (not including raptors) breeding season (April 15 through July 15), a qualified biologist will survey suitable habitat within the Corridor (i.e., non-cultivated land) for nesting activity and other evidence of nesting (e.g., mated pairs, territorial defense, birds carrying nest material, transporting food). If active nests are located, or other evidence of nesting is observed, appropriate protection measures, including establishment of buffer areas and constraint periods, will be implemented until the young have fledged and dispersed from the nest area. These measures will be implemented on a site-specific and species-specific basis, in coordination with applicable state and federal agencies, as appropriate.
- If construction is to occur during the breeding season for raptors (February 1 through August 15), prior to construction activities, raptor breeding surveys will be conducted by a qualified biologist through areas of suitable nesting habitat to identify any active nest sites within 0.5 mile (1.0 mile for bald eagles) from the

Project Corridor. If applicable, appropriate protection measures, including seasonal constraints and establishment of buffer areas will be implemented at active nest sites until the young have fledged and have dispersed from the nest area. These measures will be implemented on a site-specific and species-specific basis, in coordination with applicable state and federal agencies.

- Standard measures to minimize avian collision risk with overhead transmission lines, as outlined in the Avian Power Line Interaction Committee (APLIC) Reducing Avian Collisions with Power Lines (APLIC 2012), have been examined and appropriate measures developed as outlined in Basin Electric's Avian and Bat Protection Plan is included in **Appendix E**.
- Adequate raptor proofing designs, as described in the APLIC Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (APLIC 2006), will be implemented on the structures in coordination with applicable state and federal agencies.
- Holes that are drilled or excavated for foundation construction and left unattended overnight will be marked and secured with temporary fencing and plywood covers to reduce the potential for livestock and wildlife entering the holes and for public safety.

### **Northern Long-Eared Bat**

Field surveys conducted by WEST documented 186 trees that have the potential to provide summer roosting for the NLEB in multiple locations within the Survey Area. No potential winter hibernacula were observed with the Survey Area and there are no known hibernacula in Williams County (**Appendix E**). To avoid incidental take, tree clearing activities will occur between November 1 to March 31 when bats have either migrated or are hibernating in underground caves. If clearing of potential bat habitat cannot occur during this timeframe, Basin Electric will conduct presence/absence surveys for NLEB, and only clear trees if bats are not found to be present. In addition, **Appendix E** contains Basin Electric's Avian and Bat Protection Plan. With the combined minimization measures, it is reasonable to expect the Project is unlikely to adversely affect the northern long-eared bat.

### **Piping Plover**

The Survey Corridor is predominantly cropland and contains wetlands and waterbodies that are well vegetated and do not provide bare ground suitable for nesting habitat. With the absence of preferred nesting habitat, it is unlikely that the Project will affect the piping plover.

### **Rufa Red Knot**

Rufa red knot does not nest in North Dakota but may use areas along the Missouri River as stopover habitat. The Project is located approximately 3.4 miles north of the Missouri River system and the Survey Corridor does not have suitable shoreline stopover habitat for the rufa red knot. With the absence of preferred stopover habitat, it is unlikely that the Project will affect the red knot.

### **Whooping Crane**

Noise and vehicle activity during construction activities may cause migratory cranes to divert from the area but would be unlikely to contribute to any indirect or direct effect that would result in an increase of fatalities and, therefore, would be considered insignificant (WEST 2023). If a crane is sighted within 1.0 mile (1.6 km) of the project area, construction activities using heavy equipment would be suspended, and the sighting would be promptly reported to the USFWS. In coordination with the USFWS, suspended activities would resume once the bird(s) have left the area. Flight diverters will be installed on the transmission line to minimize bird strikes. **Appendix E** contains Basin Electric's Avian and Bat Protection Plan. Following these guidelines, it is reasonable to expect the Project is unlikely to adversely affect the whooping cranes.

### **Dakota Skipper**

The Project is located approximately 0.5 mile outside of the USFWS's known range of the Dakota skipper. The USFWS recommends limiting disturbance within the documented suitable habitat where possible and to site Project disturbance as close as possible to previously disturbed habitat. With these impact minimizing practices and the Project's location outside the species range, the Project will likely have no effect on the Dakota skipper or its designated critical habitat. Correspondence with the USFWS email is included in **Appendix F**.

### **Bald and Golden Eagle**

The transmission line will be outfitted with bird flight diverters following APLIC guidelines, which will also increase visibility of the lines for large raptors such as eagles, thereby reducing collision risk with the transmission lines. Therefore, the impacts of the Project on eagle are likely to be low.

## 6.0 PUBLIC AND AGENCY COORDINATION

Basin Electric and its representatives contacted key local, state, and federal agencies per Section 69-06-01-05 of the NDAC for assistance in identifying concerns or issues within the Study Area. Public and agency correspondence as of September 2023 are included in **Appendix F. Table 6.0-1** below summarizes the responses received from agencies to date. Basin Electric has maintained close coordination with landowner stakeholders throughout the process via in-person meetings, mailers, and phone calls. Each landowner received a pamphlet that detailed specific information about the Project such as Project permitting, design and construction, construction, maintenance, and landowner relations (**Appendix G**). Basin Electric will continue to meet with various state and county officials as the Project moves forward for all necessary permits.

Agency	Comment Date	Comment Summary	Section Addressed
SHSND	August 14, 2023	The SHSND reviewed the Study Area and concurred with the need for a Class III Cultural Resource Inventory. SHSND reference number 23-0261 is to be included with any further correspondence for the Project. The cultural resource survey report for 477 acres of the 540 acre Project was submitted on August 16, 2023 and concurrence with no historic properties affected for the 477 acres was received on September 13, 2023. An amendment to the Class III cultural resources inventory will be submitted to SHSND for review when survey of the remaining 63 acres is complete.	5.4, 7.0, Appendix C
NDDEQ	July 19, 2023	The NDDEQ recommends: using erosion and sediment controls; minimizing impacts to aquatic systems; any fill material placed below the ordinary high-water mark must be free of topsoil, decomposable materials and persistent synthetic organic compounds; care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body; care should be taken to avoid spills. Disturbing one or more acres requires a permit to discharge stormwater runoff. All solid waste materials must be managed and transported in accordance with the state's solid and hazardous waste rules. The NDDEQ owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. The NDDEQ believes that the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of ND.	4.2.2, 5.3, 5.5, 5.7, 7.0
North Dakota Parks and Recreation Department (NDPRD)	August 6, 2023	The NDPRD reviewed the North Dakota Natural Heritage biological conservation database and the Project to determine if any current or historical plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the Project. Based on this review, there are no known plant or animal species of concern or significant ecological communities documented within or immediately adjacent to the Project. The Project does not affect properties NDPRD owns, leases, or manages or any properties protected under Section 6(f) of the Land and Water Conservation Fund.	5.8.1
NDDWR/State Water Commission	July 25, 2023	Initial review indicates the Project does not require a conditional or temporary permit for water appropriation. However, if surface water or groundwater will be diverted for construction of the Project, a water permit will be required per NDCC 61-04-02. No drainage permits, construction permits for dikes, diversions, or restorations are likely required as long as watercourses are not modified. If a NDDWR observation well must be removed, the Project was requested to contact the Water Appropriations Division. No FEMA National Flood Insurance Program (NFIP) floodplains at Project location; NDDWR recommends working with local floodplain administrators of zoning authorities.	5.7, 7.0
U.S. Army Corps of Engineers	July 14, 2023	In the event the Project requires approval from the USACE and cannot be authorized by Nationwide Permit(s), a Standard or Individual Permit will be required. If this Project requires a Section 404 permit, complete and submit the enclosed Department of the Army permit application (ENG Form 6082) to the USACE. Project identification number NWO-2023-01051-BIS.	5.7, 7.0

Pioneer to Judson 345-kV Transmission Line  
 Certificate of Corridor Compatibility and Route Permit

TABLE 6.0-1			
Summary of Agency Comments			
Agency	Comment Date	Comment Summary	Section Addressed
NDDTL	July 12, 2023	The NDDTL reviewed the Study Area and does not manage any surface acreage within the Project boundary. Any proposed projects crossing NDDTL-managed property need to apply for an easement, subject to review and approval by the Board of University and School Lands.	1.4, 5.5, 7.0, Figure 1-4, Figure 5-3
North Dakota Geological Survey (NDGS)	August 14, 2023	Several landslide areas are mapped in the southeast portion of the Project area in and around Painted Woods Creek; these areas should be avoided for any planned structures.	5.6, Figure 3-1
NDGFD	August 14, 2023	NDGFD recommends avoiding work in native prairie and wooded draw areas, avoiding wetlands and placement of aboveground appurtenances in wetlands, and overhead lines be marked over perennial streams (Painted Woods Creek) and large wetland complexes to minimize avian impacts. NDGFD does not believe the Project will have significant adverse effects on wildlife or habitat, including Species of Conservation Priority, provided recommendations are implemented.	5.7, 5.8
North Dakota Department of Commerce (NDDOC)	August 14, 2023	The NDDOC is not aware of any projects within the boundary lines of the Project that would impact its ability to move forward.	N/A
US 20 <sup>th</sup> Airforce Missile Wing, Minot Air Force Base (AFB)	July 10, 2023	The Minot AFB has no assets near the Project area.	3.1
North Dakota Transmission Authority (NDTA)	August 16, 2023	The NDTA provided a letter of support for the Project: "This project is important to Basin Electric Power Cooperative's ability to serve the northwest corner of the state. The additional capacity is vital for the safety and well-being of the member customers in the region and will provide much needed capacity and grid reliability for the growing industry in the region."	N/A
USFWS	August 14, 2023	The USFWS recommends use of the Information for Planning and Consultation database. Standard buffer and timing guidance document provides general recommendations for trust resources. Some easement wetlands may be present in Project alignment; contact Crosby-Lostwood Wetland Management District for locations of easement boundaries and complete any necessary permits. Recommends contacting North Dakota Game and Fish Department for locations of eagle nests in the Project vicinity.	5.5, 5.8
USFWS Crosby-Lostwood Wetland Management District	September 11, 2023	The Crosby-Lostwood Wetland Management District confirmed that there are no USFWS easement or fee title interests located within the Project Study Area.	5.5
Williams County	August 23, 2023	The Project falls into the Public Utilities, Minor category which is a permitted use within all zoning districts.	3.7

## 7.0 POTENTIAL PERMITS/APPROVALS

**Table 7.0-1** below outlines the federal, state, county, and township permits or approvals that have been identified as potentially required for the construction and operation of the Project. Permits dependent on the final Project layout will be applied for after receiving Commission approval, but prior to construction.

TABLE 7.0-1			
Potential Permits and Approvals Required			
Agency	Type of Approval	Status*	Need
<b>Federal</b>			
USACE	Nationwide Permit 57 (NWP 57)	1	Required for discharges to jurisdictional wetlands and waterbodies; all impacts will be temporary, therefore, a pre-construction notice is not required.
	Individual Section 404 Permit	N/A	Wetland and waterbody impacts will be below the threshold for an individual permit.
	Section 10 permit	N/A	Project does not cross navigable waters.
U.S. Environmental Protection Agency (USEPA)	Spill Prevention, Control, and Countermeasure Plan	3	Required if more than 1,320 gallons of oil storage is located on-site.
USFWS	Special Use Permit	N/A	All Project infrastructure is sited outside of USWFS easements.
<b>State of North Dakota</b>			
North Dakota Public Service Commission	Certificate of Site Compatibility and Route Permit Transmission Facility	2	Required for construction of transmission facility over 115-kV.
SHSND	Concurrence with effect determinations	2	Class III cultural resources inventory report submitted and concurrence received on September 13, 2023. An addendum to the Class III cultural resources inventory will be submitted to SHSND for review when complete.
NDDEQ	National Pollutant Discharge Elimination System Permit: General Construction Storm Water	3	Required for disturbance of over one acre of land and a stormwater pollution prevention plan must be prepared.
	401 Water Quality Certification	1	Required for filling in jurisdictional waters of United States; granted with NWP 57.
North Dakota Highway Patrol	Oversize/Overweight Permit	3	Required to transport oversize loads on state maintained roads.
NDDOT	Road Approach/Access Permit	3	Required for construction of access roads from state highways.
	Utility Permit/Risk Management Documents	3	Required for utility crossings on state highway rights-of-way.
North Dakota State Water Commission	Drainage Permit	N/A	The Project will not drain a pond, slough, lake or sheetwater, or any series thereof, that has a watershed area ( <i>i.e.</i> , drainage area) of 80 acres or more.
	Conditional or Temporary Permit for Water Appropriation	N/A	No water appropriation required.
	Water Permit	N/A	Required if drilling a well. Not required for the Project.
NDDTL	Rights-of-Way Easement	N/A	Required for transmission lines on NDDTL surface lands.

Pioneer to Judson 345-kV Transmission Line  
 Certificate of Corridor Compatibility and Route Permit

TABLE 7.0-1			
Potential Permits and Approvals Required			
Agency	Type of Approval	Status*	Need
<b>County/Townships</b>			
Williams County	Conditional Use Permit	N/A	Project is categorized as Public Utility, minor which is a permitted use in all zoning areas.
Williams County Water Resource District	Construction Stormwater Permit	3	Required for any Land Disturbing Activity, as defined by the County Water Resource District Rules and Regulations.
Judson Township	Road Use Agreement	3	Temporary or permanent approach permits will be applied for if needed.
Round Prairie Township	Road Use Agreement	3	Temporary or permanent approach permits will be applied for if needed.
Hebron Township	Road Use Agreement	3	Temporary or permanent approach permits will be applied for if needed.
* Status Explanations: 1 = Completed and approved; 2 = Applied and/or decision pending; 3 = Will apply for prior to construction as applicable			

## 8.0 QUALIFICATIONS OF CONTRIBUTORS

TABLE 8.0-1		
Qualifications of Contributors		
Name	Responsibilities	Education and Experience
<b>Basin Electric Power Cooperative</b>		
Bobby Nasset	Project Manager	B.S. Civil Engineering Registered Professional Engineer 18 Years of Experience
Erin Dukart	Environmental/Permitting	B.S. Biology 14 Years of Experience
Shane Vasbinder	Project Engineer	B.S. Civil Engineering Registered Professional Engineer 18 Years of Experience
Mike Murray	Right-of-Way	A.A. Business Administration B.S. Management SR/WA (Senior ROW designation) 26 Years of Experience
Jason Brekke	GIS Analyst	B.S. Geography 22 Years of Experience
<b>Merjent, Inc.</b>		
Lindsey Churchill	Project Manager	PhD Natural Resources Management M.S. Natural Resources Management B.S. Biology and Mathematics 15 Years of Experience
Maddy Krumwiede	Deputy Project Manager and Application Lead	MBA B.S. Civil Engineering 12 Years of Experience
Liz Metzen	Application Preparation	B.S. Geology 30 Years of Experience
Evan Carlson	GIS and Data Analyst	B.S. Environmental Science – Conservation and Resource Management 4 Years of Experience
Dirk Churchill	Application Reviewer	B.S. Natural Resources Management 12 Years of Experience
<b>Metcalf Archaeological Consultants, Inc.</b>		
Damita Engel	Cultural Resource Inventory	B.A. Anthropology Master of Anthropology, Specialization in Cultural Resource Management 31 Years of Experience
<b>Western EcoSystems Technology, Inc.</b>		
Chad Tucker	Natural Resource Inventory	B.S. Wildlife Fisheries Science 19 Years of Experience

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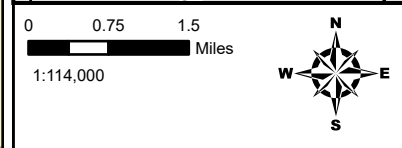
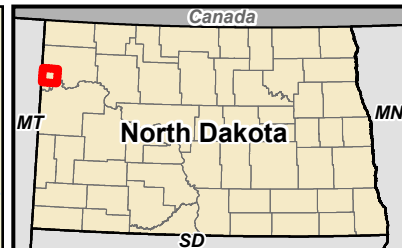
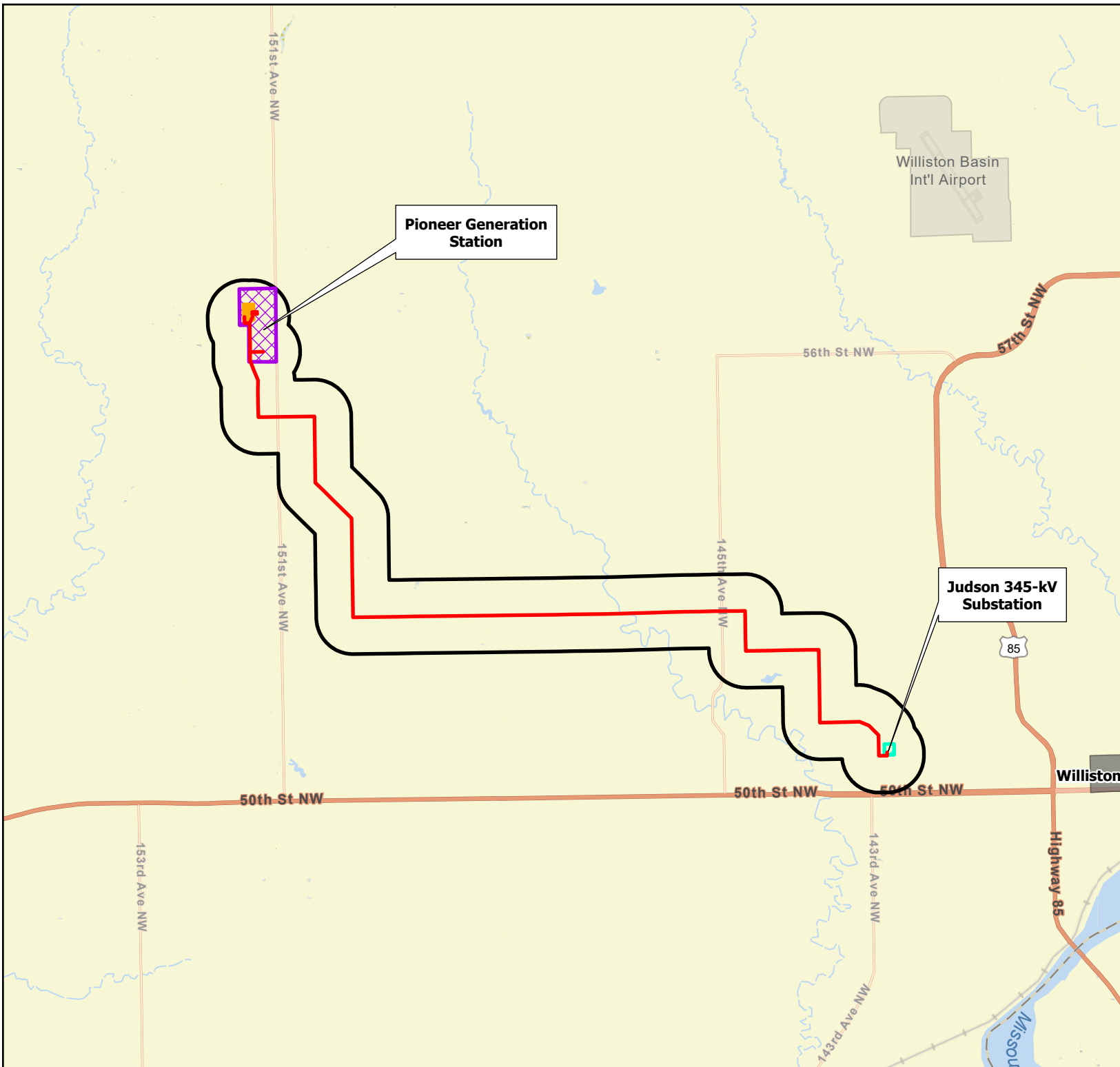
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## 10.0 ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
APLIC	Avian Power Line Interaction Committee
Basin Electric	Basin Electric Power Cooperative
BGEPA	Bald and Golden Eagle Protection Act
Certificate	Certificate of Corridor Compatibility
Commission	North Dakota Public Service Commission
CRP	Conservation Reserve Program
CTG	combustion turbine generator
EMF	electromagnetic fields
EMR	electromagnetic radiation
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FSA	Farm Service Agency
ft <sup>2</sup>	square feet
GIS	geographic information systems
ICBM	intercontinental ballistic missile
IPaC	Information for Planning and Conservation
Judson Substation	Judson 345-kV Substation
kHz	kilohertz
kV	kilovolt
Metcalf	Metcalf Archaeological Consultants, Inc.
MHz	megahertz
NDAC	North Dakota Administrative Code
NDCC	North Dakota Century Code
NDDEQ	North Dakota Department of Environmental Quality
NDDMR	North Dakota Department of Mineral Resources
NDDOC	North Dakota Department of Commerce
NDDOT	North Dakota Department of Transportation
NDDTL	North Dakota Department of Trust Lands
NDDWR	North Dakota Department of Water Resources
NDGFD	North Dakota Game and Fish Department
NDGS	North Dakota Geological Survey
NDPRD	North Dakota Parks and Recreation Department
NTA	North Dakota Transmission Authority
NESC	National Electrical Safety Code
NIEHS	National Institute of Environmental Health Sciences
NHD	National Hydrography Dataset
NLEB	northern long-eared bat
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory

NWP	Nationwide Permit
OPGW	optical ground wire
PGS	Pioneer Generation Station
Project	Pioneer to Judson 345-kV Transmission Project
PWS	public water system
RICE	reciprocating internal combustion engines
Route Permit	Transmission Facility Route Permit
ROW	right-of-way
RUS	Rural Utilities Service
SCADA	Supervisory Control and Data Acquisition
SHSND	State Historical Society of North Dakota
SPP	Southwest Power Pool
SPCC	Spill Prevention, Control and Countermeasure (plan)
SWPA	Source Water Protection Areas
SWPPP	Storm Water Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WAWSA	Western Area Water Supply Authority
WEST	Western EcoSystems Technology, Inc.

## Figures



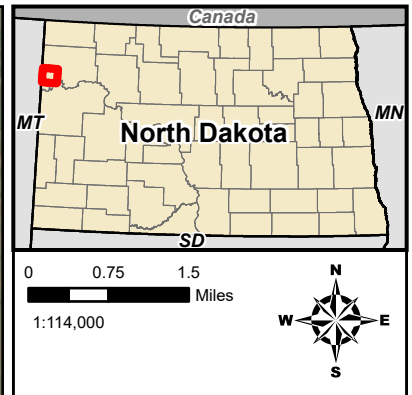
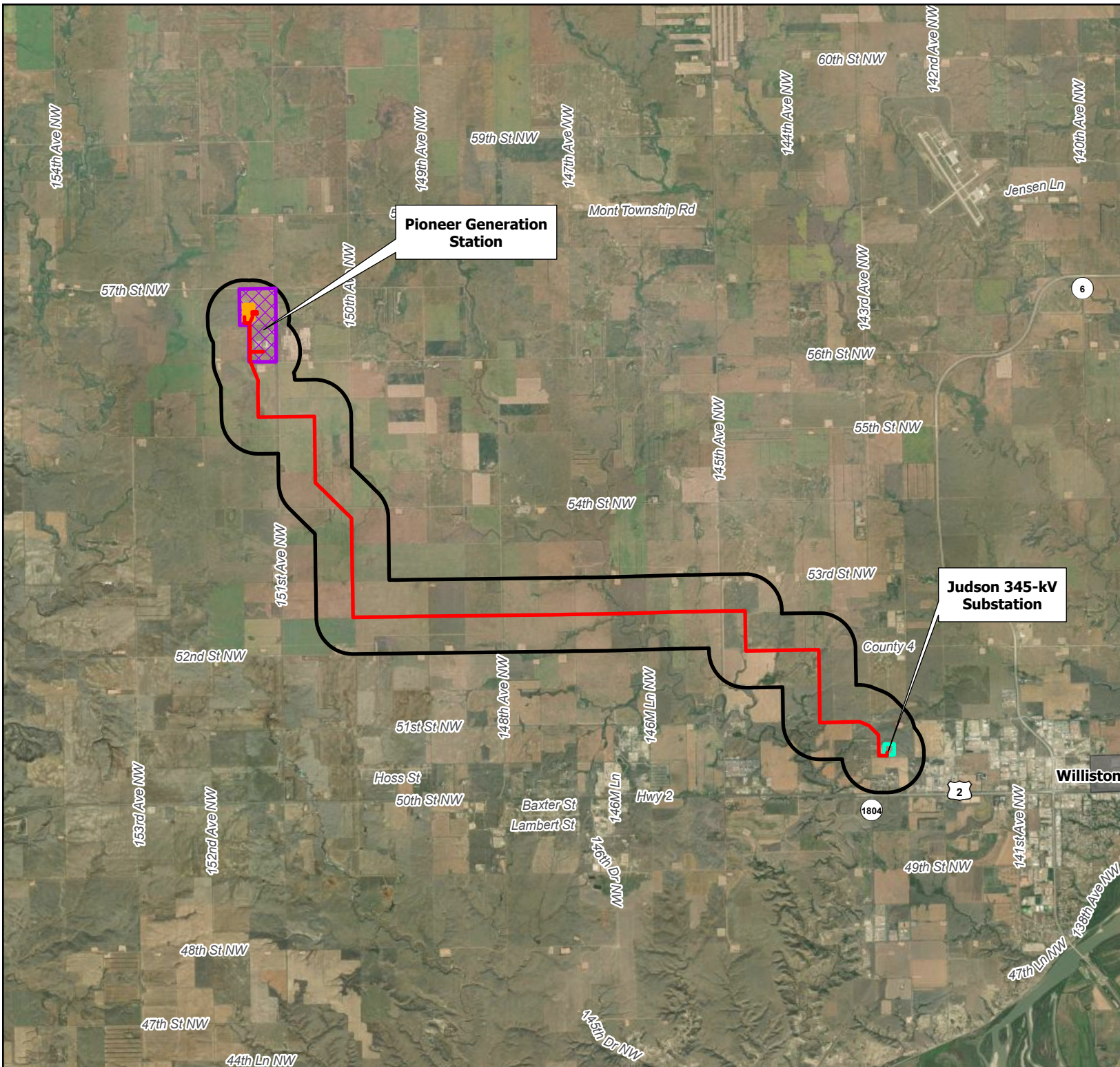
**Legend**

- Municipal Boundaries
- Site Plan**
- Transmission Line Route
- Study Area
- Judson Substation
- Pioneer Generation Station
- Pioneer 345-kV Switchyard

**Figure 1-1**  
**Project Overview Map**  
**Pioneer to Judson 345-kV**  
**Transmission Line Project**  
 Basin Electric Power Cooperative  
 Williams County, North Dakota

For Environmental Review Purposes Only 9/22/2023

Source: Z:\Clients\A\_D\Basin\Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGD\FIGS\_to\_Judson\_Webviewer



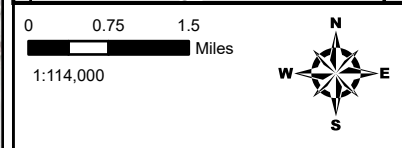
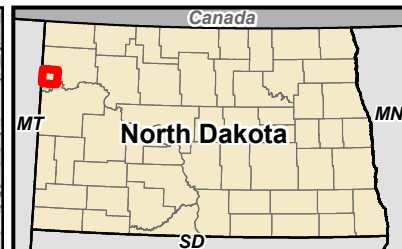
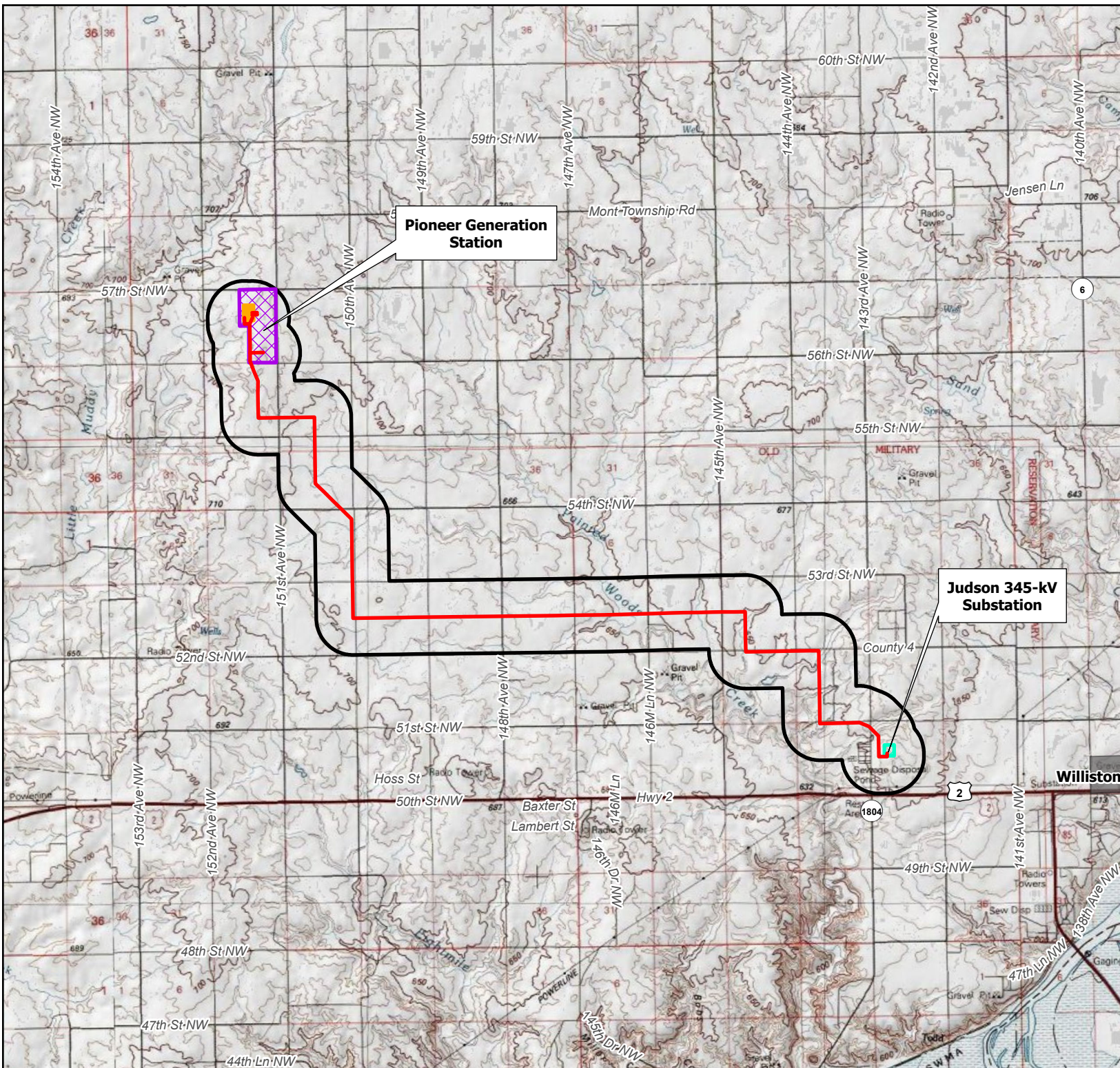
**Legend**







- Municipal Boundaries
- Site Plan**
- Transmission Line Route
- Study Area
- Judson Substation
- Pioneer Generation Station
- Pioneer 345-kV Switchyard

**Figure 1-2**  
**Project Location Map (Aerial)**  
**Pioneer to Judson 345-kV**  
**Transmission Line Project**  
 Basin Electric Power Cooperative  
 Williams County, North Dakota


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Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGD\FIGS\_to\_Judson\_Webviewer



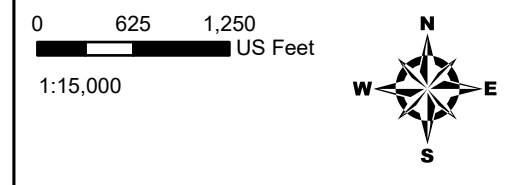
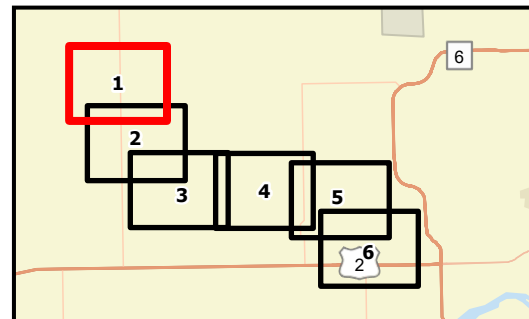
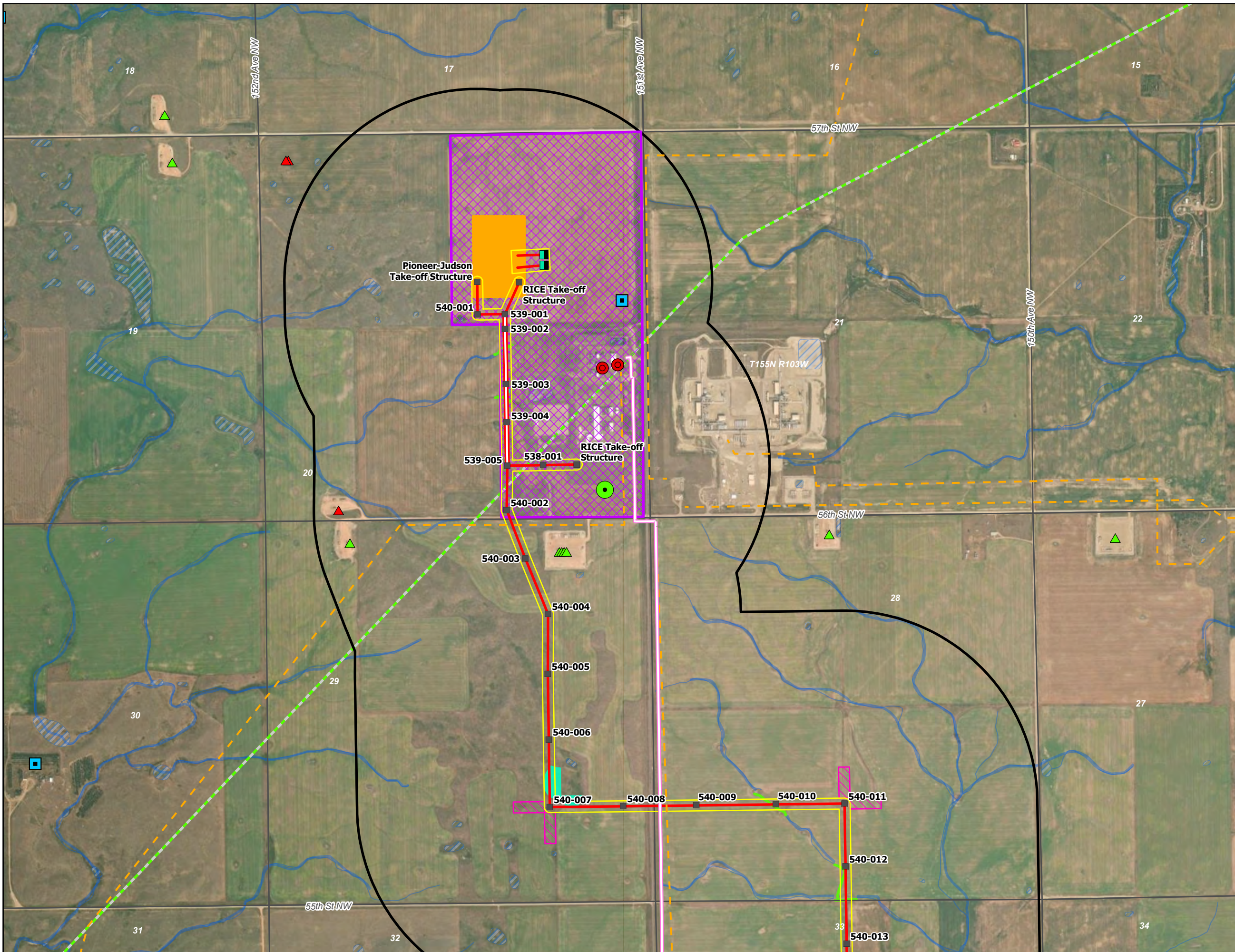
-  Municipal Boundaries
- Site Plan**
-  Transmission Line Route
-  Study Area
-  Judson Substation
-  Pioneer Generation Station
-  Pioneer 345-kV Switchyard

**Figure 1-3**  
**Project Location Map**  
**(Topographic)**  
**Pioneer to Judson 345-kV**  
**Transmission Line Project**  
**Basin Electric Power Cooperative**  
**Williams County, North Dakota**



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Date: (9/22/2023) Source: Z:\OlemissVA\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGD\FIGS\_to\_Judson\_Webviewer

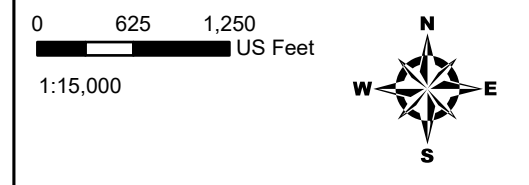
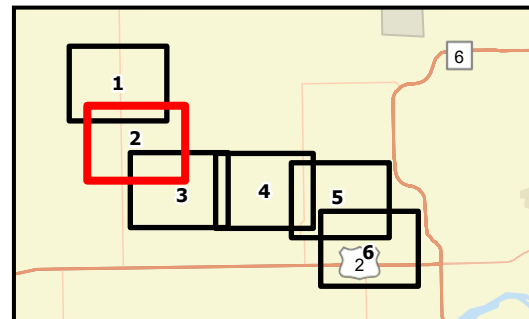
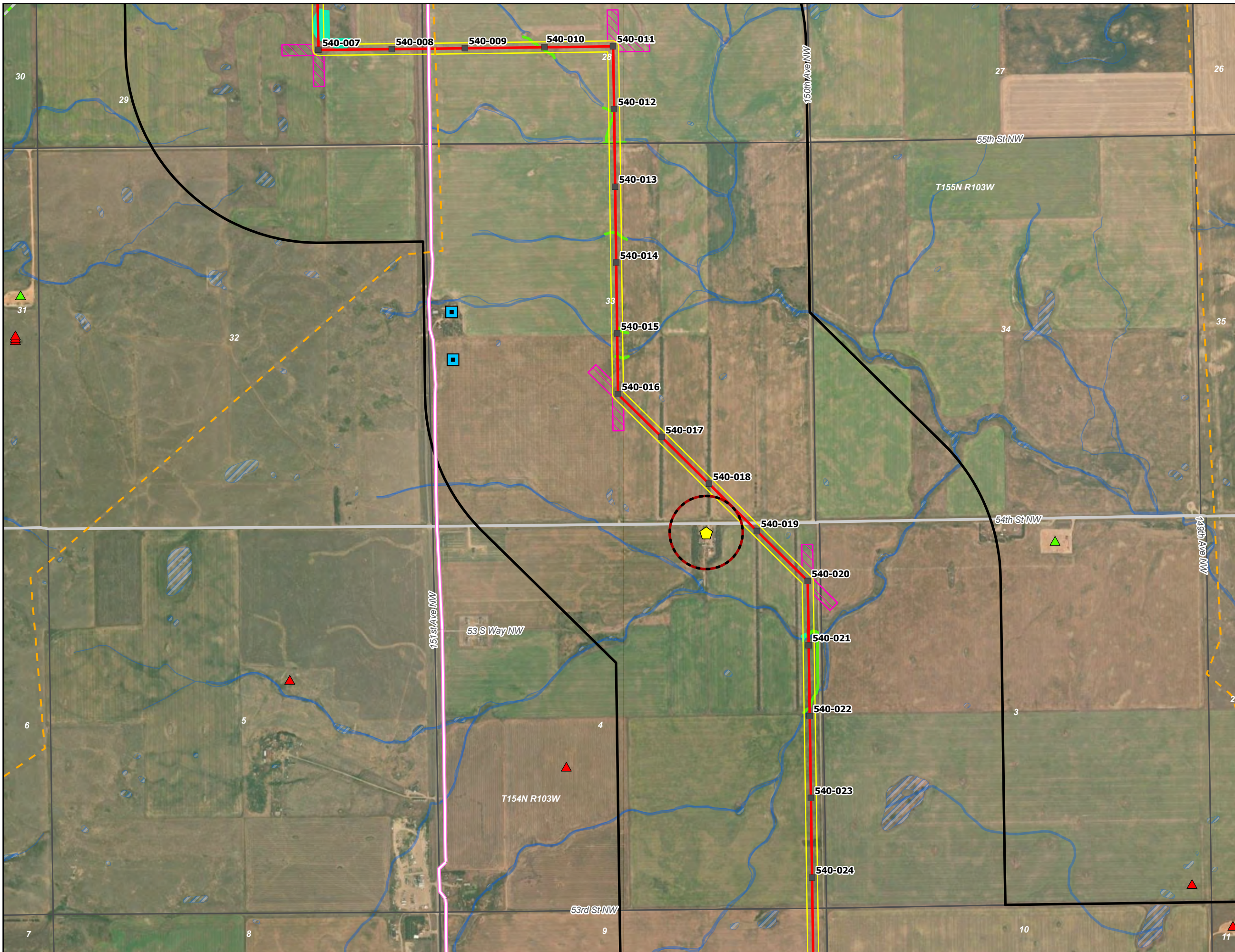


- PLSS Township Boundary
- PLSS Section Boundary
- 115-kV Transmission Line
- 230-kV Transmission Line
- Natural Gas Pipeline
- WAWSA Transmission Mains
- Approximate NPMS Pipeline
- Water Supply Well
- Inactive Oil/Gas Well
- Active Oil/Gas Well
- Microwave Station
- NHD Waterbody
- NWI Wetland
- Field Delineated Waterbodies
- Field Delineated Wetlands

- ### Site Plan
- Planned Transmission Structure Location
  - Transmission Line Route
  - Double Circuit Transmission Line Route
  - CTG
  - Laydown Yard Location
  - Pioneer 345-kV Switchyard
  - 150-foot Project Corridor
  - Study Area
  - Pull Lanes
  - Pioneer Generation Station

**Figure 1-4**  
**Site Plan**  
 Pioneer to Judson 345-kV  
 Transmission Line Project  
 Basin Electric Power Cooperative  
 Williams County, North Dakota  
 Page 1 of 6

Date: (9/29/2023) Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGOPGS\_to\_Judson\_Webviewer



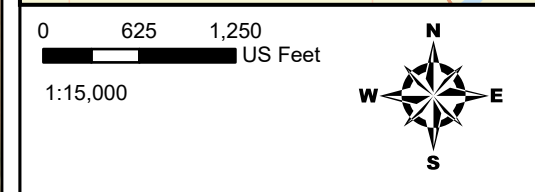
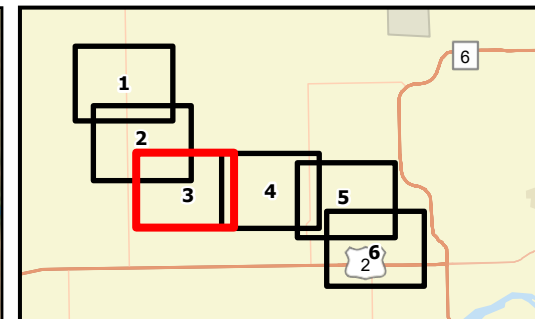
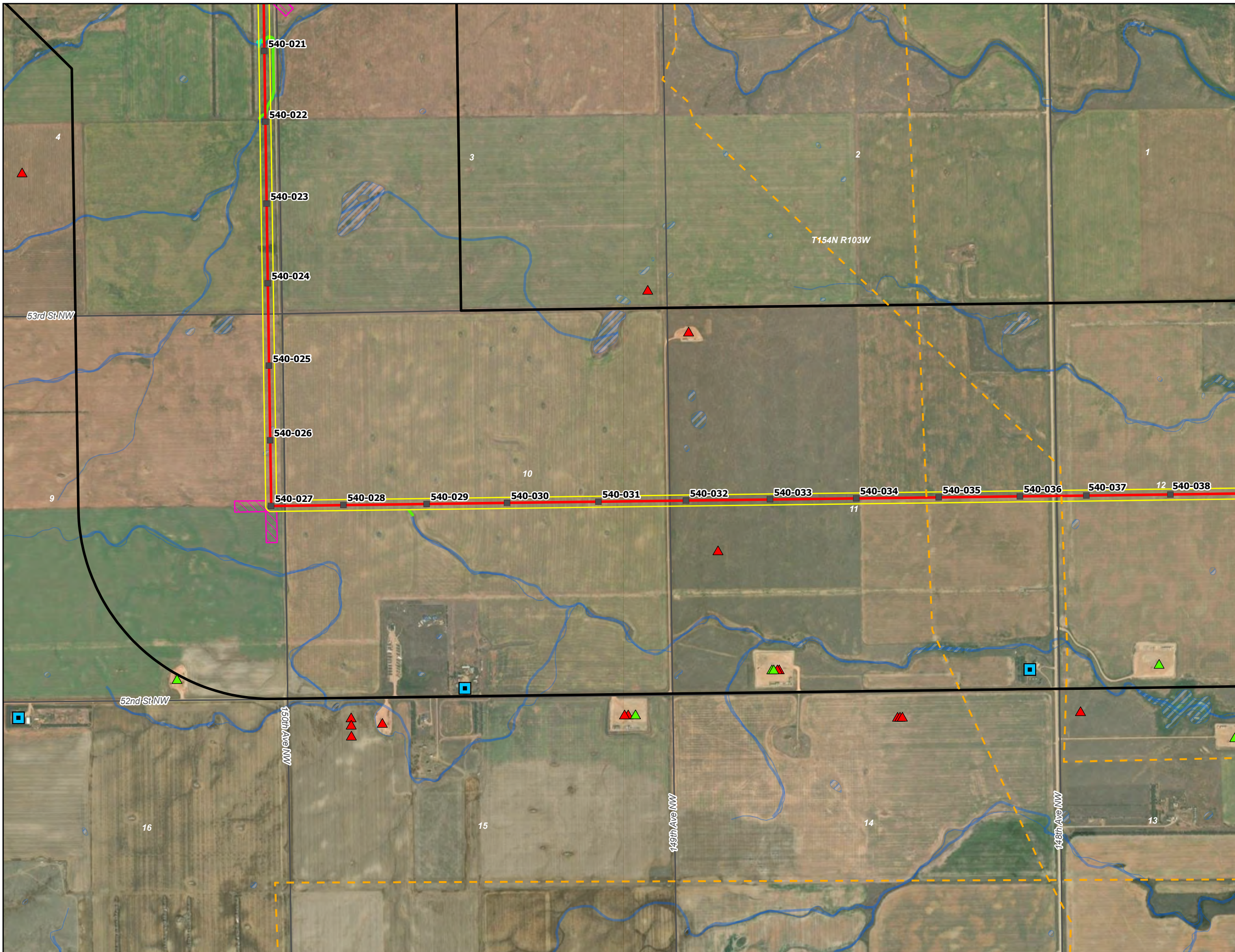
- PLSS Township Boundary
- PLSS Section Boundary
- 115-kV Transmission Line
- 230-kV Transmission Line
- Natural Gas Pipeline
- WAWSA Transmission Mains
- Approximate NPMS Pipeline
- Water Supply Well
- Inactive Oil/Gas Well
- Active Oil/Gas Well
- NHD Waterbody
- NWI Wetland
- Field Delineated Waterbodies
- Field Delineated Wetlands

- ### Site Plan
- Planned Transmission Structure Location
  - Transmission Line Route
  - 150-foot Project Corridor
  - Study Area
  - Pull Lanes

- ### Avoidance Areas
- Occupied Structure within 500' of Corridor
  - Occupied Structure 500' Radius

**Figure 1-4**  
**Site Plan**  
**Pioneer to Judson 345-kV**  
**Transmission Line Project**  
**Basin Electric Power Cooperative**  
**Williams County, North Dakota**  
**Page 2 of 6**

Date: (9/29/2023) 9/29/2023  
 Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGOPGS\_to\_Judson\_Webviewer  
 For Environmental Review Purposes Only

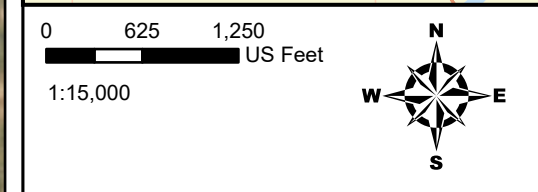
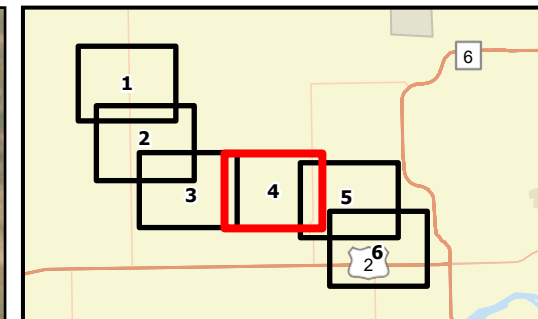
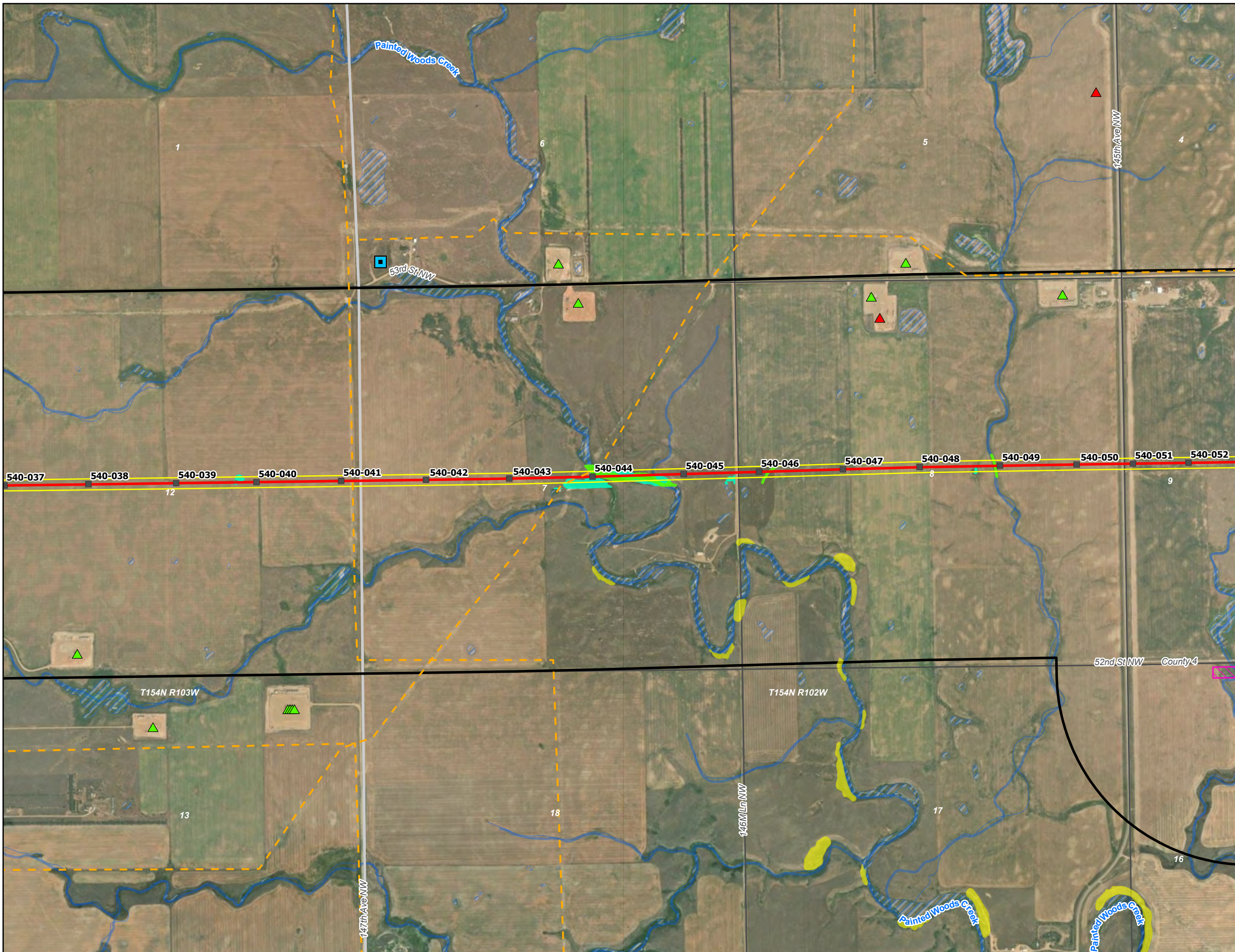


- PLSS Township Boundary
- PLSS Section Boundary
- 115-kV Transmission Line
- 230-kV Transmission Line
- Approximate NPMS Pipeline
- Water Supply Well
- Inactive Oil/Gas Well
- Active Oil/Gas Well
- NHD Waterbody
- NWI Wetland
- Field Delineated Waterbodies
- Field Delineated Wetlands

- ### Site Plan
- Planned Transmission Structure Location
  - Transmission Line Route
  - 150-foot Project Corridor
  - Study Area
  - Pull Lanes

**Figure 1-4**  
**Site Plan**  
 Pioneer to Judson 345-kV  
 Transmission Line Project  
 Basin Electric Power Cooperative  
 Williams County, North Dakota  
 Page 3 of 6

Date: (9/29/2023) Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGOPGS\_to\_Judson\_Webviewer



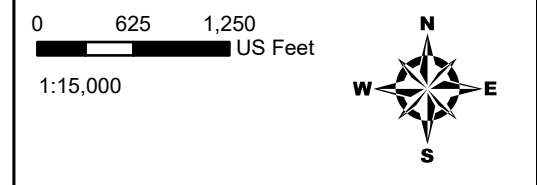
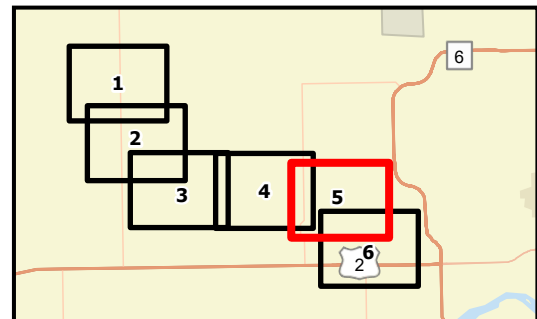
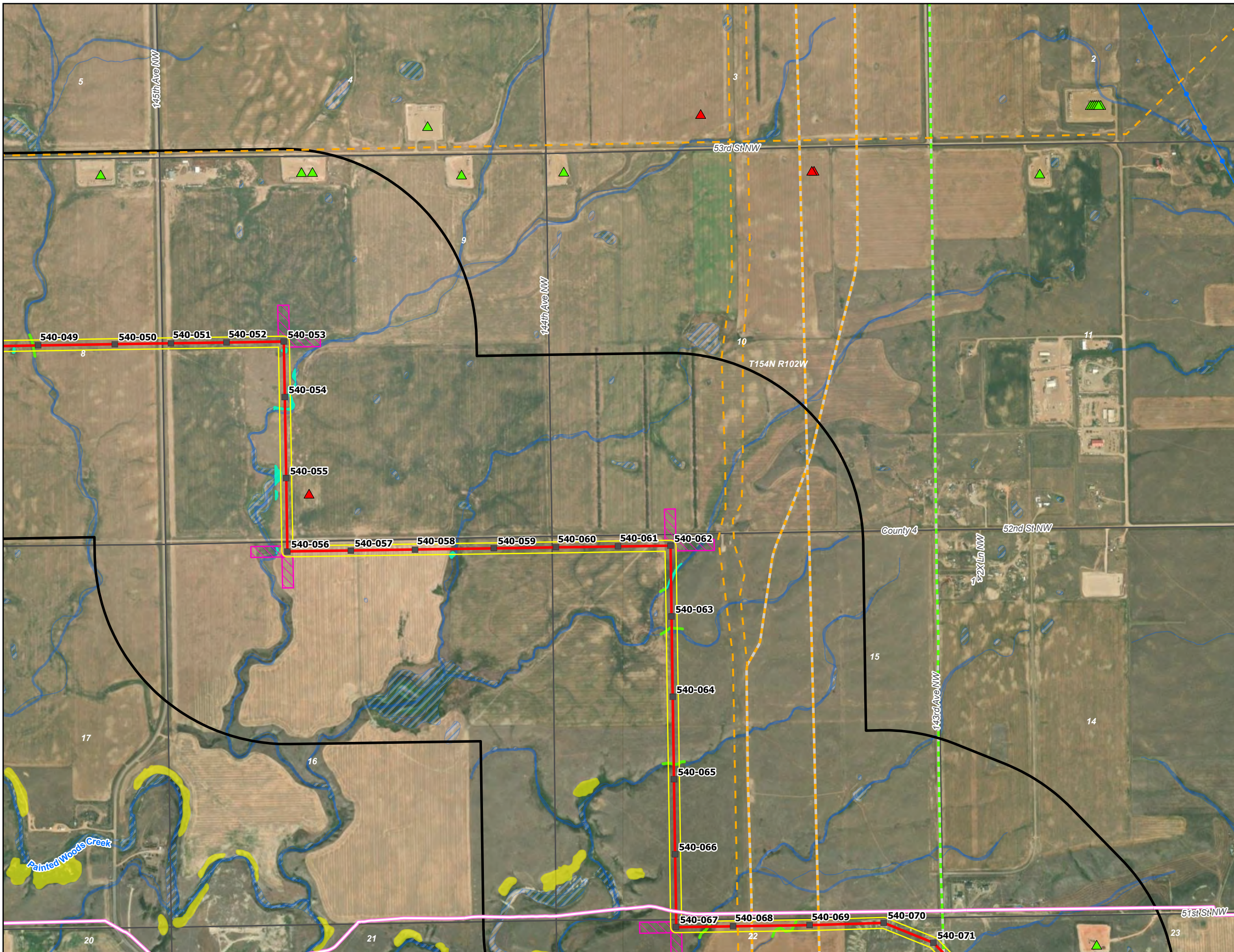
- PLS Township Boundary
- PLS Section Boundary
- 115-kV Transmission Line
- 230-kV Transmission Line
- Approximate NPMS Pipeline
- Water Supply Well
- Inactive Oil/Gas Well
- Active Oil/Gas Well
- NHD Waterbody
- NWI Wetland
- Field Delineated Waterbodies
- Field Delineated Wetlands

- ### Site Plan
- Planned Transmission Structure Location
  - Transmission Line Route
  - 150-foot Project Corridor
  - Study Area
  - Pull Lanes

- ### Avoidance Areas
- Landslide Deposit

**Figure 1-4**  
**Site Plan**  
 Pioneer to Judson 345-kV  
 Transmission Line Project  
 Basin Electric Power Cooperative  
 Williams County, North Dakota  
 Page 4 of 6

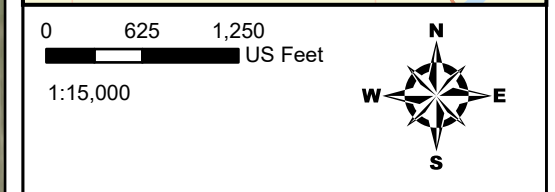
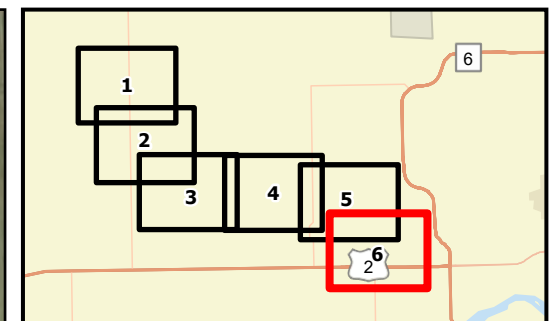
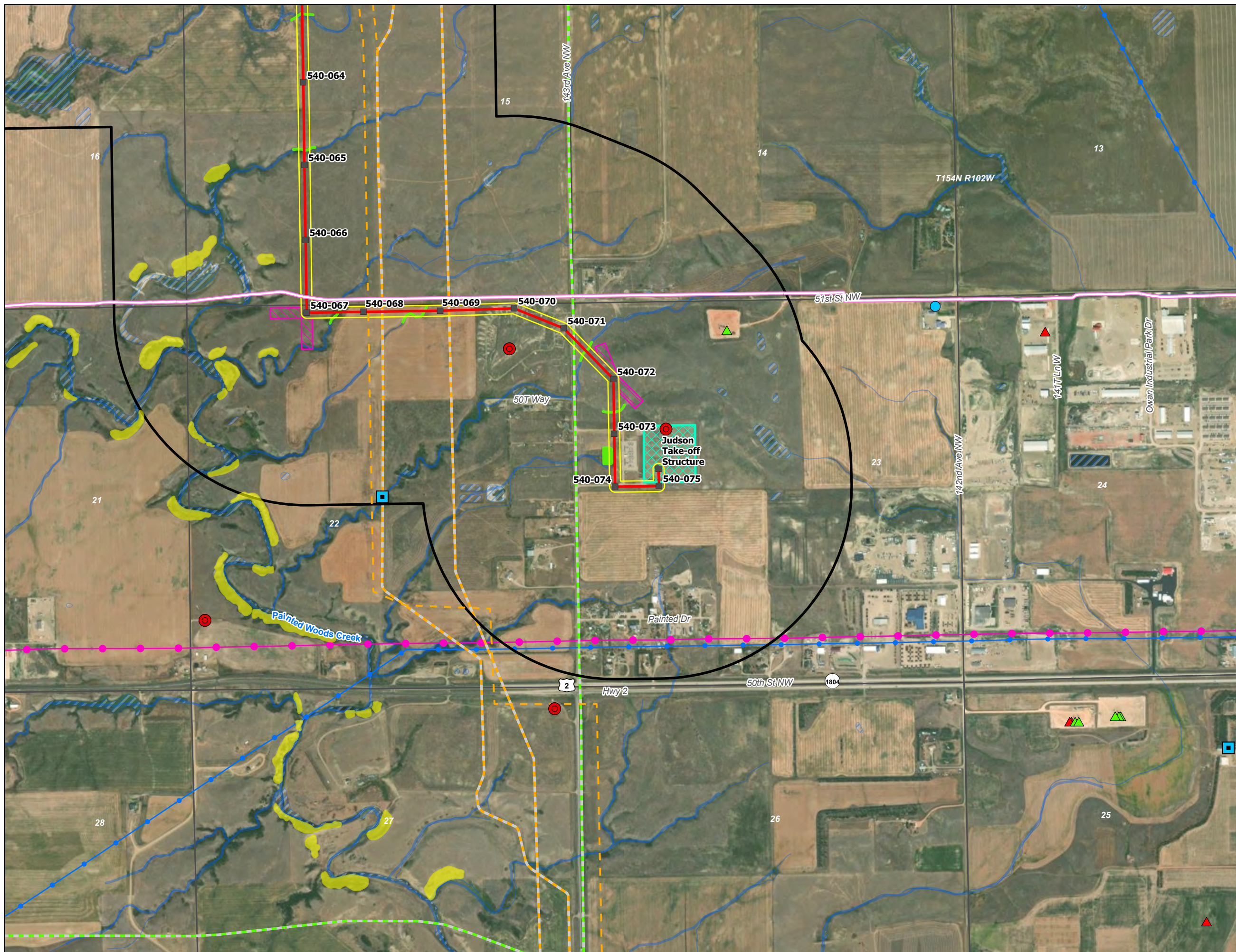
Date: (9/29/2023) Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGOPGS\_to\_Judson\_Webviewer



- PLSS Township Boundary
- PLSS Section Boundary
- 115-kV Transmission Line
- 230-kV Transmission Line
- Natural Gas Pipeline
- WAWSA Transmission Mains
- Approximate NPMS Pipeline
- Inactive Oil/Gas Well
- Active Oil/Gas Well
- Crude Oil Pipeline
- NHD Waterbody
- NWI Wetland
- Field Delineated Waterbodies
- Field Delineated Wetlands

- ### Site Plan
- Planned Transmission Structure Location
  - Transmission Line Route
  - 150-foot Project Corridor
  - Study Area
  - Pull Lanes
- ### Avoidance Areas
- Landslide Deposit

**Figure 1-4**  
**Site Plan**  
 Pioneer to Judson 345-kV  
 Transmission Line Project  
 Basin Electric Power Cooperative  
 Williams County, North Dakota  
 Page 5 of 6



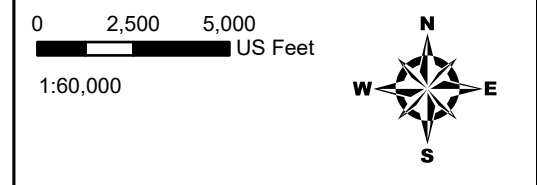
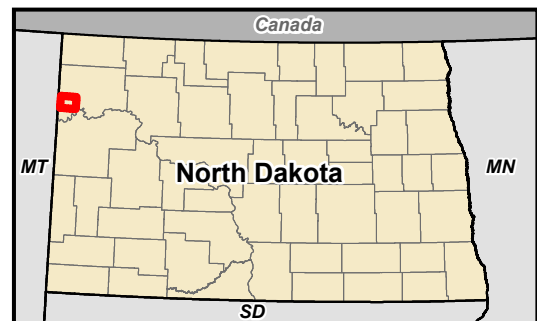
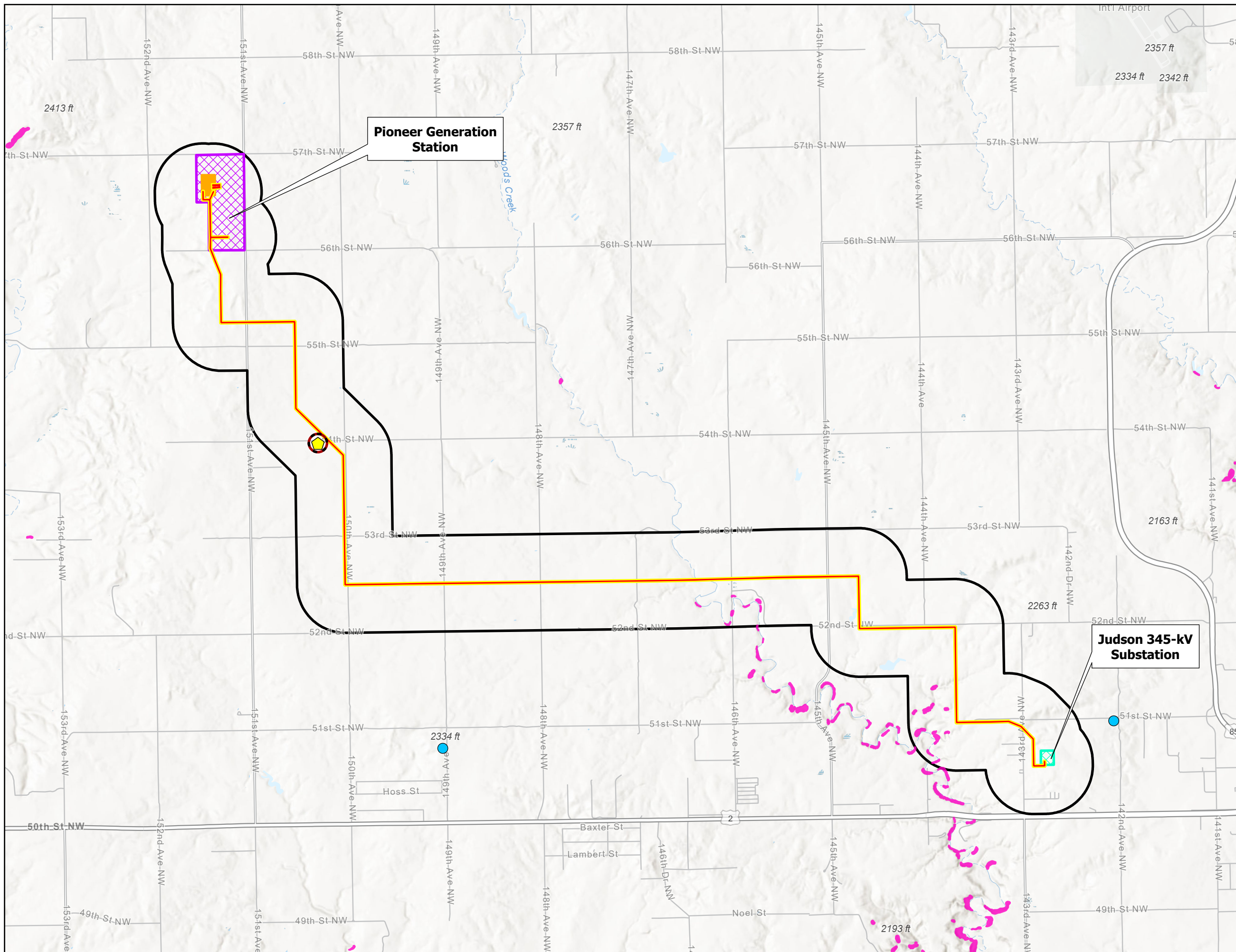
- PLSS Township Boundary
- PLSS Section Boundary
- 115-kV Transmission Line
- 230-kV Transmission Line
- Natural Gas Pipeline
- WAWSA Transmission Mains
- Approximate NPMS Pipeline
- Water Supply Well
- Inactive Oil/Gas Well
- Active Oil/Gas Well
- Microwave Station
- Crude Oil Pipeline
- NHD Waterbody
- NWI Wetland
- Field Delineated Waterbodies

- Site Plan**
- Planned Transmission Structure Location
  - Transmission Line Route
  - Judson Substation
  - 150-foot Project Corridor
  - Study Area
  - Pull Lanes

- Avoidance Areas**
- Landslide Deposit
  - WAWSA Reservoir/Water Tower

**Figure 1-4**  
**Site Plan**  
 Pioneer to Judson 345-kV  
 Transmission Line Project  
 Basin Electric Power Cooperative  
 Williams County, North Dakota  
 Page 6 of 6

Date: (9/29/2023) Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGOPGS\_to\_Judson\_Webviewer

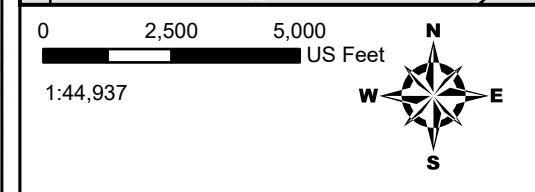
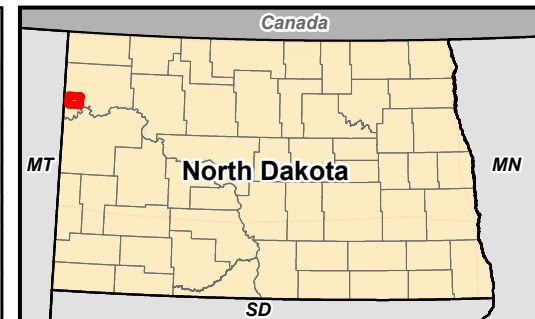
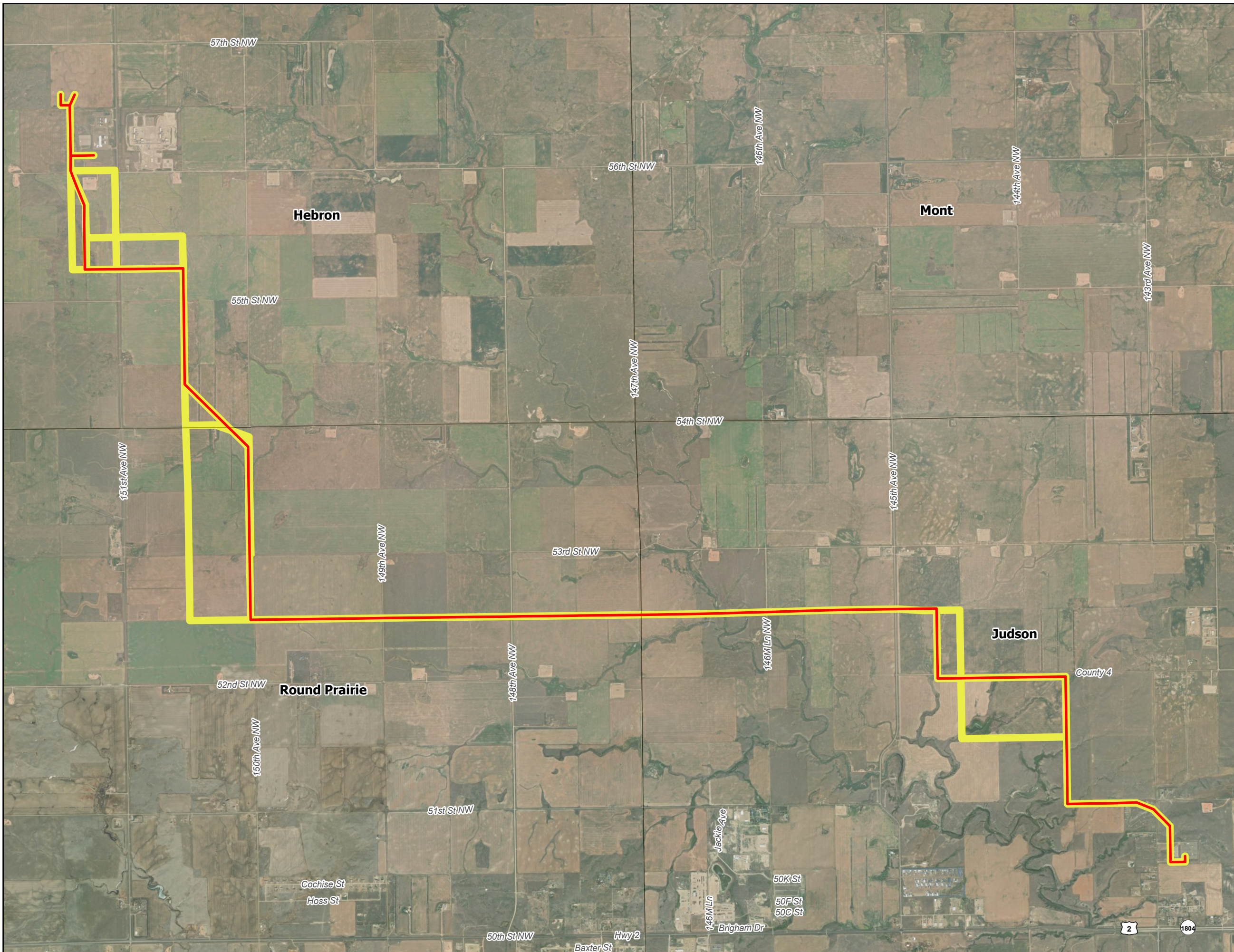


- Transmission Line Route
  - Pioneer 345-kV Switchyard
  - ▣ Judson Substation
  - ▣ Pioneer Generation Station
  - Study Area
  - 150-foot Project Corridor
- Avoidance Areas**
- ▬ Landslide Deposit
  - Occupied Structure 500' Radius
  - ▣ Occupied Structure within 500' of Corridor
  - Municipal Water Supply Reservoir/Water Tower

**Figure 3-1**  
**Exclusion and Avoidance Maps**  
**Pioneer to Judson 345-kV**  
**Transmission Line Project**  
**Basin Electric Power Cooperative**  
**Williams County, North Dakota**



Date: (9/22/2023) Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGOPGS\_to\_Judson\_Webviewer

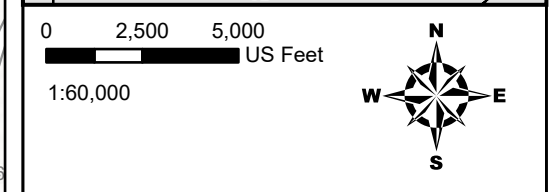
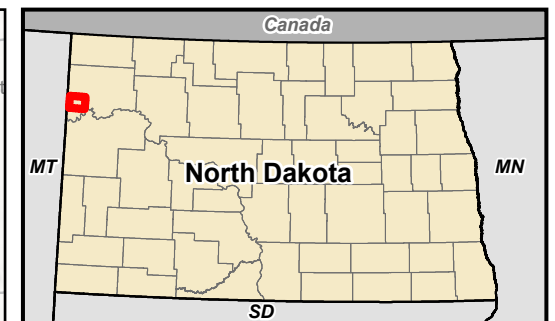
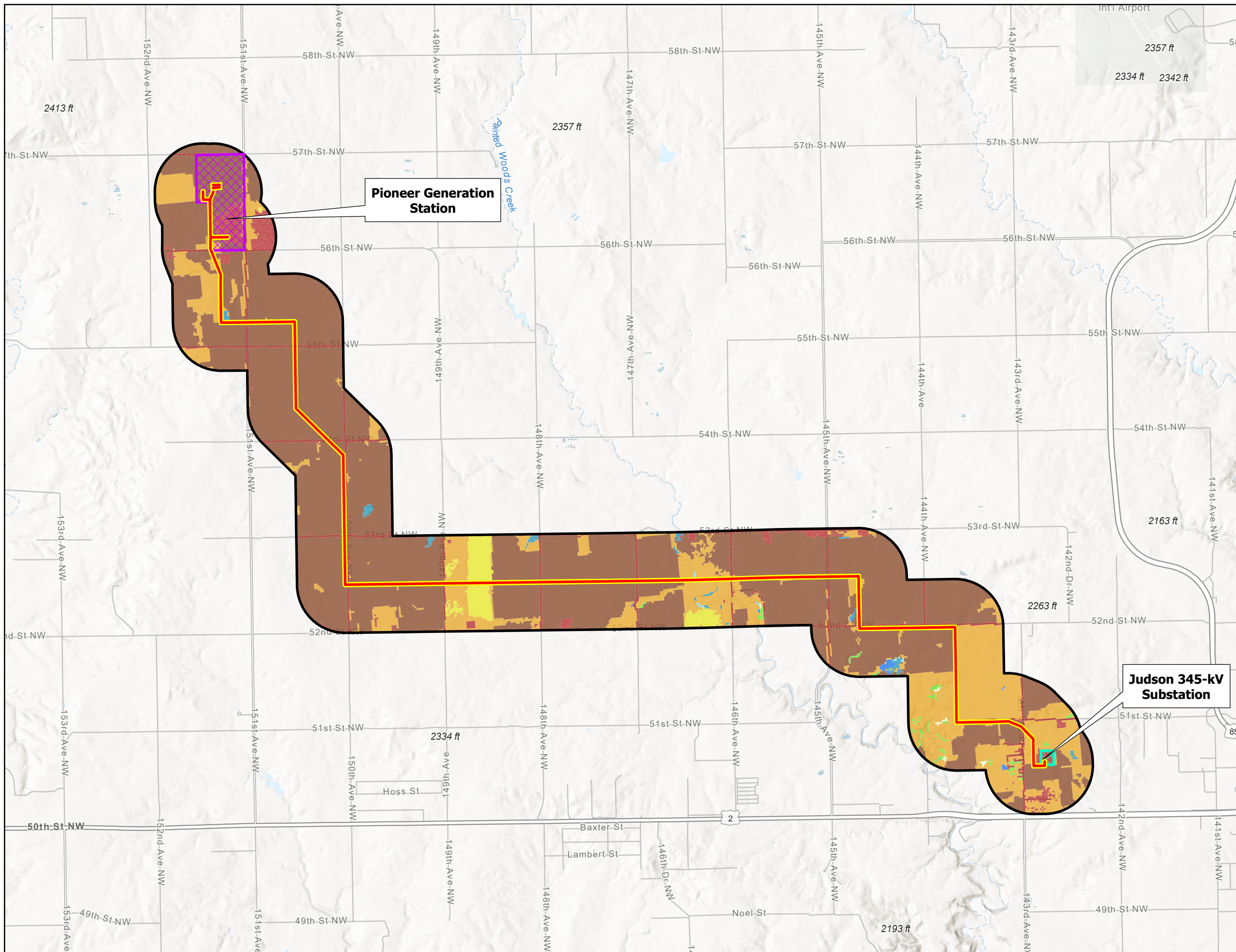


- Cultural Resources Survey Area
- Civil Township Boundary
- Site Plan**
- PGS to Judson Transmission Route

**Figure 5-1**  
**Cultural Resources Survey**  
**Corridor Map**  
**Pioneer to Judson 345-kV**  
**Transmission Line Project**  
**Basin Electric Power Cooperative**  
**Williams County, North Dakota**



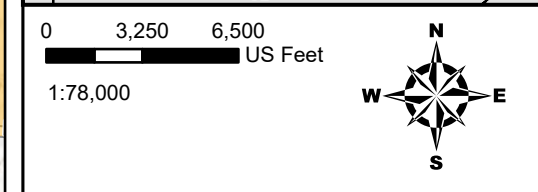
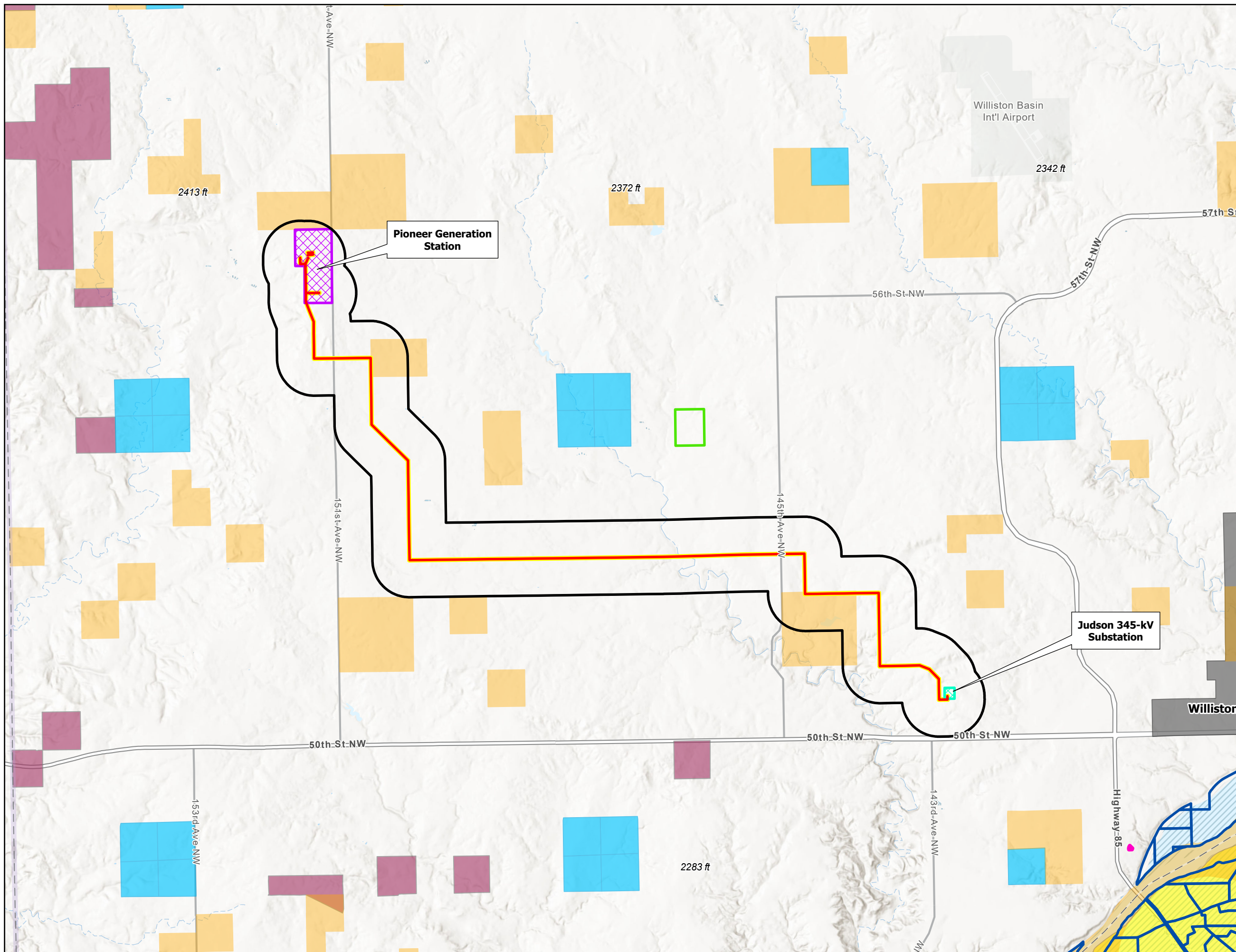
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- Transmission Line Route
  - 150-foot Project Corridor
  - Study Area
  - Pioneer Generation Station
  - Judson Substation
- National Land Cover Dataset**
- Open Water
  - Developed
  - Barren Land
  - Deciduous Forest
  - Evergreen Forest
  - Mixed Forest
  - Herbaceous
  - Hay/Pasture
  - Cultivated Crops
  - Woody Wetlands
  - Emergent Herbaceous Wetlands

**Figure 5-2**  
**Land Use Map**  
 Pioneer to Judson 345-kV  
 Transmission Line Project  
 Basin Electric Power Cooperative  
 Williams County, North Dakota

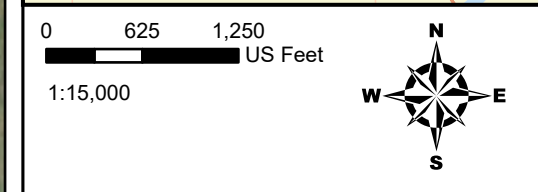
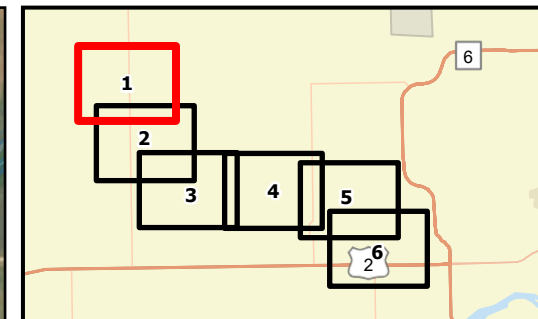
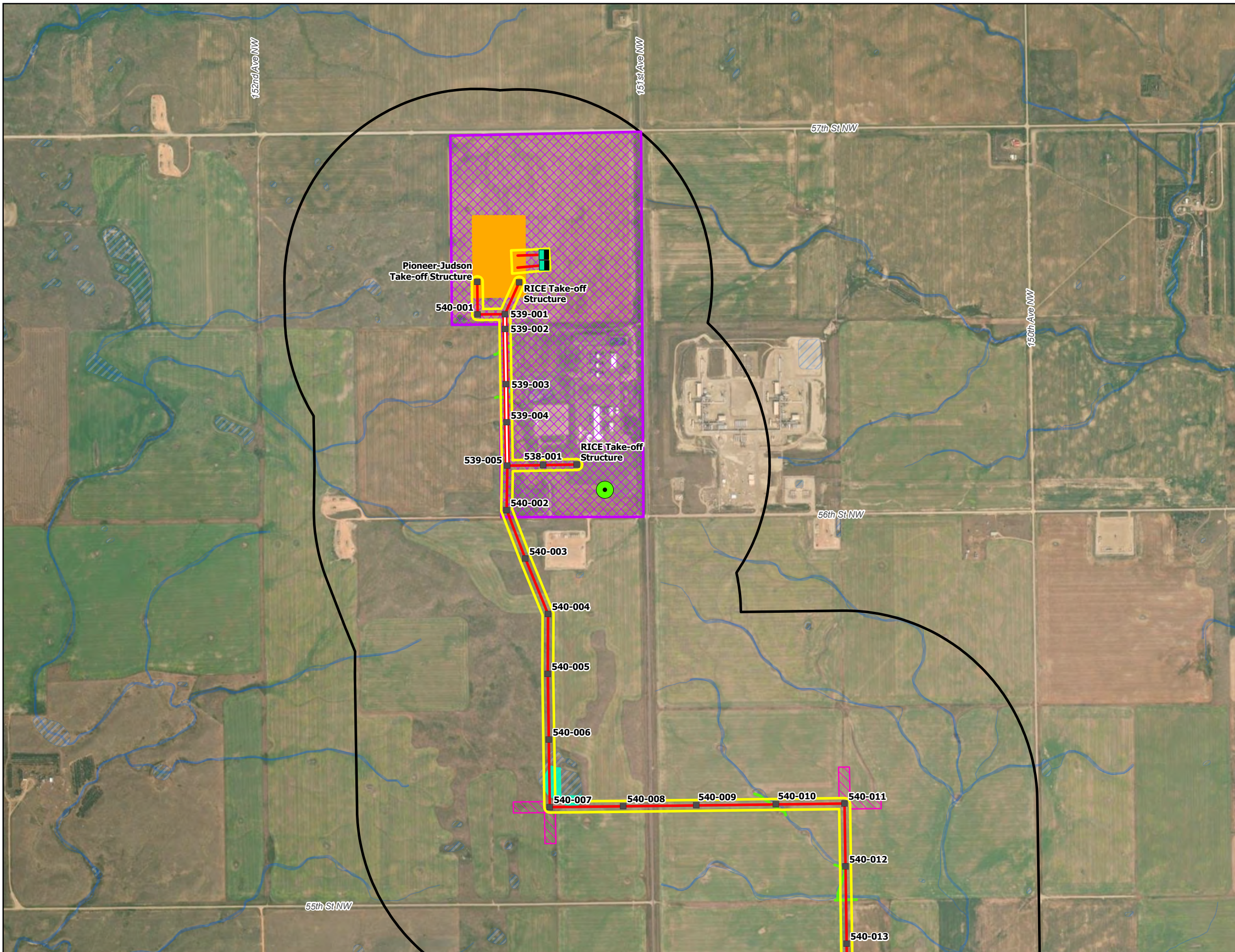
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- Municipal Boundaries
  - ND State Trust Surface Lands
  - ND State Trust Mineral Lands
  - Army Corps of Engineers
  - Private Lands Open To Sportsmen
  - American Indian Land
  - Lewis & Clark WMA
  - Lookout Park
- Site Plan**
- Transmission Route
  - 150-foot Project Corridor
  - Study Area
  - Judson Substation
  - Pioneer Generation Station

**Figure 5-3  
Public Lands, Easements, and  
Agreements Map  
Pioneer to Judson 345-kV  
Transmission Line Project  
Basin Electric Power Cooperative  
Williams County, North Dakota**

Date: (9/22/2023) Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGOPGS\_to\_Judson\_Webviewer



- NHD Waterbody
- NWI Wetland
- Field Delineated Wetlands
- Field Delineated Waterbodies

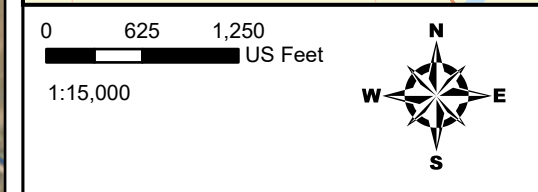
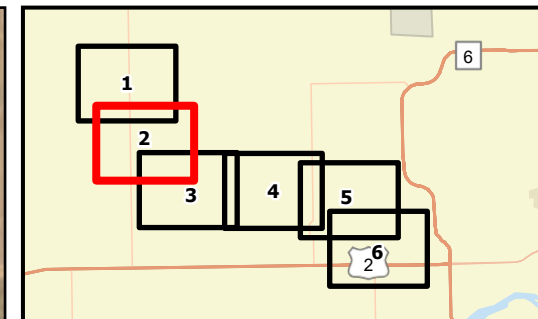
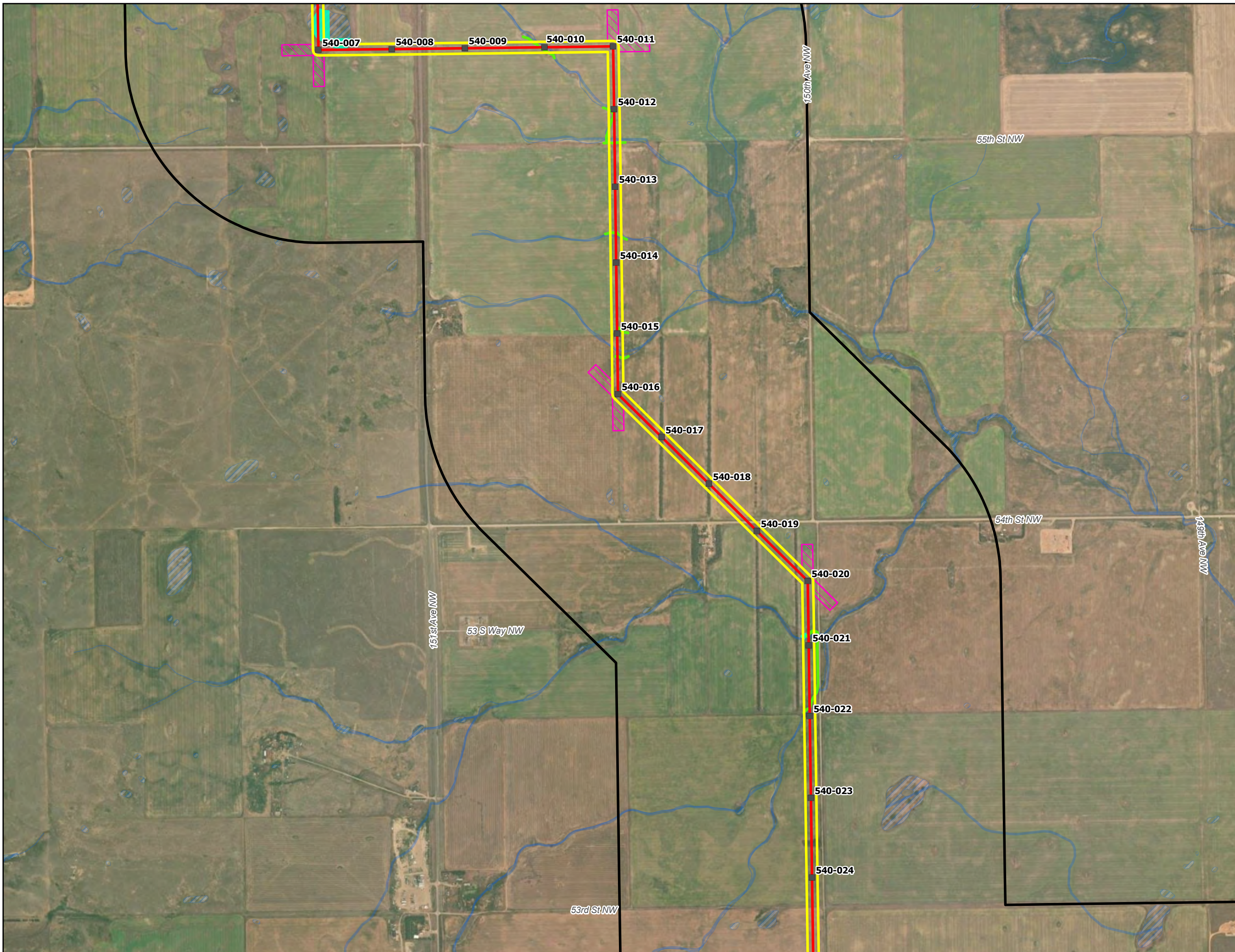
### Site Plan

- Planned Transmission Structure Location
- CTG
- Transmission Line Route
- Double Circuit Transmission Line Route
- 150-foot Project Corridor
- Laydown Yard Location
- Pioneer 345-kV Switchyard
- Pioneer Generation Station
- Pull Lanes
- Study Area

**Figure 5-4**  
**Wetland and Waterbody Map**  
 Pioneer to Judson 345-kV  
 Transmission Line Project  
 Basin Electric Power Cooperative  
 Williams County, North Dakota  
 Page 1 of 6



Date: (9/29/2023) Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGOPGS\_to\_Judson\_Webviewer

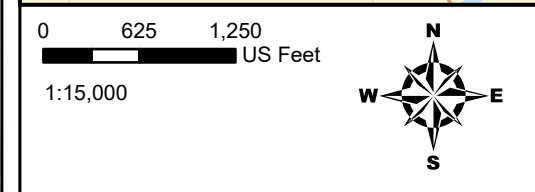
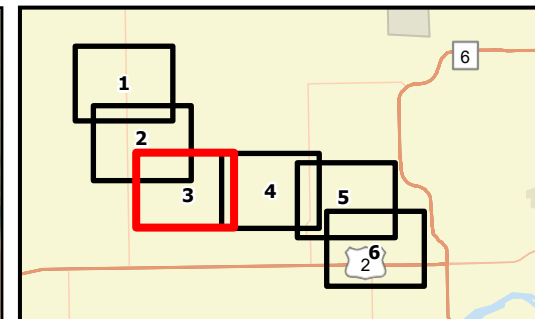
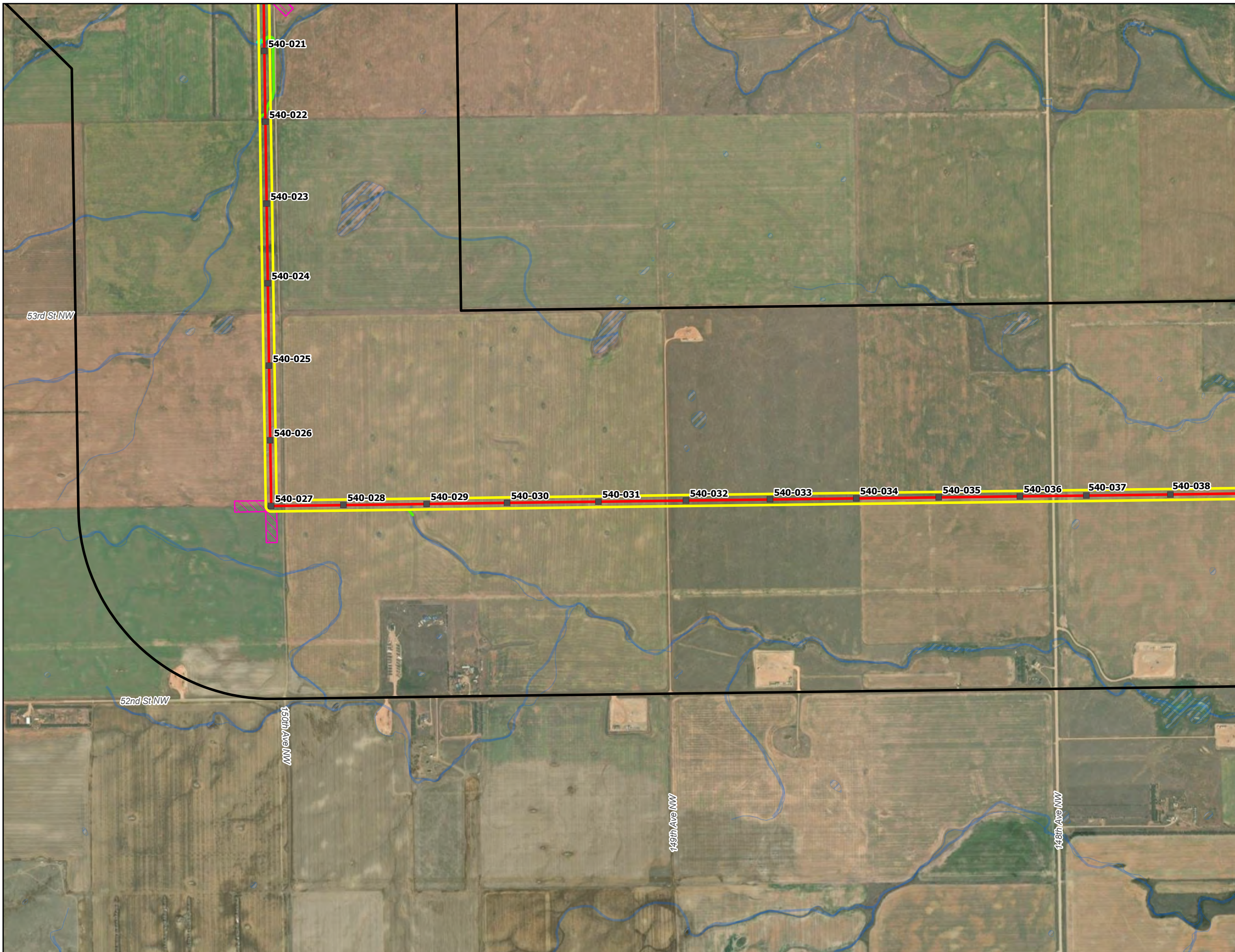


- NHD Waterbody
  - ▨ NWI Wetland
  - ▨ Field Delineated Wetlands
  - Field Delineated Waterbodies
- Site Plan**
- Planned Transmission Structure Location
  - Transmission Line Route
  - ▨ 150-foot Project Corridor
  - ▨ Pull Lanes
  - Study Area

**Figure 5-4**  
**Wetland and Waterbody Map**  
 Pioneer to Judson 345-kV  
 Transmission Line Project  
 Basin Electric Power Cooperative  
 Williams County, North Dakota  
 Page 2 of 6



Date: (9/29/2023) Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGOPGS\_to\_Judson\_Webviewer

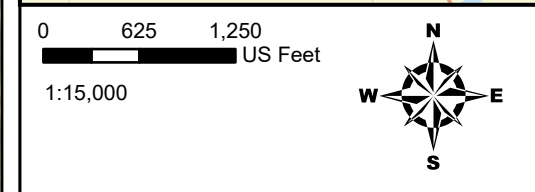
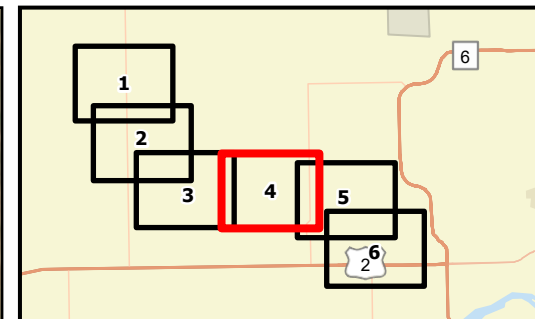
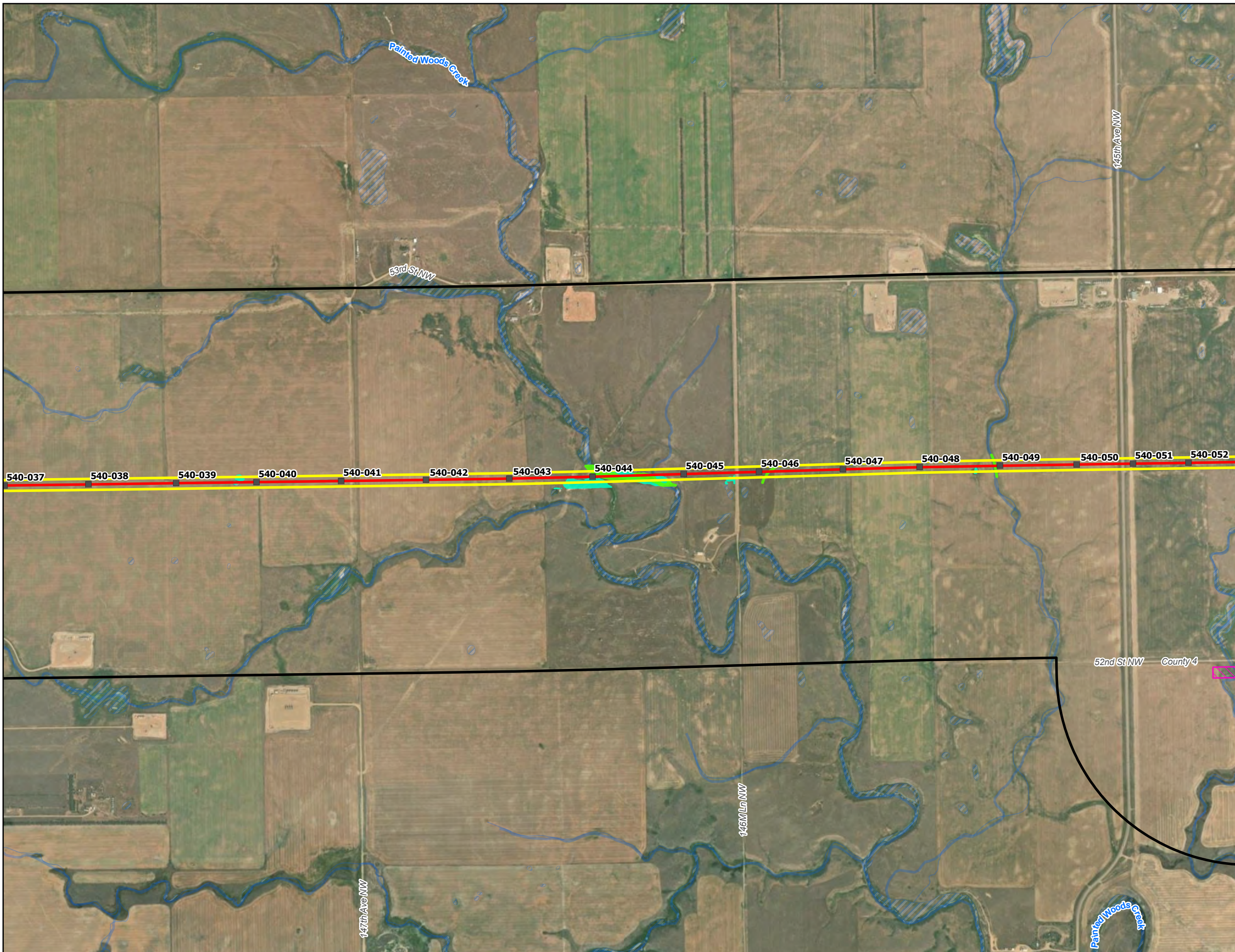


- NHD Waterbody
  - ▨ NWI Wetland
  - ▨ Field Delineated Wetlands
  - ▨ Field Delineated Waterbodies
- Site Plan**
- Planned Transmission Structure Location
  - Transmission Line Route
  - ▨ 150-foot Project Corridor
  - ▨ Pull Lanes
  - ▭ Study Area

**Figure 5-4**  
**Wetland and Waterbody Map**  
 Pioneer to Judson 345-kV  
 Transmission Line Project  
 Basin Electric Power Cooperative  
 Williams County, North Dakota  
 Page 3 of 6



Date: (9/29/2023) Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGOPGS\_to\_Judson\_Webviewer

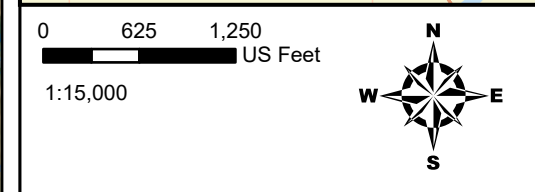
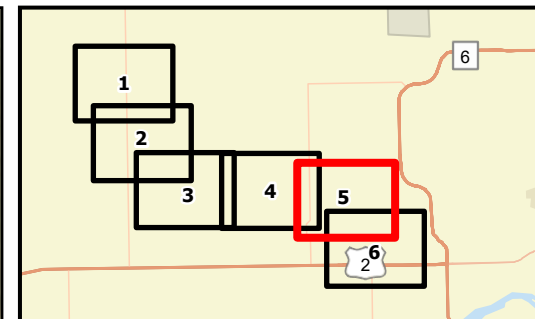
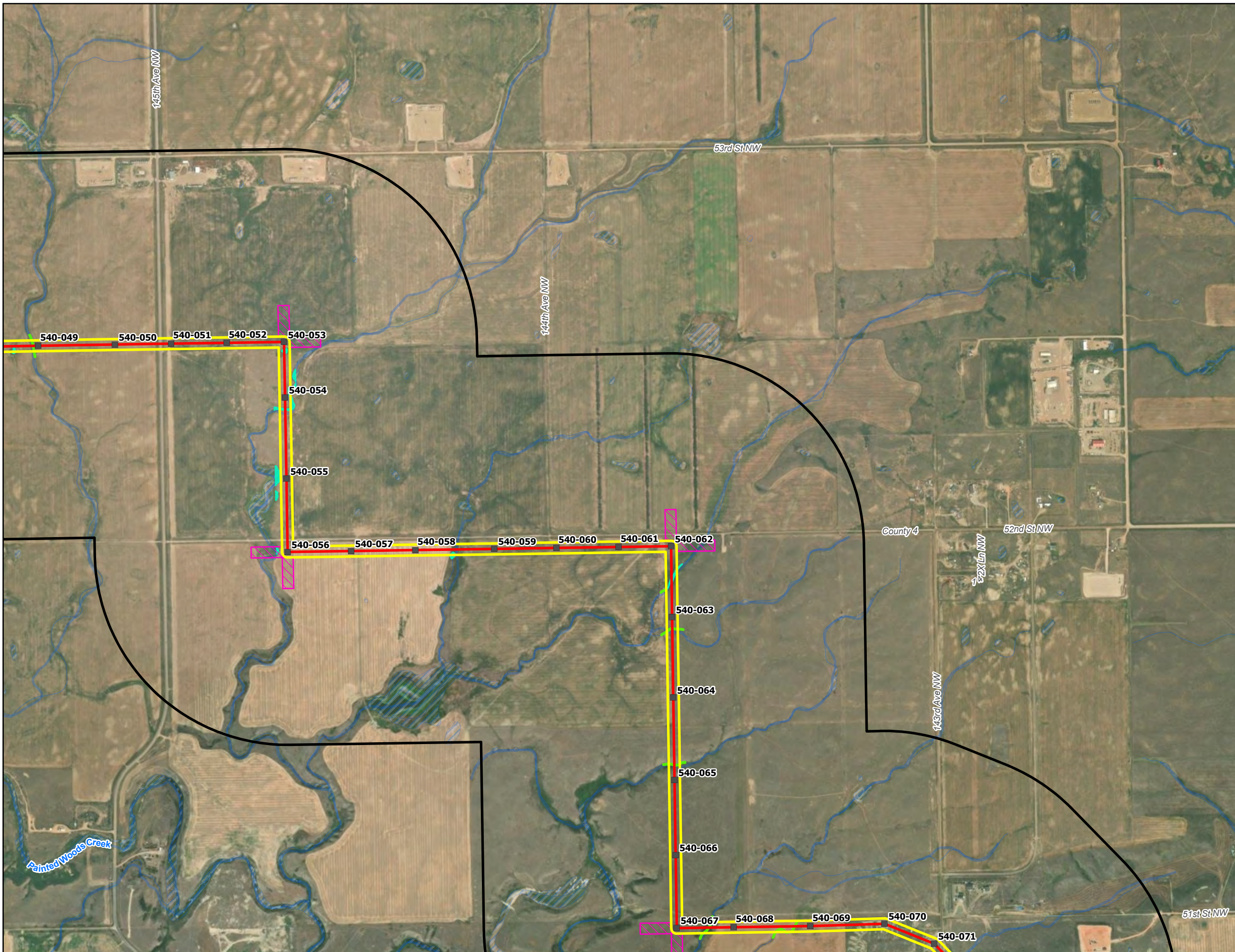


- NHD Waterbody
  - NWI Wetland
  - Field Delineated Wetlands
  - Field Delineated Waterbodies
- Site Plan**
- Planned Transmission Structure Location
  - Transmission Line Route
  - 150-foot Project Corridor
  - Pull Lanes
  - Study Area

**Figure 5-4**  
**Wetland and Waterbody Map**  
 Pioneer to Judson 345-kV  
 Transmission Line Project  
 Basin Electric Power Cooperative  
 Williams County, North Dakota  
 Page 4 of 6



Date: (9/29/2023) Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGOPGS\_to\_Judson\_Webviewer

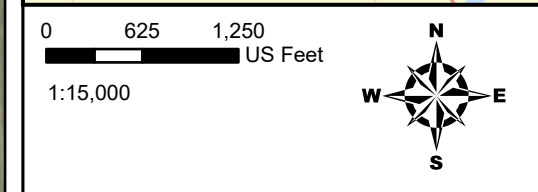
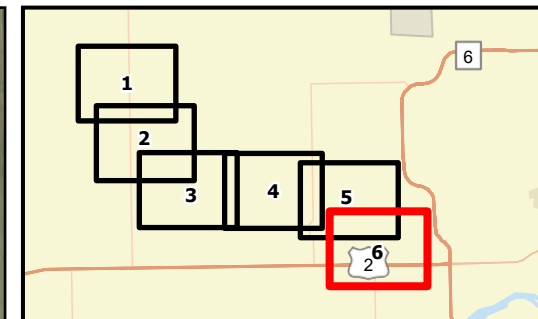
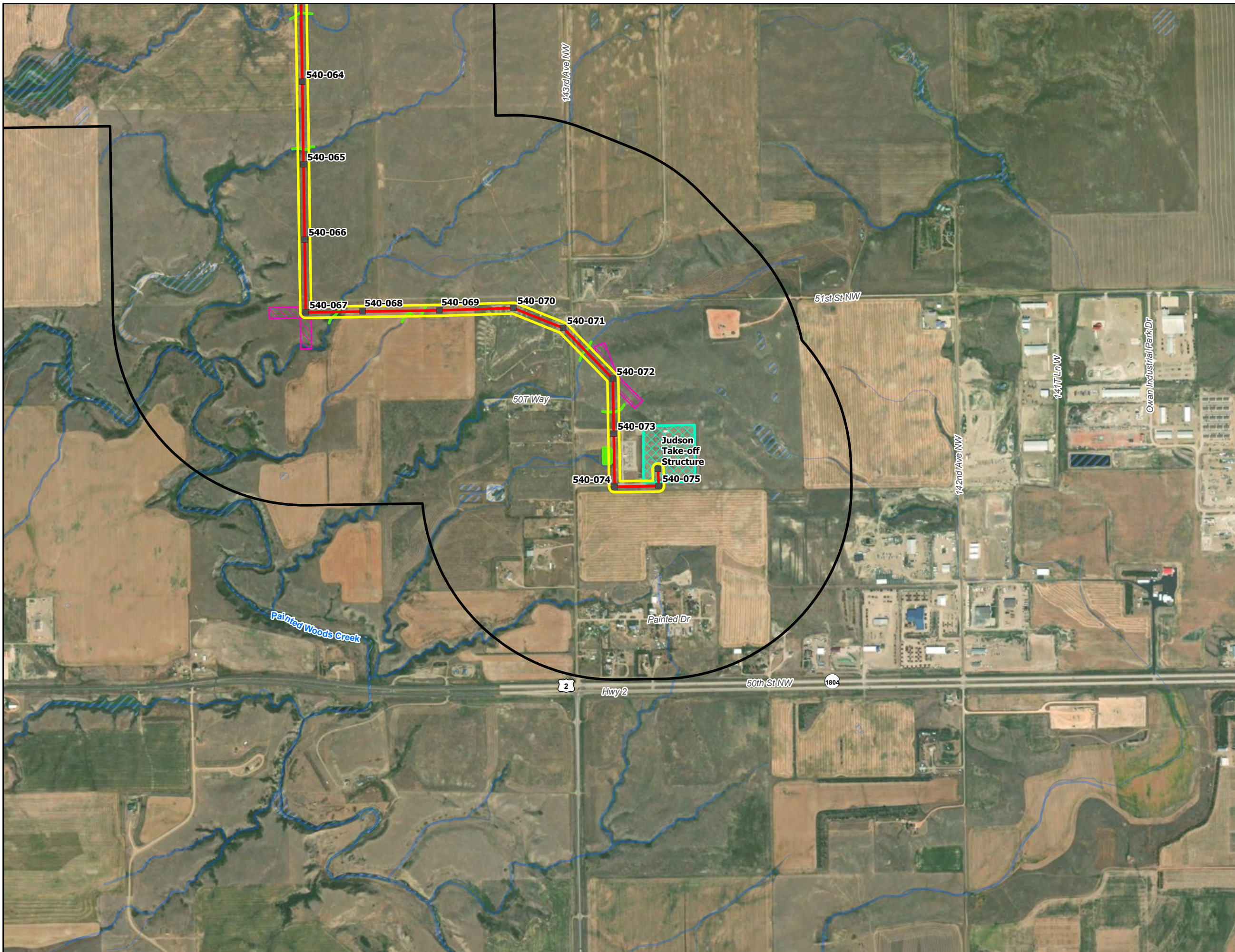


- NHD Waterbody
  - ▨ NWI Wetland
  - Field Delineated Wetlands
  - Field Delineated Waterbodies
- ### Site Plan
- Planned Transmission Structure Location
  - Transmission Line Route
  - 150-foot Project Corridor
  - Pull Lanes
  - Study Area

**Figure 5-4**  
**Wetland and Waterbody Map**  
**Pioneer to Judson 345-kV**  
**Transmission Line Project**  
**Basin Electric Power Cooperative**  
**Williams County, North Dakota**  
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Date: (9/29/2023) Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGOPGS\_to\_Judson\_Webviewer



- NHD Waterbody
  - ▨ NWI Wetland
  - ▭ Field Delineated Waterbodies
- ### Site Plan
- Planned Transmission Structure Location
  - Transmission Line Route
  - 150-foot Project Corridor
  - Judson Substation
  - Pull Lanes
  - Study Area

**Figure 5-4**  
**Wetland and Waterbody Map**  
 Pioneer to Judson 345-kV  
 Transmission Line Project  
 Basin Electric Power Cooperative  
 Williams County, North Dakota  
 Page 6 of 6



Date: (9/29/2023) Source: Z:\Clients\A\_D\Basin Electric Power Cooperative\2023\Pioneer Generation Station to Judson 345-kV Transmission Line\AGOPGS\_to\_Judson\_Webviewer

## **Appendix A**

### **Policies and Commitments Statement to Limit Environmental Impacts**

Excerpts from “**RESOLUTIONS ADOPTED BY THE MEMBERS OF BASIN ELECTRIC POWER COOPERATIVE**” DATED August 15, 2023.

## **STATEMENT OF PURPOSE**

The Basin Electric Resolutions Committee shall review all resolutions before presentation to the membership at each Annual Meeting, and that all resolutions are subject to change by the membership at the Annual Meeting.

## **STATEMENT OF IDEALS AND OBJECTIVES**

This statement was initially adopted by the Membership at the 1967 Annual Meeting.

It has been reviewed and readopted by the Membership at each subsequent Annual Meeting, and was last revised in 2022.

Basin Electric Power Cooperative (the Cooperative) was organized by its member systems in the Missouri River Basin to provide an adequate wholesale supply of dependable, low-cost electric power under democratic member control, consistent with the public interest.

### **We believe:**

1. That an adequate, universally available and safe supply of affordable electricity is a vital ingredient for maintaining and improving the economy and the people’s standard of living. Basin Electric commits to ensuring that our generation and transmission resources are used for the benefit of Basin Electric and its member-owners, now and in the future, through cooperation with our power-supply partners.
2. That a clean and healthy environment, which we all need and enjoy, must be maintained and that the energy industry should minimize impacts to the environment.
3. That Basin Electric is dedicated to supporting a healthy agricultural economy, which is essential to the greater development of rural areas and the nation’s general welfare. Furthermore, our commercial and industrial consumer-members are similarly important to cooperative health and should be encouraged.
4. That the Rural Utilities Service program of providing long-term, low-interest load funds and load guarantees to rural electric cooperatives is a vital element in providing low cost electricity for the social and economic benefit of people, and is one of the most beneficial programs ever undertaken by our federal government, and that this program should be continued as an important device to foster the economic development of rural areas and to help improve the standard of living of its consumer-owners.
5. That federal hydropower is an important renewable energy resource in the region, providing competitive cost-based rates to the membership. The long-standing statutory and contractual relationship between the membership and the federal government for preference power from these facilities should continue uninterrupted.

6. That the benefits of the development of our national resources should accrue to the people and that the federal government has the principal responsibility for establishing and maintaining programs and policies to protect the public interest in the multipurpose development, conservation, and utilization of our water and power resources.
7. That Basin Electric was established for all its members and the benefits of its operation should accrue to them on a consistent and uniform basis.
8. That people have the right to organize themselves to provide needed goods and services; that cooperatives and their associated entities can provide a yardstick of costs which benefit all consumers; and that they are consistent and help preserve our private enterprise system.

**We pledge:**

1. To provide our members with an adequate supply of wholesale electric power and high-quality service at the lowest-possible cost by:
  - a. Supporting use of the federal hydroelectric generating plants so these facilities continue to serve as the backbone of a region-wide power supply system.
  - b. Encouraging prudent development of clean and efficient power technologies, legislation, and research in the fuels and energy fields as it affects our lives and environment.
  - c. Operating Basin Electric's energy production facilities in the most efficient, productive, and safe manner possible.
2. To maintain a competent staff of dedicated employees by establishing policies which provide challenging careers and fair compensation, and which recognize their rights and responsibilities.
3. To conduct the business affairs of Basin Electric as trustees for the interest of the members on a basis of honesty and equity.
4. To help promote area development throughout Basin Electric's service area by working with member systems in the planning and execution of programs to help develop the natural, human, and economic resources within the region, and to encourage conservative and efficient use of electrical energy.
5. To conduct a vigorous communication and education program to promote Basin Electric's policies, plans, and progress among its employees, members, and the general public.

6. Through membership, aid other rural electric cooperatives, public agencies, and consumer-controlled organizations to obtain reliable wholesale power at the lowest-possible cost.
7. To encourage development of and work with consumer-owned and other organizations having similar objectives.

#### **Resolution 4 – Environment**

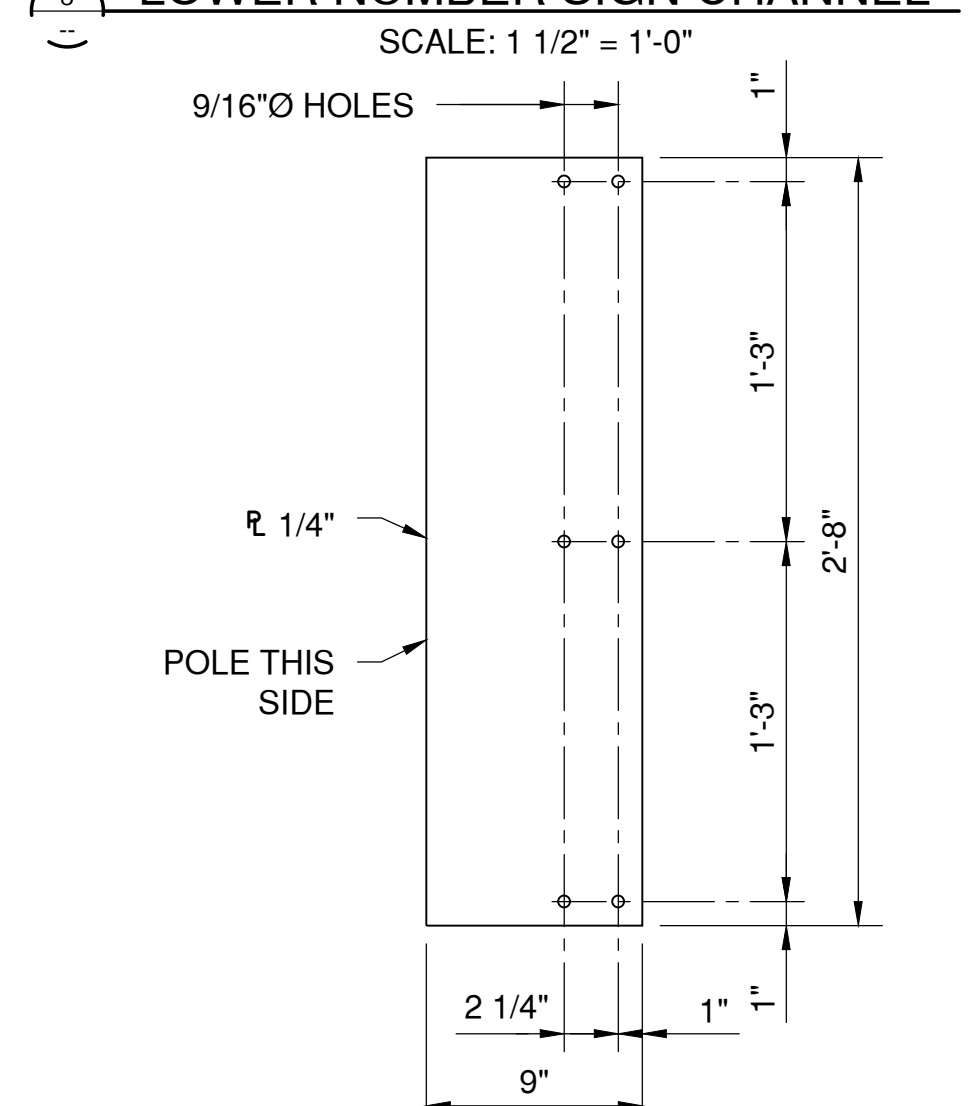
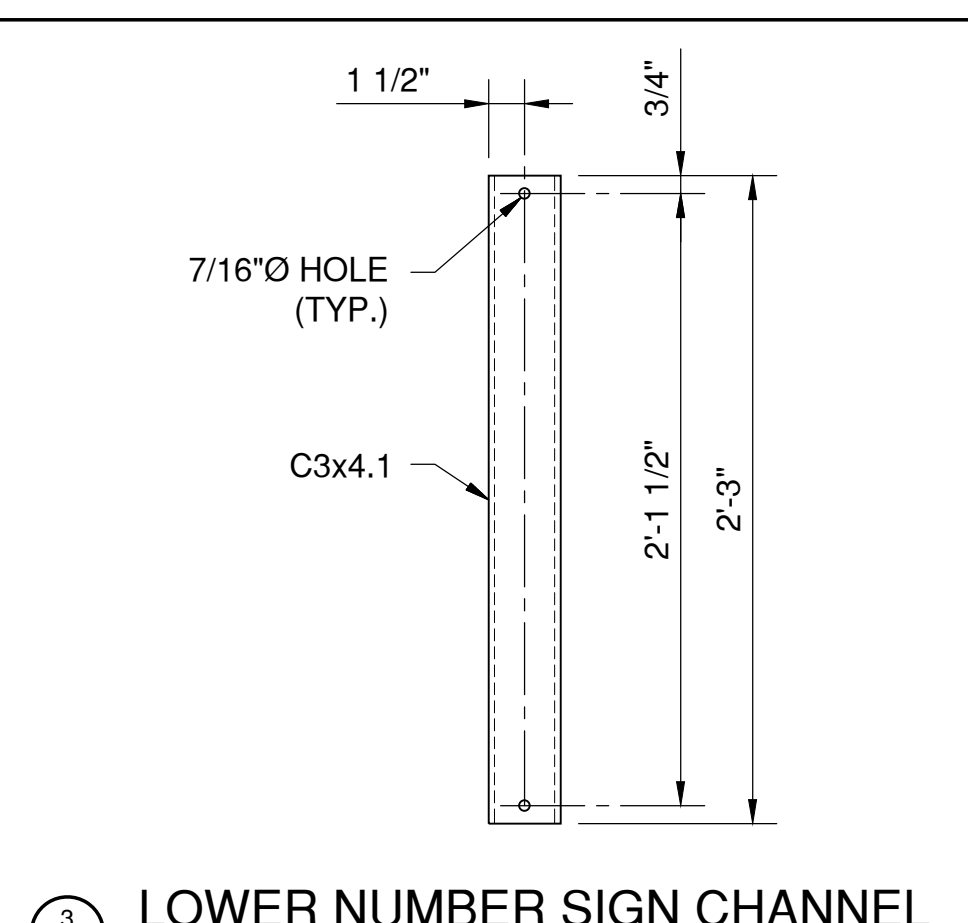
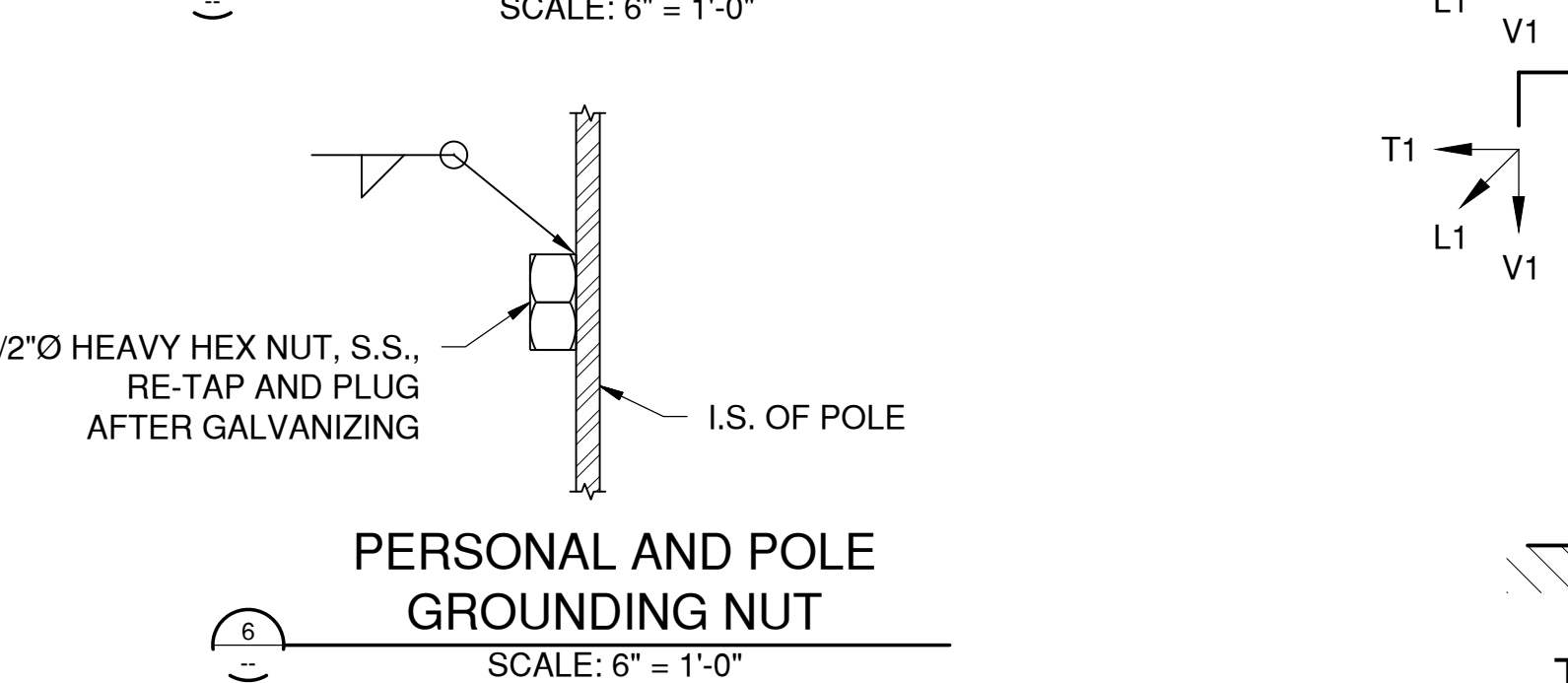
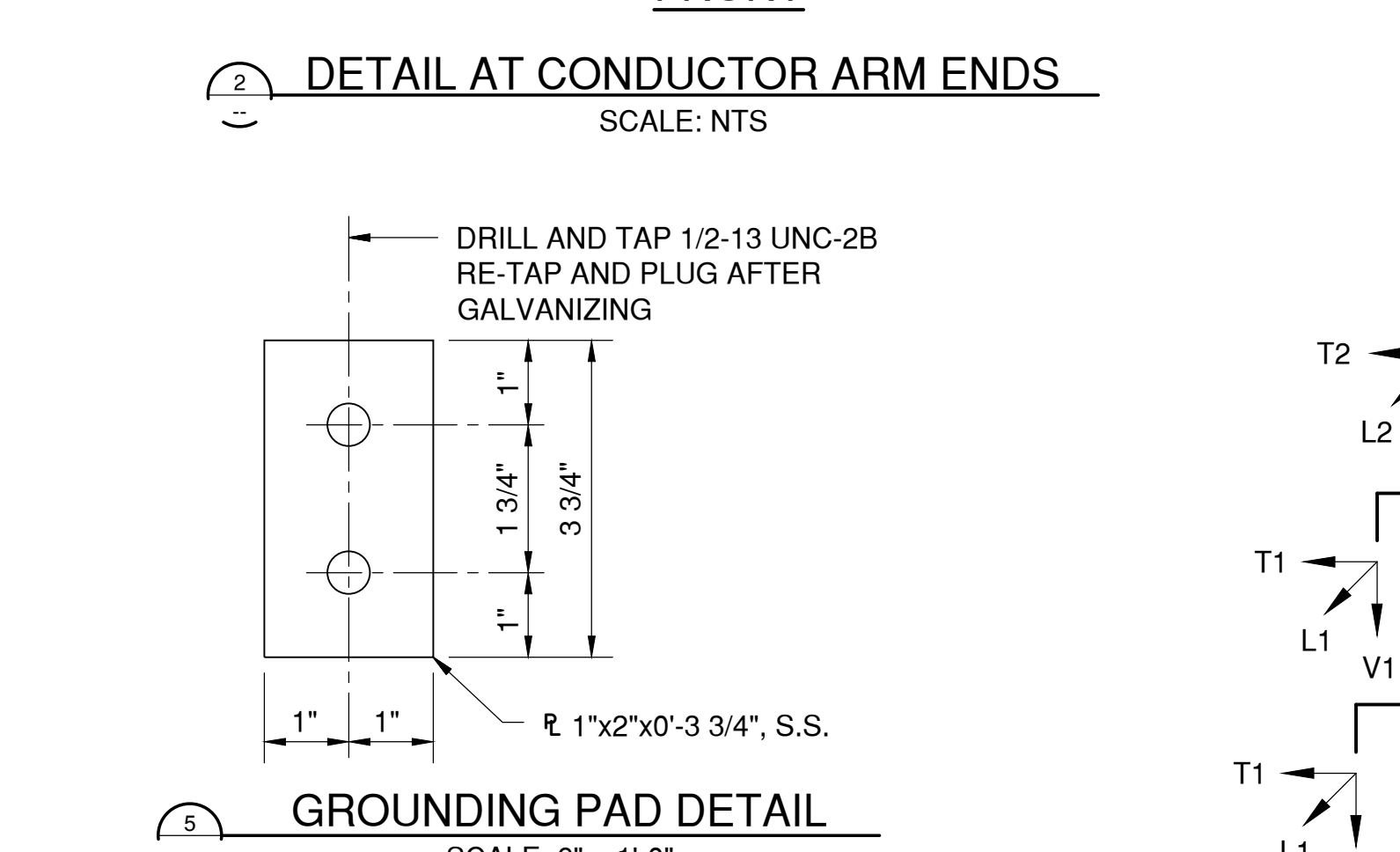
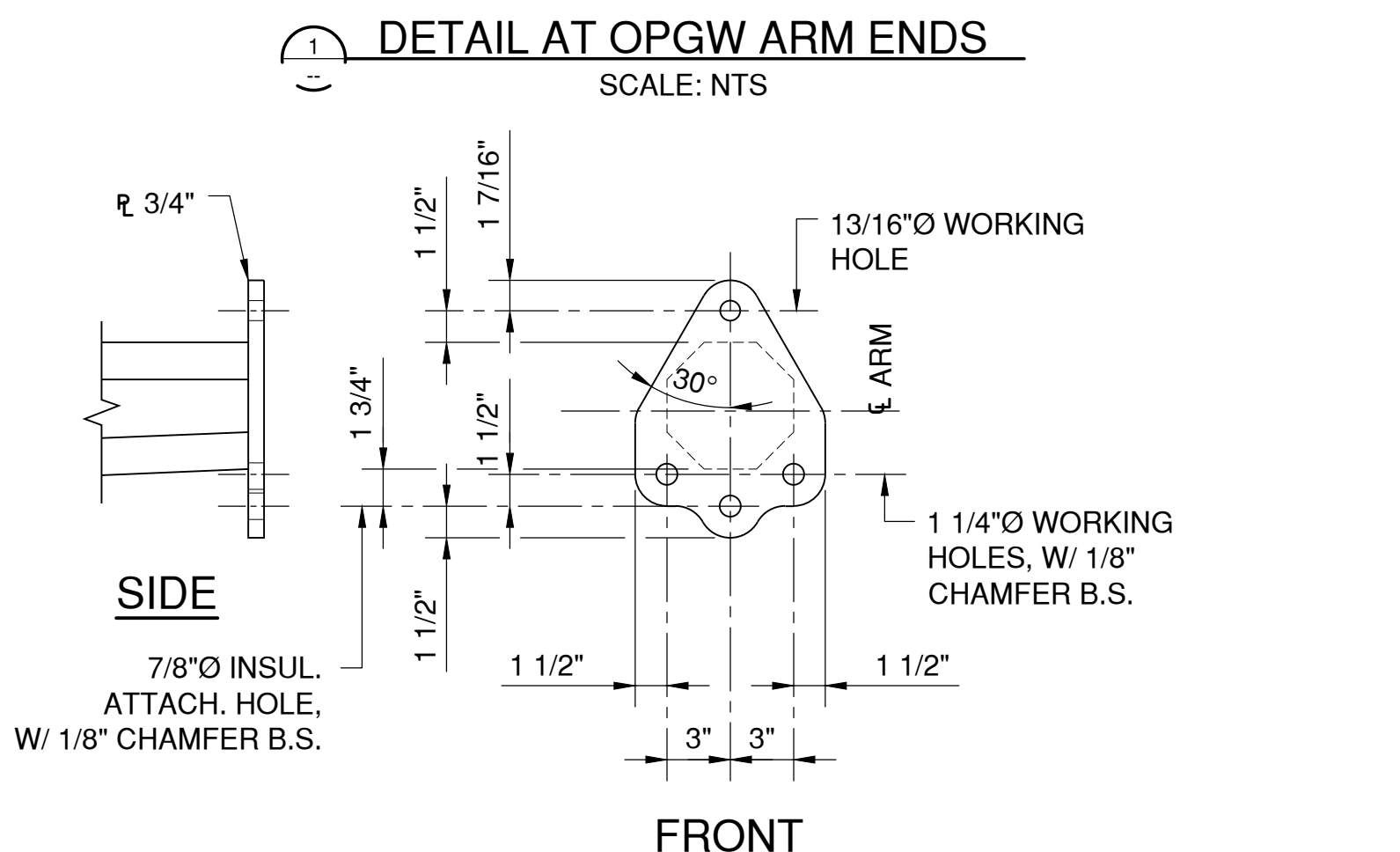
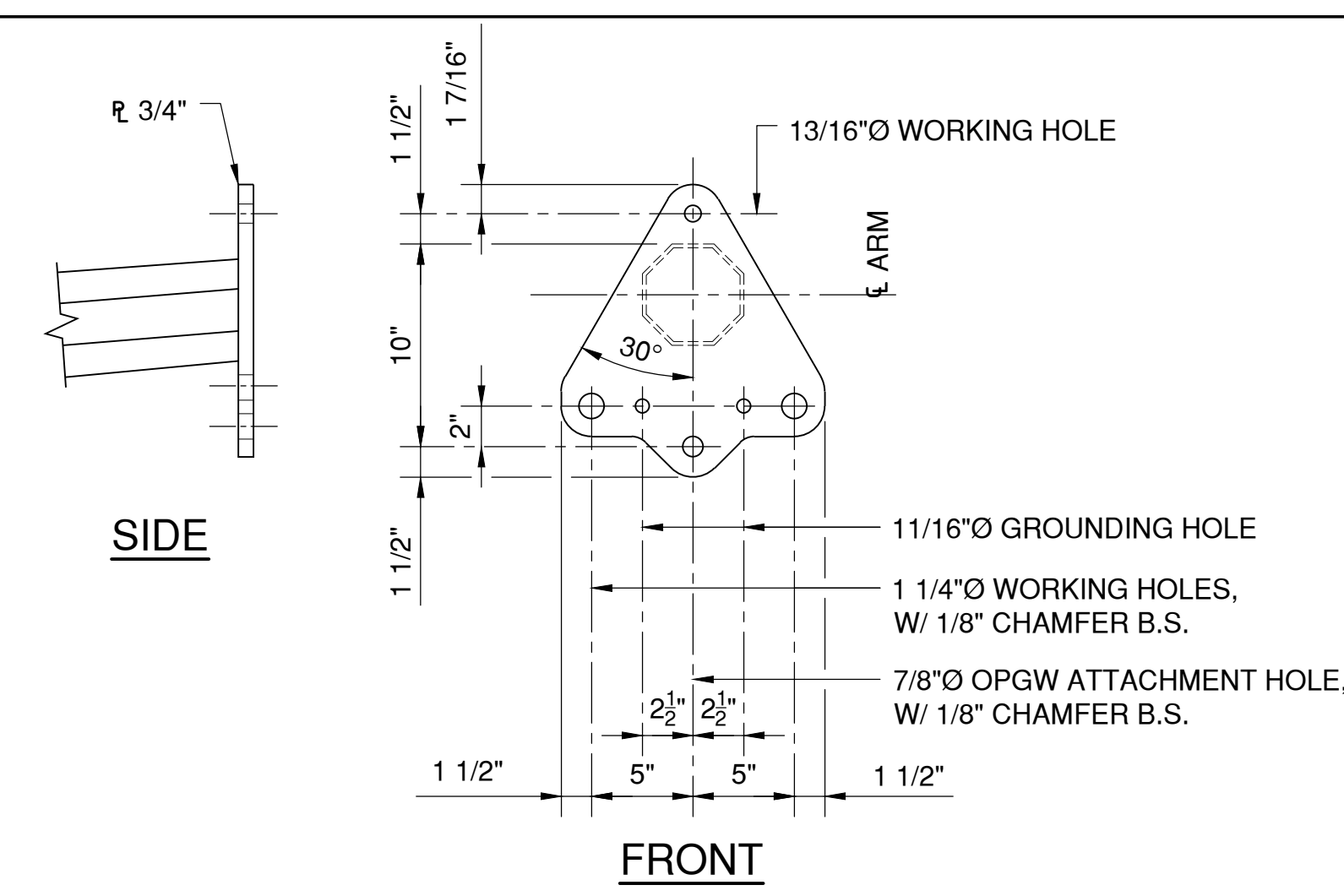
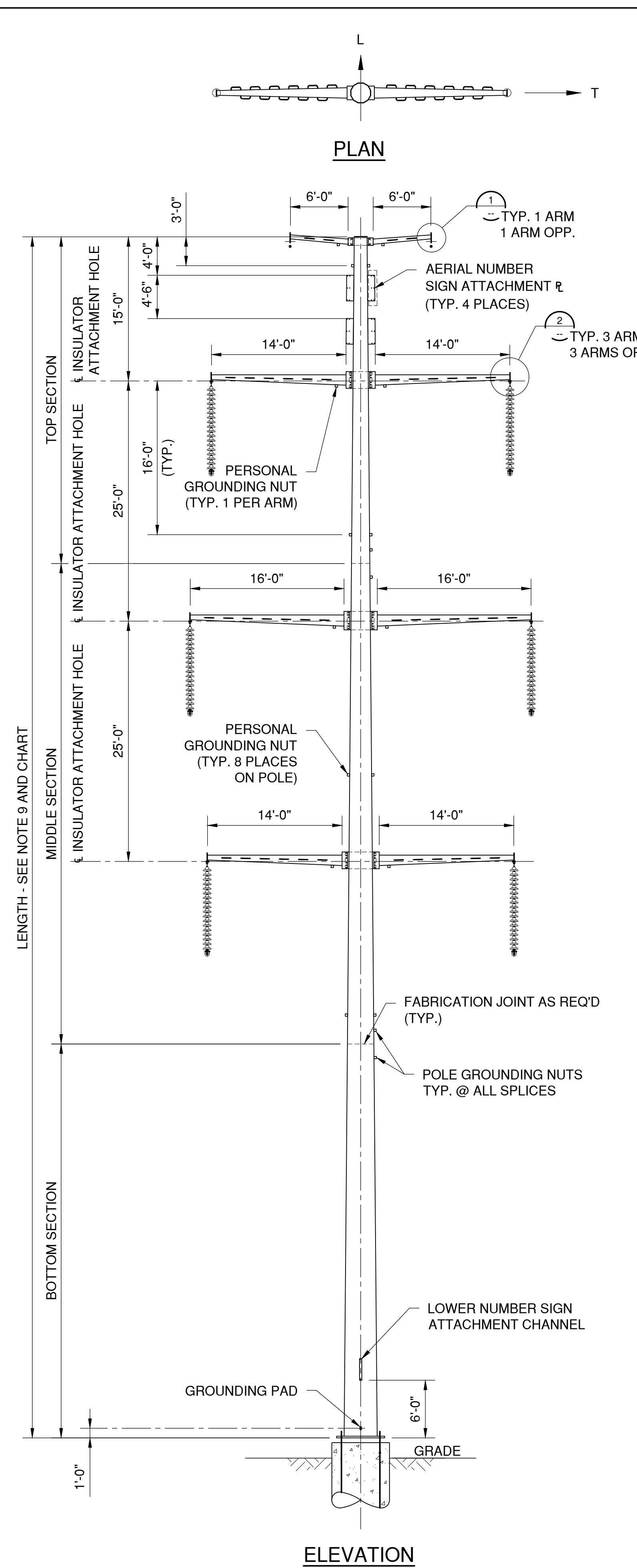
Basin Electric Power Cooperative (Basin Electric) supports the care and utilization of our natural resources. Basin Electric believes that is best accomplished through 1) clear and easily interpreted environmental laws and regulations; 2) single, efficient, and predictable permitting processes; and 3) local oversight of compliance that ensures needed interpretations take into account the realities of the environment and local interests are being fairly considered.

#### **Background:**

*Basin Electric has provided leadership, resources, and efforts in research to advance state-of-the-art conservation measures, including land reclamation and significant development of renewable generation sources from its inception. Basin Electric, its membership, and member-consumers are committed to maintaining a clean and healthy environment for ourselves and our communities. Basin Electric also recognizes the economic realities that dictate both an achievable environmental standard be maintained while providing satisfactory balance between protecting the environment and sustaining the economy.*

## **Appendix B**

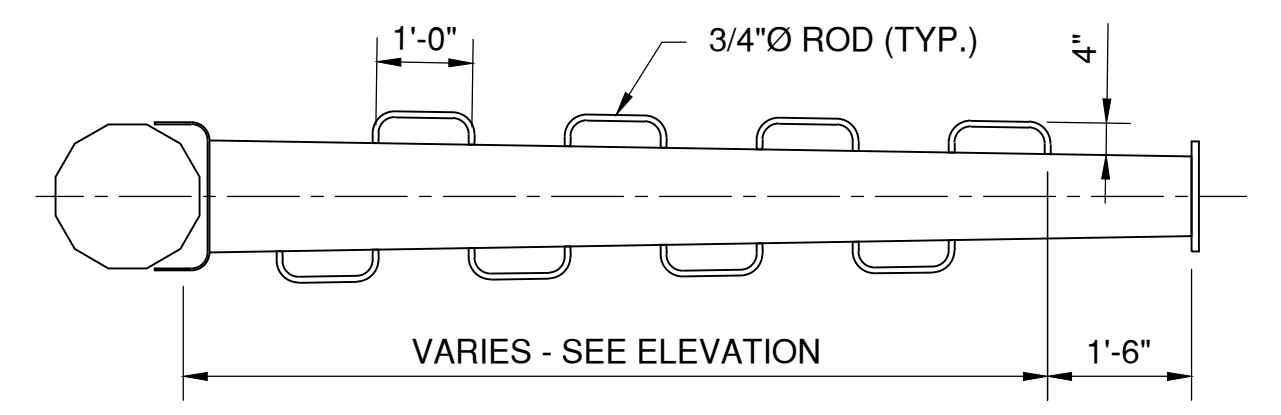
### **Structure Diagrams and Conceptual Construction Configuration Diagram**



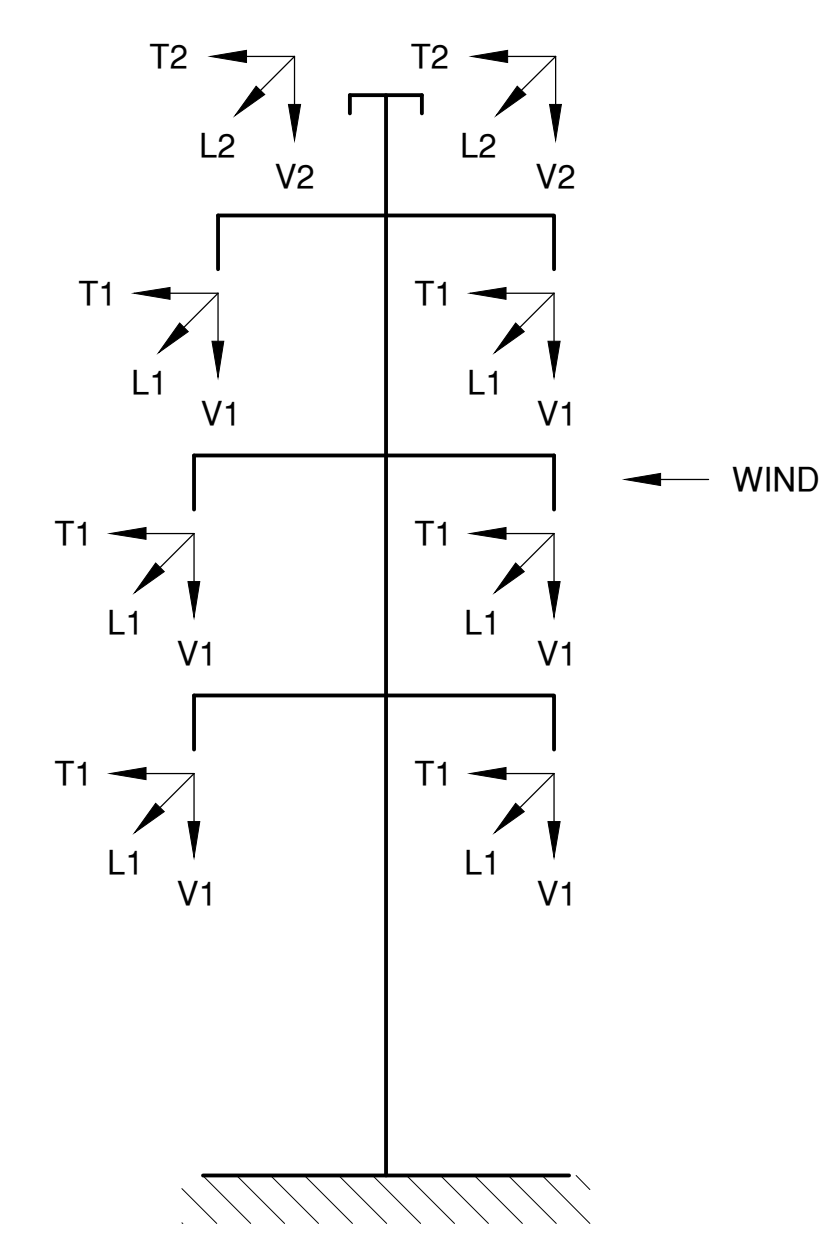
**NOTES FOR STEEL POLE:**

- POLE AND ARMS SHALL BE GALVANIZED STEEL. POLE SHALL HAVE BASE PLATE AND ANCHOR BOLTS.
- DESIGN CAPACITY WITH 1.72" DIA. 2609 TS KILLDEER CFCC-TW CONDUCTOR, 0.571" OPGW AND 7/16" EHS:  
 WIND SPAN..... 1250 FT  
 WEIGHT SPAN..... 1450 FT  
 DESIGN RULING SPAN..... 1200 FT  
 CONDUCTOR HARDWARE..... 400 LBS  
 STATIC HARDWARE..... 40 LBS  
 LINE ANGLE..... 0-3 DEG.  
 SPECIFIC LOAD CASE AND LOADING TREES ARE SHOWN ON THIS DRAWING.
- POLES MAY BE SINGLE PIECE OR HAVE A FABRICATION JOINT. POLE ARM RISE SHALL NOT EXCEED 1" PER 1'-0" OF LENGTH.
- TYPICAL PHASE ATTACHMENT IS SHOWN. DESIGN AND DETAILING OF PHASE ATTACHMENT SHALL BE BY FABRICATOR. END CLOSURES SHALL BE PROVIDED FOR ALL OPEN SECTIONS.
- THE FOLLOWING LIMITING TAPER SHALL APPLY: 0.30" PER FT. MAX. ALTERNATE TAPER MAY BE PROPOSED PROVIDED POLE APPEARANCE IS ACCEPTABLE.
- SLIP JOINTS SHALL BE ASSEMBLED ACCORDING TO POLE MANUFACTURER'S INSTRUCTIONS INCLUDING APPLICATION OF FULL SPECIFIED JACKING FORCE.
- FOUNDATION IS A SEPARATE CONSTRUCTION UNIT.
- PROVIDE COVERS FOR ALL GALVANIZING WEEP HOLES.
- OVERALL LENGTH IS SHOWN BY THE POLE DESIGNATION BELOW.

POLE TYPE	LENGTH (FEET)	EMBEDMENT (FEET)
3-3DST-155	155	FDN
3-3DST-160	160	FDN
3-3DST-165	165	FDN



- NOTES:
- HAND RINGS TO BE WELDED TO ALL ARMS ON ALTERNATING SIDES.
  - RINGS SHALL EXTEND TO WITHIN 1'-0" TO 1'-6" OF ARM CONNECTION TO POLE.



LOAD CASE	OLF'S			COND. 1			OPGW				Wstr (psf)			
	VERT	TRANS	TEN	WIRE TENSION (LBS)	V1 (KIPS)	T1 (KIPS)	L1 (KIPS)	WIRE TENSION (LBS)	V2 (KIPS)	T2 (KIPS)		L2 (KIPS)		
1. NESC HEAVY	INTACT	0.5" ICE 4 PSF WIND 0 DEG INITIAL	1.50	2.50	1.65	22400	9.19	4.77	0.00	8300	2.40	2.35	0.00	10.00
2. EXTREME WIND	INTACT	0" ICE 31 PSF WIND 60 DEG FINAL	1.10	1.10	1.10	24500	4.54	7.52	0.00	7800	0.70	2.48	0.00	34.10
3. ICE & WIND	INTACT	0.5" ICE 9.2 PSF WIND 15 DEG INITIAL	1.10	1.10	1.10	23000	6.74	4.19	0.00	8500	1.76	2.15	0.00	10.12
4. EXTREME ICE	INTACT	1.25" ICE 0 PSF WIND 0 DEG INITIAL	1.25	1.10	1.10	33000	13.53	1.90	0.00	12800	5.92	0.74	0.00	0.00
5. NORMAL	INTACT	0" ICE 2 PSF WIND 40 DEG FINAL	1.00	1.00	1.00	13400	4.13	1.06	0.00	3500	0.63	0.30	0.00	2.00
6. EXTREME COLD	INTACT	0" ICE 0 PSF WIND -40 DEG FINAL	1.00	1.00	1.00	20000	4.13	1.05	0.00	4500	0.63	0.24	0.00	0.00
7. STRINGING*	INTACT	0" ICE 4 PSF WIND 0 DEG INITIAL	1.50	1.50	1.50	18500	11.63	2.53	0.54	4600	2.30	0.72	0.13	6.00
8. BROKEN WIRE*	INTACT	0" ICE 0 PSF WIND 60 DEG FINAL	1.00	1.00	1.00	13000	4.13	0.27	10.40	3300	0.63	0.07	2.64	0.00

\* STRINGING AND BROKEN WIRE LOADS APPLIED ONLY TO ONE ARM ATTACHMENT AT A TIME

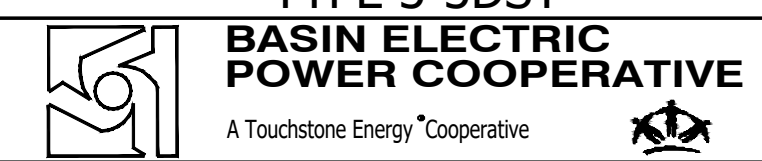
**ISSUED FOR CONSTRUCTION**

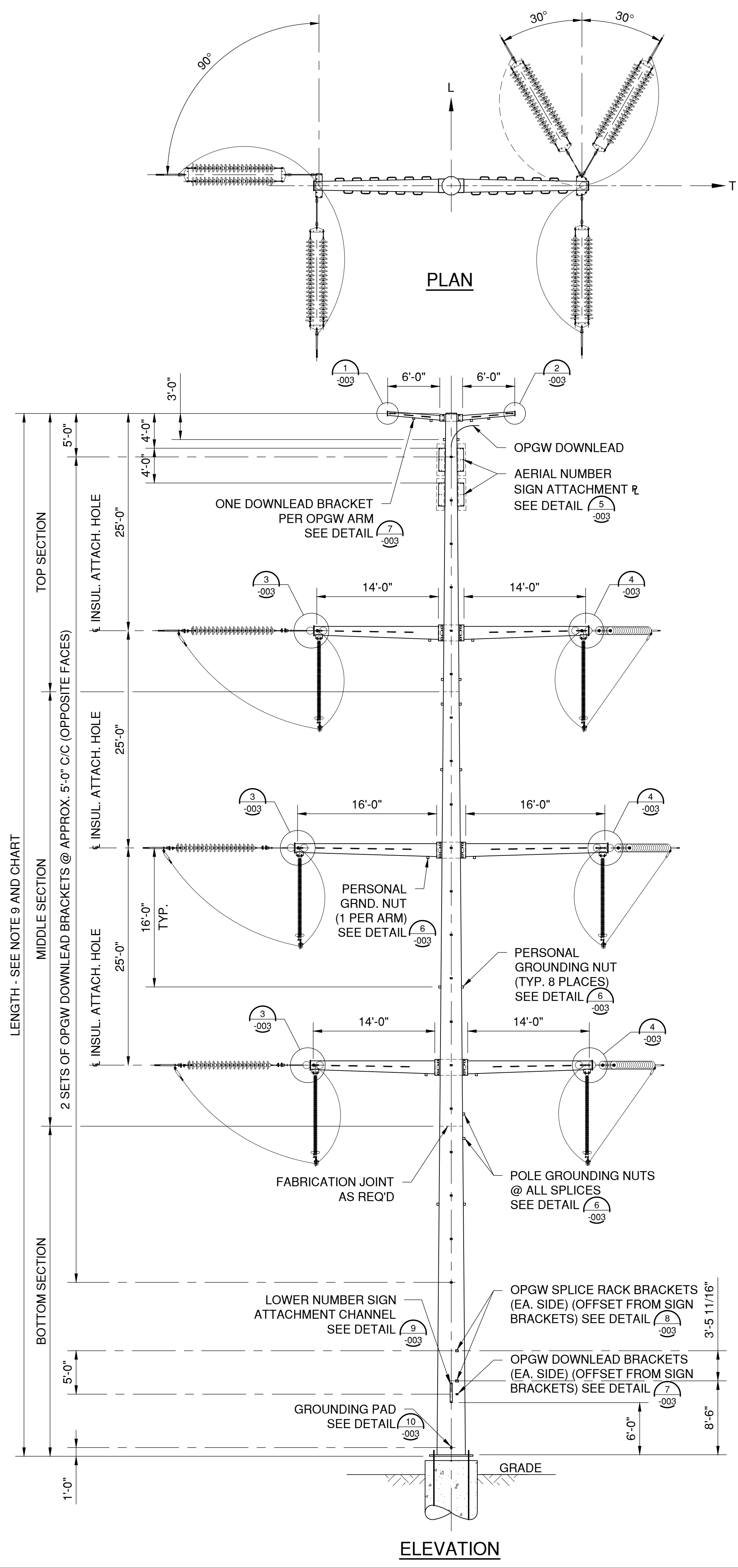
REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
0C	ISSUED FOR CONSTRUCTION	A. BURGARD	S. VASBINDER		7/25/23
0B	REVISED CONDUCTOR SIZE & TYPE & LOAD CHART	A. BURGARD	S. VASBINDER		5/3/23
0A	ISSUED FOR BID ONLY - RES 13032	A. BURGARD	S. VASBINDER		3/20/23

REFERENCE DRAWINGS

BASIN DRAWING NBR  
539-090-T2-004 345KV STEEL POLE LADDER CLIP CONFIGURATION

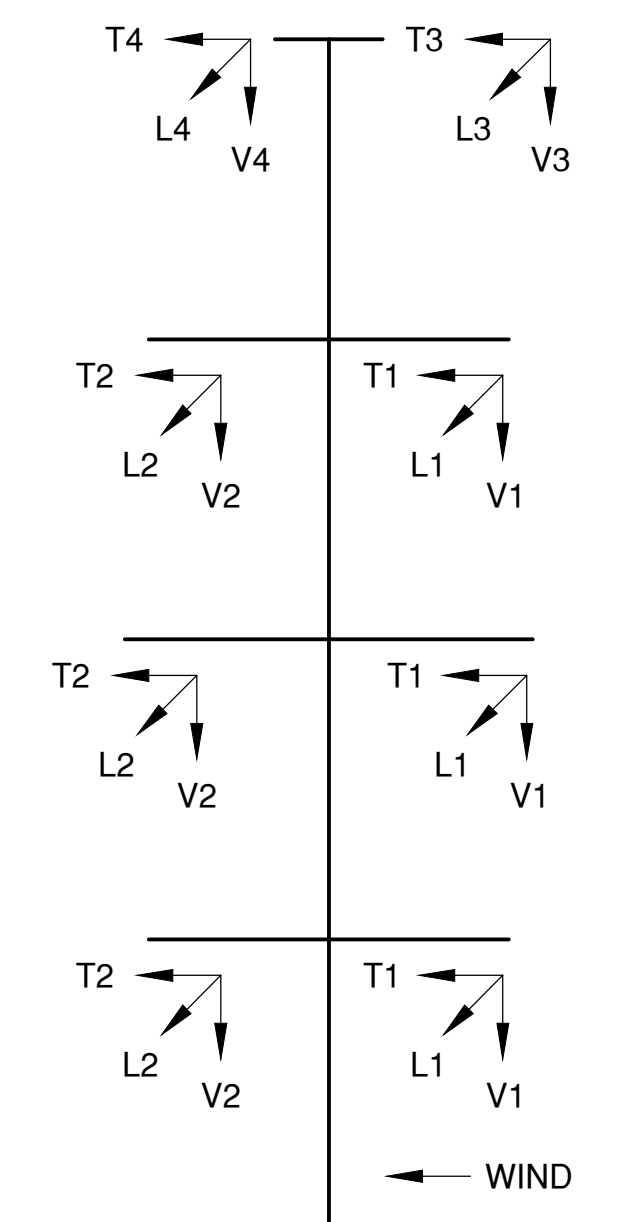
FACILITY:	TSM - TRANSMISSION SYSTEM MAINTENANCE	DESIGN BY:	B. WILKINSON	3/14/23
FACILITY UNIT/COMPLEX/SITE NUMBER:	539-345KV LINE - PIONEER SUB DOUBLE CIRCUIT SEGMENT 540/538	DRAWN BY:	A. BURGARD	3/14/23
CONTRACT/TELECOM LOOP:		DESIGN CHK:		
		DRAFT CHK:		
		APPROVED:		
		SCALE:	DO NOT SCALE	
		VENDOR NAME:		
		VENDOR NUMBER:	ORIGINAL REV:	
		ENG DRAWING NUMBER:	539-090-T2-001	REV. NO. 0C





- NOTES FOR STEEL POLE:**
- POLE AND ARMS SHALL BE GALVANIZED STEEL. POLE SHALL HAVE BASE PLATE AND ANCHOR BOLTS.
  - DESIGN CAPACITY WITH 1.72" DIA. 2609 TS KILLDEER CFCC-TW CONDUCTOR, 0.571" OPGW AND 7/16" EHS:  
 WIND SPAN..... 1250 FT  
 WEIGHT SPAN..... 1450 FT  
 DESIGN RULING SPAN..... 1200 FT  
 CONDUCTOR HARDWARE..... 1000 LBS  
 STATIC HARDWARE..... 60 LBS  
 LINE ANGLE..... 60-90 / 0-30 DEG.  
 STRUCTURE IS DESIGNED FOR FULL DEADEND CAPACITY  
 SPECIFIC LOAD CASE AND LOADING TREES ARE SHOWN ON THIS DRAWING.
  - POLES MAY BE SINGLE PIECE OR HAVE A FABRICATION JOINT. POLE ARM RISE SHALL NOT EXCEED 1" PER 1'-0" OF LENGTH.
  - TYPICAL PHASE ATTACHMENT IS SHOWN. DESIGN AND DETAILING OF PHASE ATTACHMENT SHALL BE BY FABRICATOR. END CLOSURES SHALL BE PROVIDED FOR ALL OPEN SECTIONS.
  - THE FOLLOWING LIMITING TAPER SHALL APPLY: 0.45" PER FT. MAX. ALTERNATE TAPER MAY BE PROPOSED PROVIDED POLE APPEARANCE IS ACCEPTABLE.
  - SLIP JOINTS SHALL BE ASSEMBLED ACCORDING TO POLE MANUFACTURER'S INSTRUCTIONS INCLUDING APPLICATION OF FULL SPECIFIED JACKING FORCE.
  - FOUNDATION IS A SEPARATE CONSTRUCTION UNIT.
  - PROVIDE COVERS FOR ALL GALVANIZING WEEP HOLES.
  - OVERALL LENGTH IS SHOWN BY THE POLE DESIGNATION BELOW.

POLE TYPE	LENGTH (FEET)	EMBEDMENT (FEET)
3-3DSD90-30-160	160	FDN



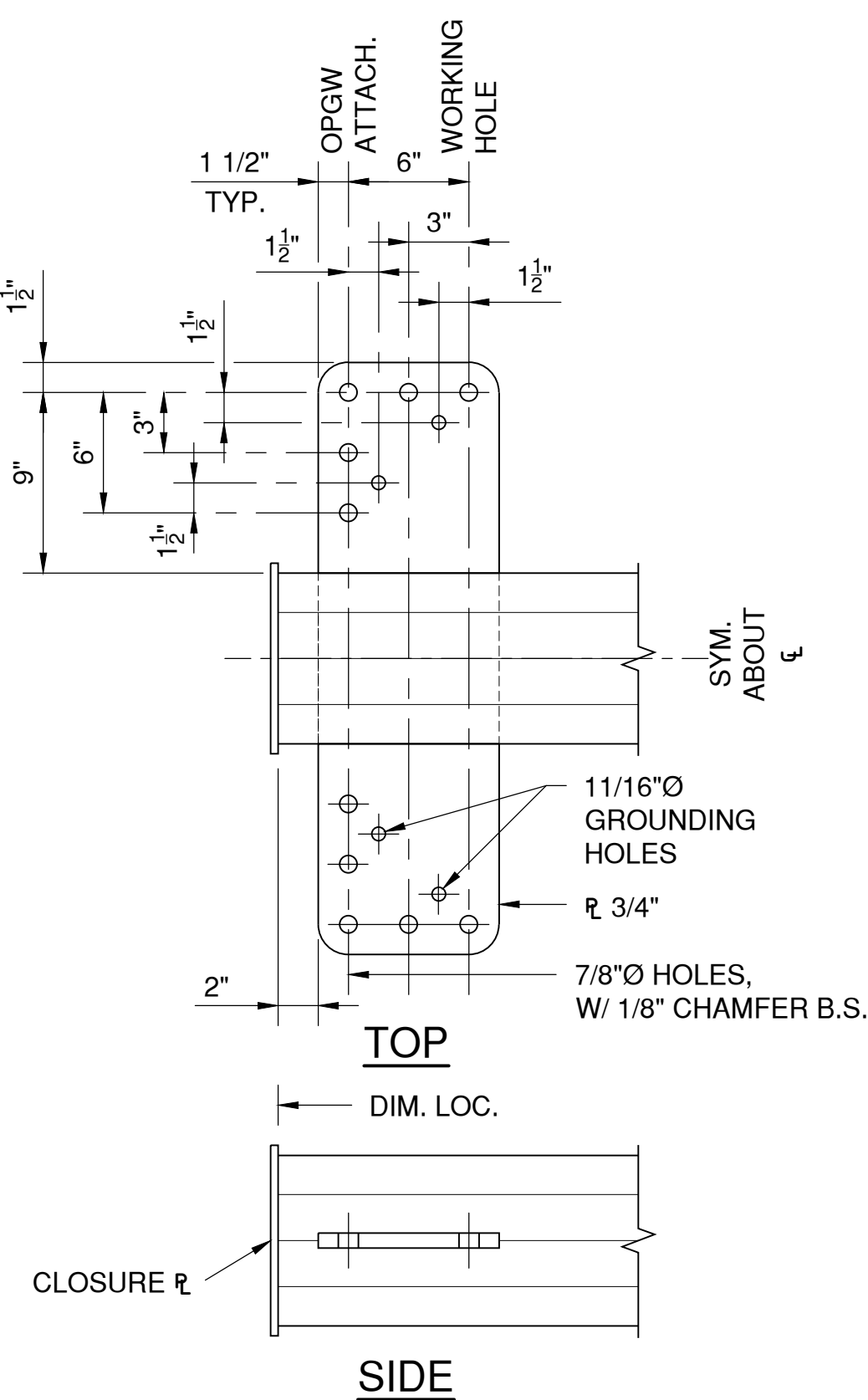
LOAD CASE			OLF'S			COND. 1			COND. 2			OPGW 1			OPGW 2			Wstr (psf)				
			VERT	TRANS	TEN	WIRE TENSION (LBS)	V1 (KIPS)	T1 (KIPS)	L1 (KIPS)	WIRE TENSION (LBS)	V2 (KIPS)	T2 (KIPS)	L2 (KIPS)	WIRE TENSION (LBS)	V3 (KIPS)	T3 (KIPS)	L3 (KIPS)		WIRE TENSION (LBS)	V4 (KIPS)	T4 (KIPS)	L4 (KIPS)
1. NESC HEAVY	INTACT	0.5" ICE 4 PSF WIND 0 DEG INITIAL	1.50	2.50	1.65	22400	10.09	21.31	4.95	22400	10.09	39.79	36.96	8300	3.60	16.15	10.03	8300	3.60	29.84	13.70	10.00
2. NESC HEAVY	DE	0.5" ICE 4 PSF WIND 0 DEG INITIAL	1.50	2.50	1.65	22400	10.09	20.75	36.96	22400	10.09	39.23	36.96	8300	3.60	15.00	23.72	8300	3.60	28.70	13.70	10.00
3. EXTREME WIND	INTACT	0" ICE 31 PSF WIND 60 DEG FINAL	1.10	1.10	1.10	24500	5.20	19.58	3.61	24500	5.20	33.06	26.95	7800	1.04	11.62	6.28	7800	1.04	20.20	8.58	34.10
4. EXTREME WIND	DE	0" ICE 31 PSF WIND 60 DEG FINAL	1.10	1.10	1.10	24500	5.20	18.36	26.95	24500	5.20	31.84	26.95	7800	1.04	10.20	14.86	7800	1.04	18.78	8.58	34.10
5. ICE & WIND	INTACT	0.5" ICE 9.2 PSF WIND 15 DEG INITIAL	1.10	1.10	1.10	23000	7.40	15.52	3.39	23000	7.40	28.17	25.30	8500	2.64	11.83	6.84	8500	2.64	21.18	9.35	10.12
6. ICE & WIND	DE	0.5" ICE 9.2 PSF WIND 15 DEG INITIAL	1.10	1.10	1.10	23000	7.40	14.94	25.30	23000	7.40	27.59	25.30	8500	2.64	10.67	16.19	8500	2.64	20.02	9.35	10.12
7. EXTREME ICE	INTACT	1.25" ICE 0 PSF WIND 0 DEG INITIAL	1.25	1.10	1.10	33000	14.28	18.15	4.86	33000	14.28	36.30	36.30	12800	8.88	14.08	10.31	12800	8.88	28.16	14.08	0.00
8. EXTREME ICE	DE	1.25" ICE 0 PSF WIND 0 DEG INITIAL	1.25	1.10	1.10	33000	14.28	18.15	36.30	33000	14.28	36.30	36.30	12800	8.88	14.08	24.39	12800	8.88	28.16	14.08	0.00
9. NORMAL	INTACT	0" ICE 2 PSF WIND 40 DEG FINAL	1.00	1.00	1.00	13400	4.73	7.06	1.80	13400	4.73	13.76	13.40	3500	0.95	3.68	2.56	3500	0.95	7.18	3.50	2.00
10. NORMAL	DE	0" ICE 2 PSF WIND 40 DEG FINAL	1.00	1.00	1.00	13400	4.73	6.99	13.40	13400	4.73	13.69	13.40	3500	0.95	3.60	6.06	3500	0.95	7.10	3.50	2.00
11. EXTREME COLD	INTACT	0" ICE 0 PSF WIND -40 DEG FINAL	1.00	1.00	1.00	20000	4.73	10.00	2.68	20000	4.73	20.00	20.00	4500	0.95	4.50	3.29	4500	0.95	9.00	4.50	0.00
12. EXTREME COLD	DE	0" ICE 0 PSF WIND -40 DEG FINAL	1.00	1.00	1.00	20000	4.73	10.00	20.00	20000	4.73	20.00	20.00	4500	0.95	4.50	7.79	4500	0.95	9.00	4.50	0.00

**TYPE 3-3DSD90-30**  
 ALL LOADS ARE IN KIPS, EXCEPT FOR W (WIND ON POLE) WHICH IS PSF  
 ALL LOADS INCLUDE OVERLOAD FACTORS

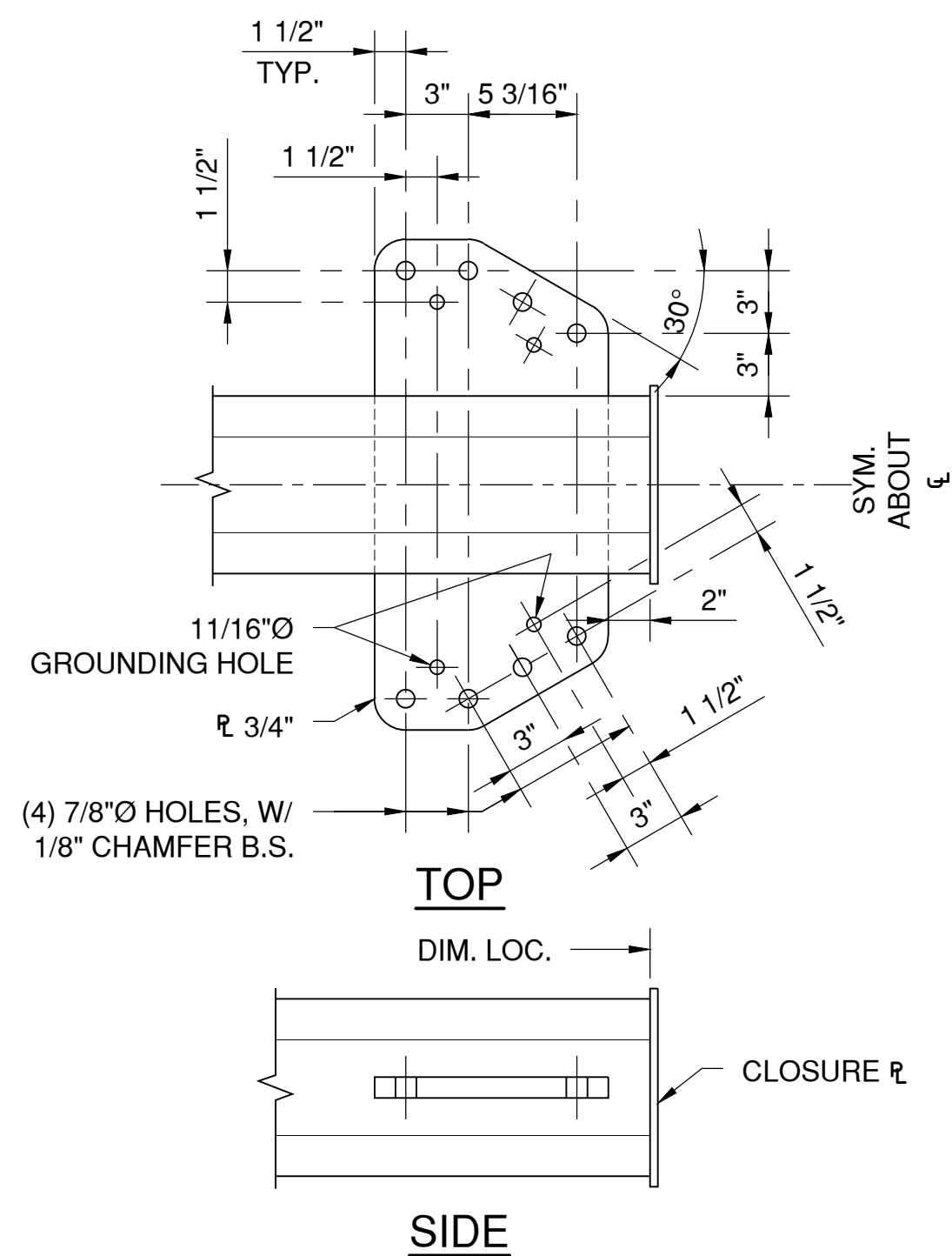
**ISSUED FOR CONSTRUCTION**

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
0C	ISSUED FOR CONSTRUCTION	A. BURGARD	S. VASBINDER		6/6/23
0B	REVISED CONDUCTOR SIZE & TYPE & LOAD CHART	A. BURGARD	S. VASBINDER		5/3/23
0A	ISSUED FOR BID ONLY - RES 13032	A. BURGARD	S. VASBINDER		3/20/23

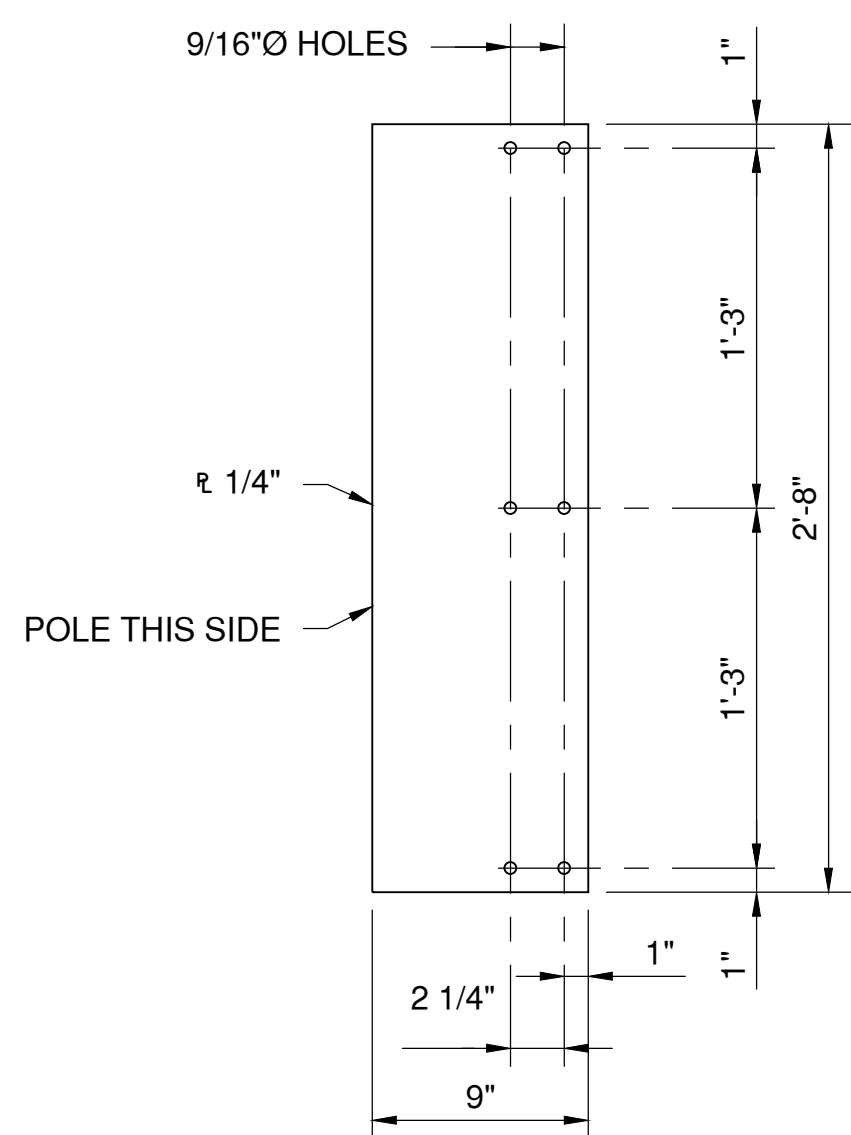
REFERENCE DRAWINGS BASIN DRAWING NBR 539-090-T2-003 345/345KV DOUBLE CIRCUIT ANGLE DEADEND STRUCTURE TYPE 3-3DSD90-30 DETAILS 539-090-T2-004 345KV STEEL POLE LADDER CLIP CONFIGURATION	FACILITY: TSM - TRANSMISSION SYSTEM MAINTENANCE DESIGN BY: B. WILKINSON DRAWN BY: A. BURGARD DESIGN CHK: S. VASBINDER DRAFT CHK: APPROVED: SCALE: DO NOT SCALE VENDOR NAME: VENDOR NUMBER: ORIGINAL REV:	345/345KV DOUBLE CIRCUIT ANGLE DEADEND STRUCTURE TYPE 3-3DSD90-30 <b>BASIN ELECTRIC POWER COOPERATIVE</b> A Touchstone Energy Cooperative	3/15/23 3/15/23 3/20/23 539-090-T2-002 0C
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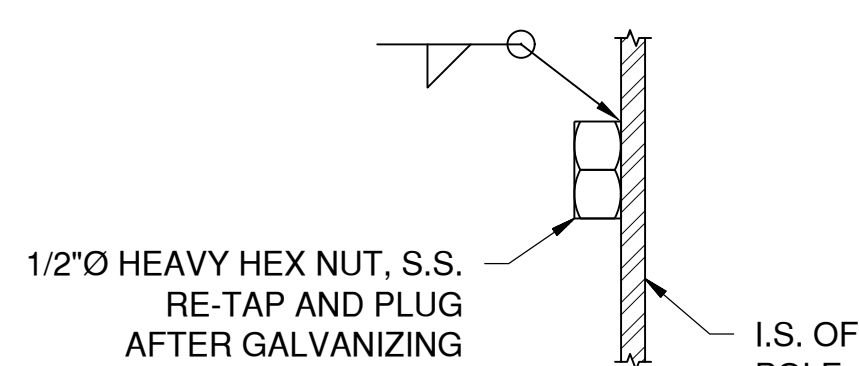
1  
-003  
DETAIL AT OPGW ARM END  
SCALE: NTS



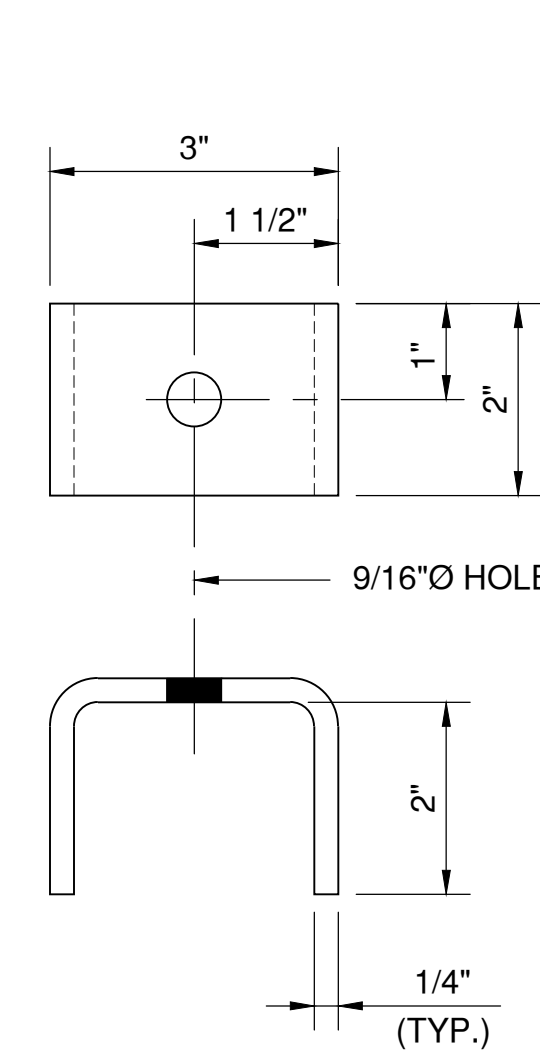
2  
-003  
DETAIL AT OPGW ARM END  
SCALE: NTS



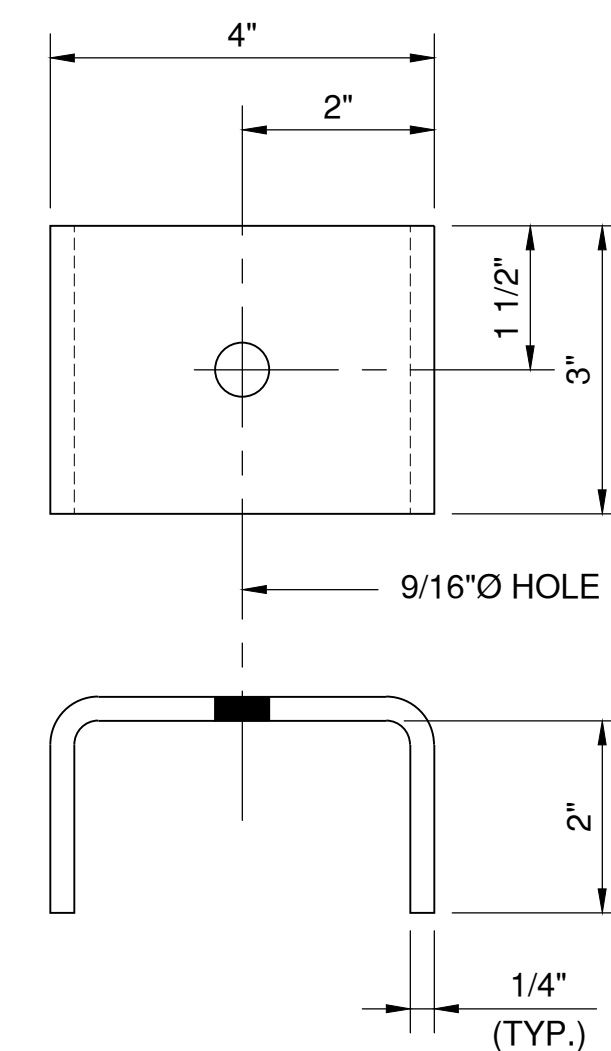
5  
-003  
AERIAL NUMBER SIGN PLATE  
SCALE: 1 1/2" = 1'-0"



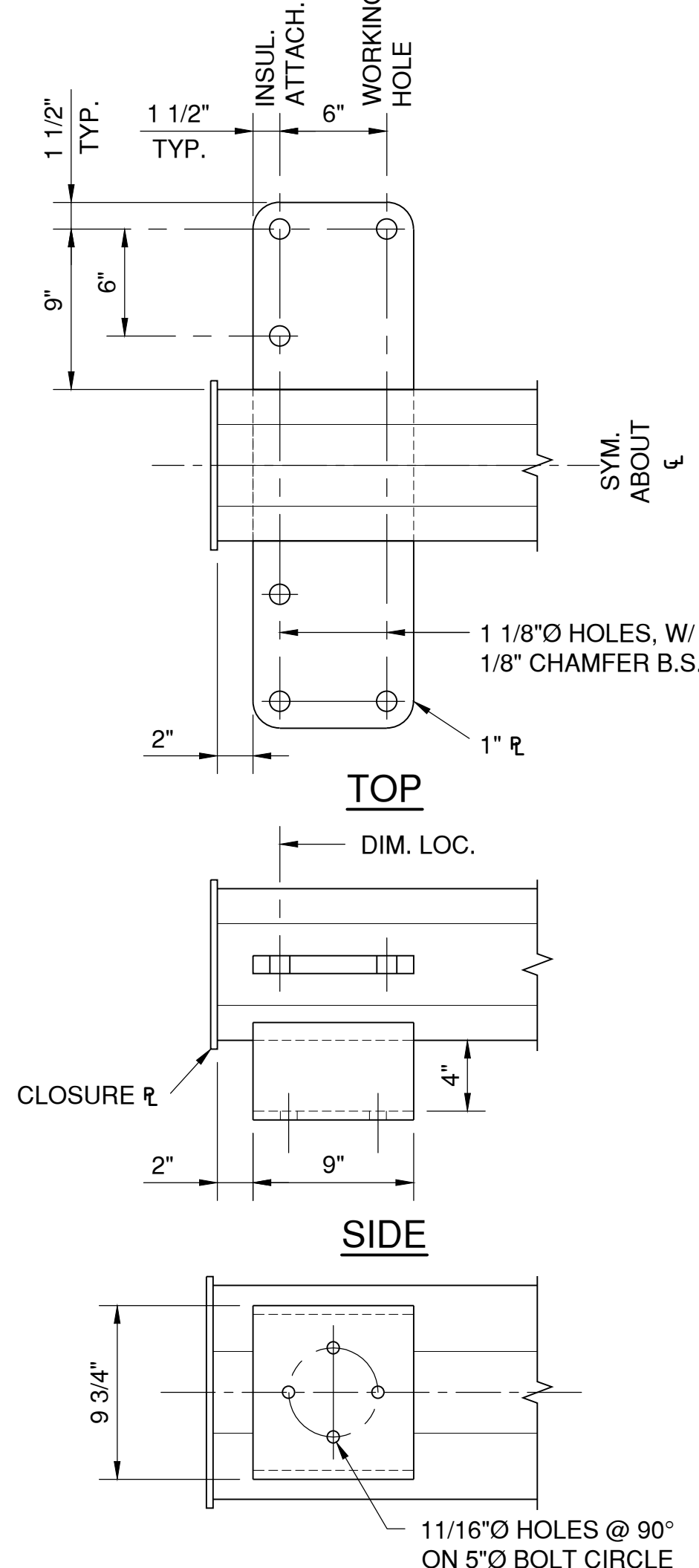
6  
-003  
PERSONAL & POLE  
GROUNDING NUT  
SCALE: 6" = 1'-0"



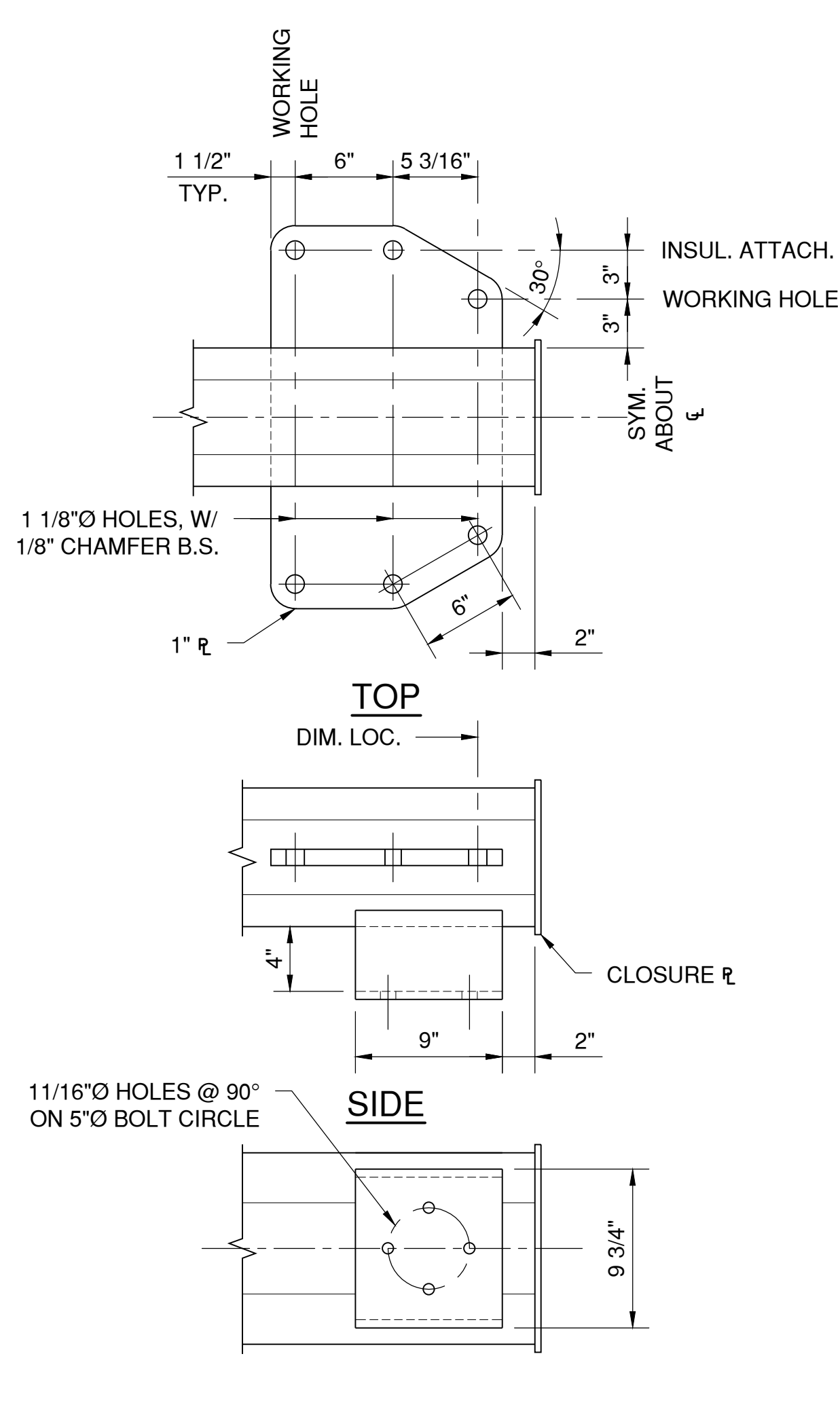
7  
-003  
OPGW DOWNLOAD BRACKET  
SCALE: 6" = 1'-0"



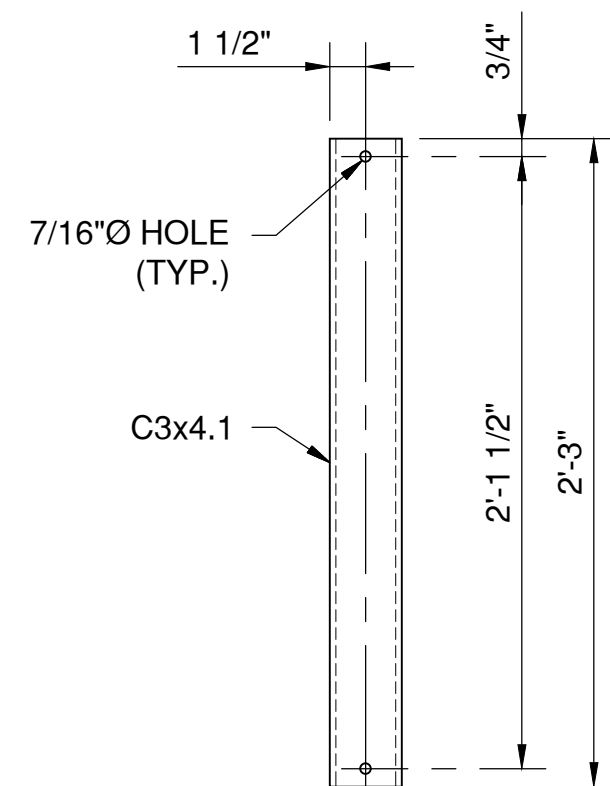
8  
-003  
OPGW SPLICE RACK BRACKET  
SCALE: 6" = 1'-0"



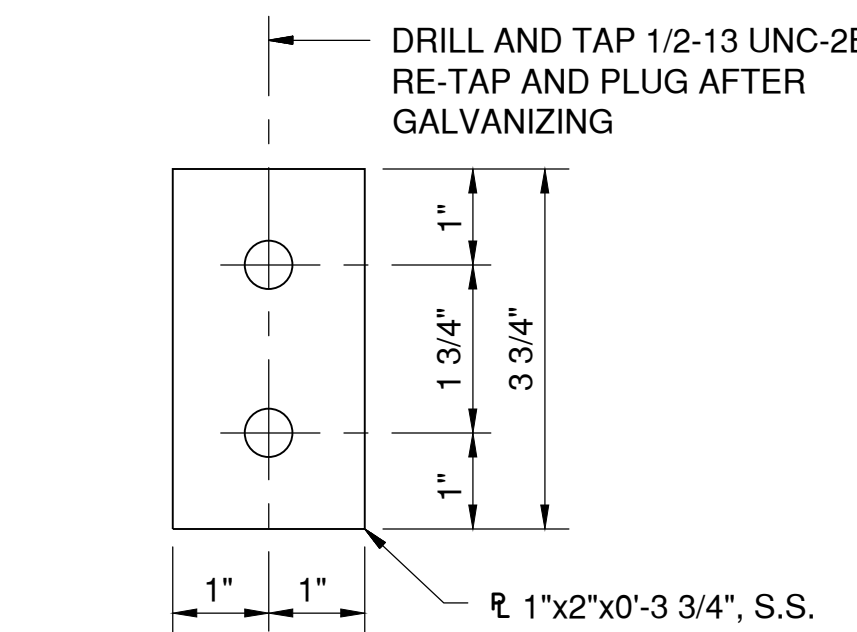
3  
-003  
DETAILS AT CONDUCTOR  
ARM END  
SCALE: NTS



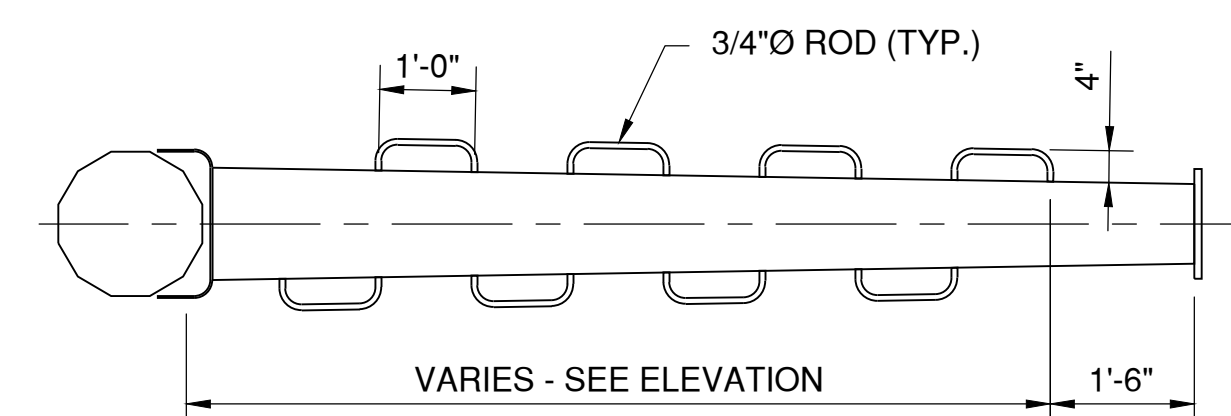
4  
-003  
DETAILS AT CONDUCTOR  
ARM END  
SCALE: NTS



9  
-003  
LOWER NUMBER SIGN CHANNEL  
SCALE: 1 1/2" = 1'-0"



10  
-003  
GROUNDING PAD DETAIL  
SCALE: 6" = 1'-0"



NOTES:  
1. HAND RINGS TO BE WELDED TO ALL ARMS ON ALTERNATING SIDES.  
2. RINGS SHALL EXTEND TO WITHIN 1'-0" TO 1'-6" OF ARM CONNECTION TO POLE.

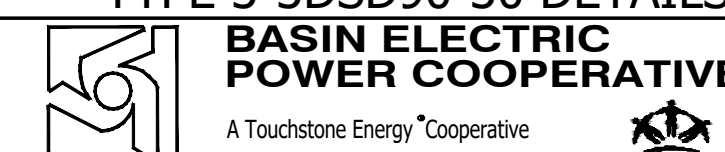
11  
-003  
ARM HAND RINGS  
SCALE: NONE

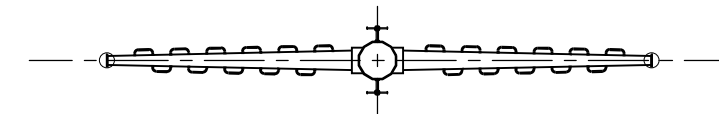
**ISSUED FOR CONSTRUCTION**

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
0C	ISSUED FOR CONSTRUCTION	A. BURGARD	S. VASBINDER		6/6/23
0B	REVISED TITLE AND REFERENCE DWG. TITLE	A. BURGARD	S. VASBINDER		5/1/23
0A	ISSUED FOR BID ONLY - RES 13032	A. BURGARD	S. VASBINDER		3/20/23

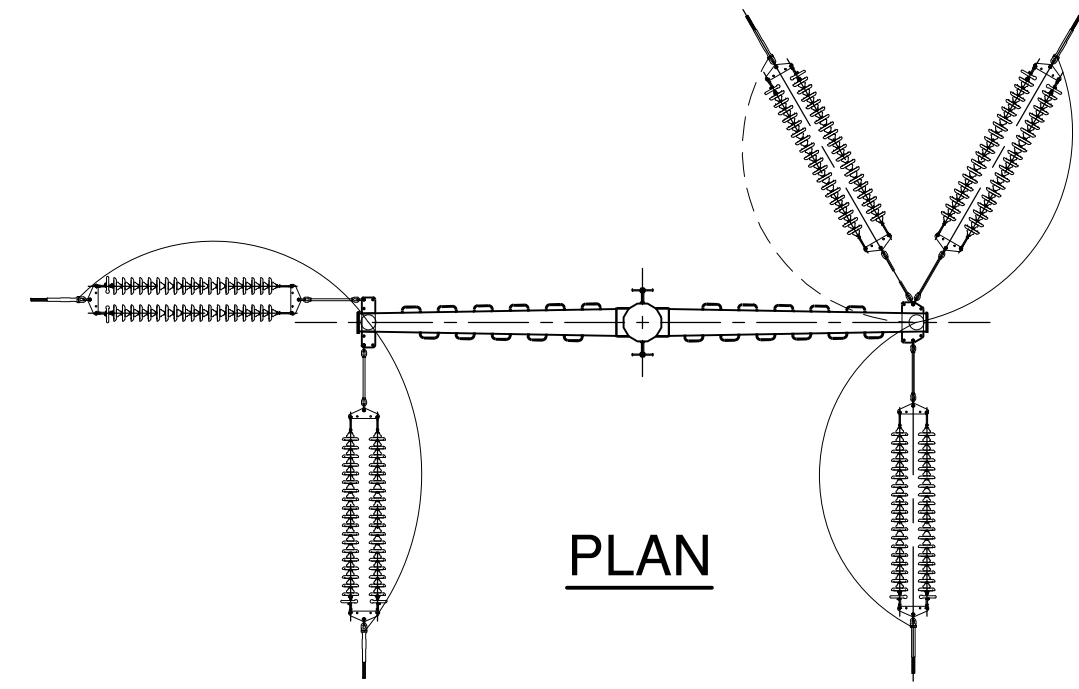
REFERENCE DRAWINGS	
BASIN DRAWING NBR 539-090-T2-002	345/345KV DOUBLE CIRCUIT ANGLE DEADEND STRUCTURE TYPE 3-3DSD90-30

FACILITY: TSM - TRANSMISSION SYSTEM MAINTENANCE	DESIGN BY: B. WILKINSON	3/15/23
FACILITY UNIT/COMPLEX/SITE NUMBER: 539-345KV LINE - PIONEER SUB DOUBLE CIRCUIT SEGMENT 540/538	DRAWN BY: A. BURGARD	3/15/23
CONTRACT/TELECOM LOOP:	DESIGN CHK:	
	DRAFT CHK:	
	APPROVED:	
	SCALE:	DO NOT SCALE
	VENDOR NAME:	
	VENDOR NUMBER:	ORIGINAL REV
	ENG DRAWING NUMBER:	REV. NO.
	539-090-T2-003	0C

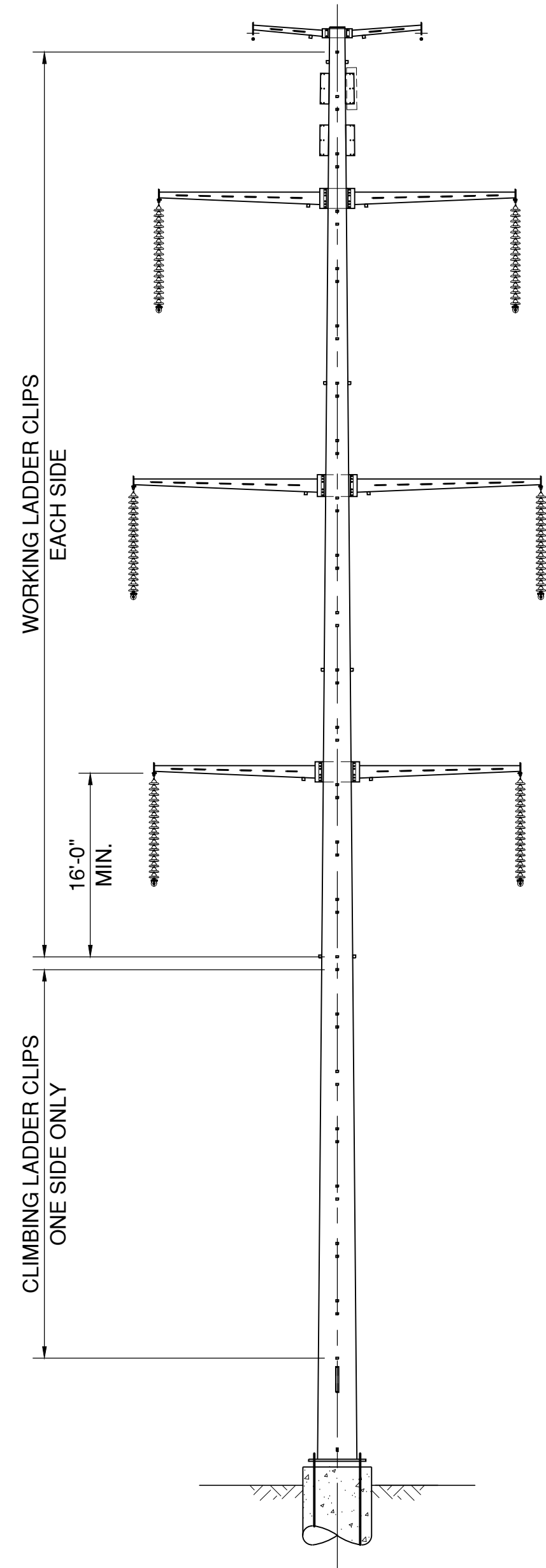




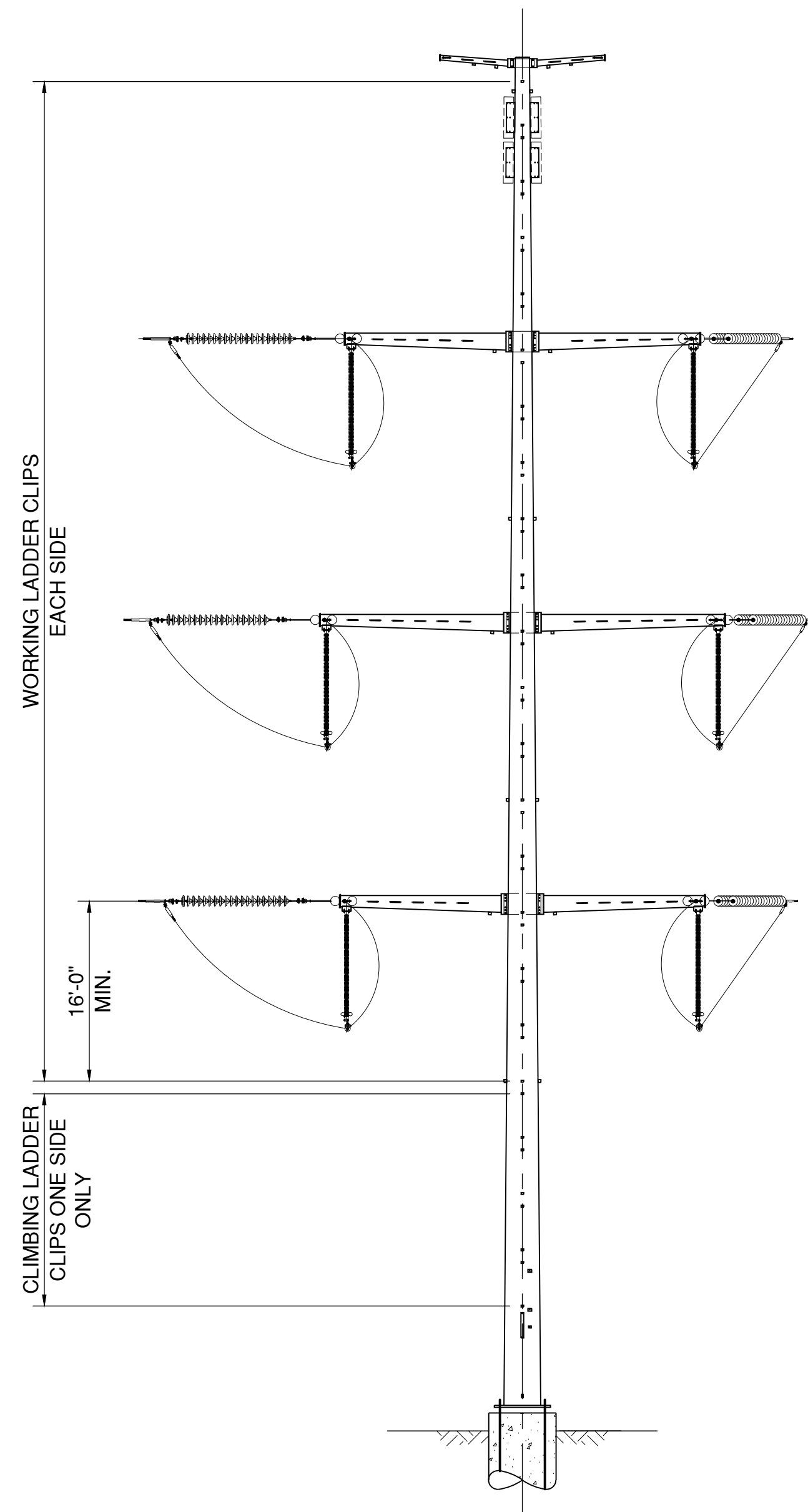
PLAN



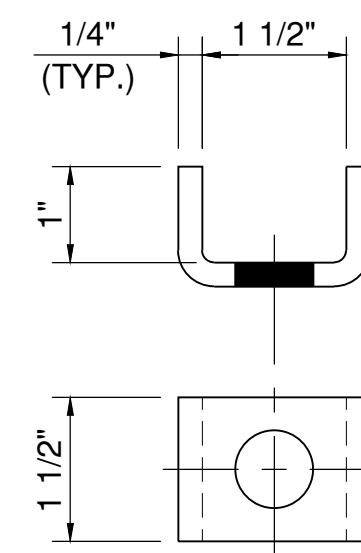
PLAN



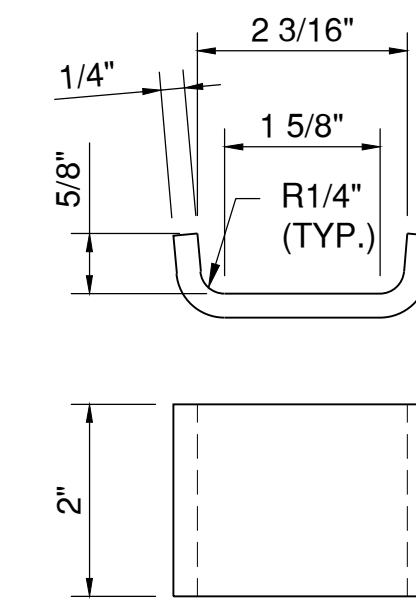
SINGLE POLE DOUBLE CIRCUIT  
TANGENT STRUCTURES  
TYPICAL STRUCTURE TYPES  
3-3DST



SINGLE POLE DOUBLE CIRCUIT  
ANGLE DEADEND STRUCTURES  
TYPICAL STRUCTURE TYPES  
3-3DSD90-30 & 3-3DSD90



STEP BOLT CLIP DETAIL



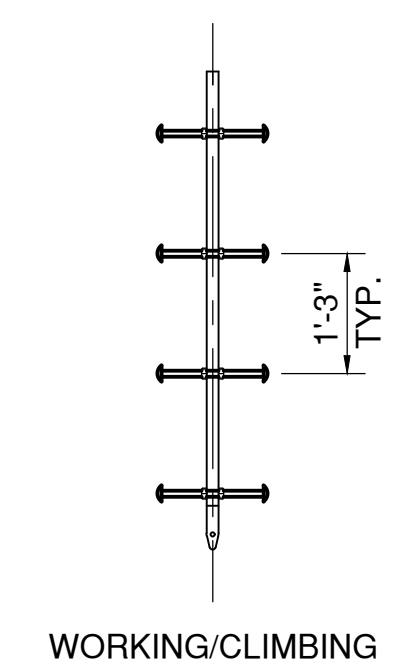
LADDER CLIP DETAIL



TYPICAL LADDER LAYOUT  
(TYP. ALL STR., U.N.O.)

LADDER NOTES:

1. PROVIDE TRANSITION STEP CLIPS (SEE DET. THIS DWG.) WITH STEP BOLTS FOR ACCESS TO FAR SIDE LADDERS.
2. STEP BOLTS SHALL BE 3/4" x 7 1/2" LONG WITH 2" DIAMETER BUTTON HEAD AND TWO HEAVY HEX LOCK NUTS. INSTALLATION OF STEP BOLTS WILL BE BY CONSTRUCTION CONTRACTOR.
3. STEP CLIP SHALL BE DESIGNED TO PREVENT BACKUP NUT ROTATION WHILE INSTALLING STEP BOLT. STEP BOLT CLIP DETAIL SHOWN TO BE USED OR OWNER APPROVED EQUAL.
4. ALL LADDERS AND LADDER HARDWARE TO BE HOT-DIPPED GALVANIZED PER A123 AND A153.
5. ALL LADDERS TO BE PROVIDED BY OWNER. STEP BOLTS TO BE PROVIDED BY FABRICATOR.
6. SEE CONSTRUCTION LIST FOR QUANTITY OF LADDERS REQUIRED FOR EACH STRUCTURE.



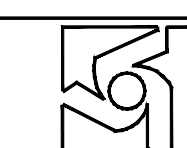
WORKING/CLIMBING

LADDER CONFIGURATION

**ISSUED FOR CONSTRUCTION**

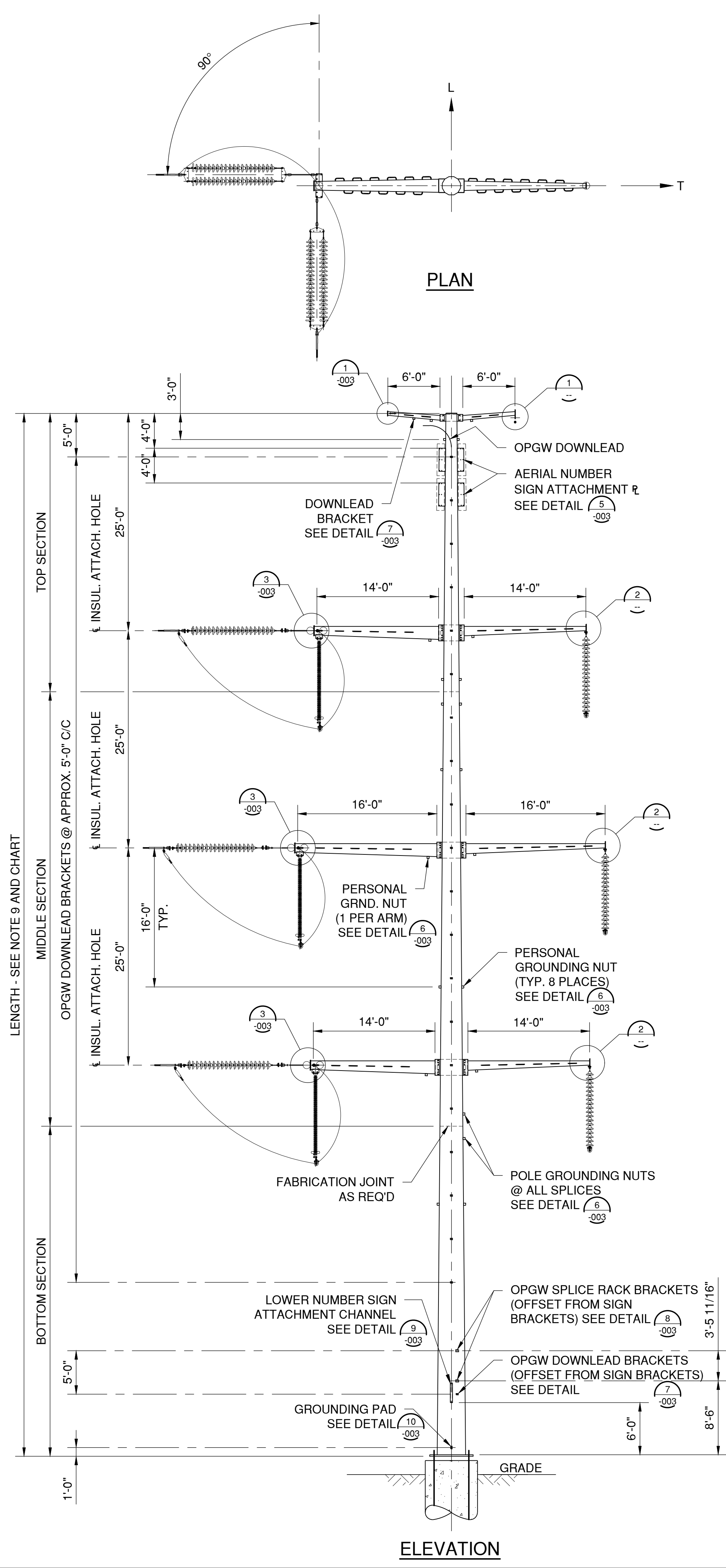
REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
0B	ISSUED FOR CONSTRUCTION	A. BURGARD	S. VASBINDER		8/3/23
0A	ISSUED FOR BID ONLY	A. BURGARD	S. VASBINDER		5/4/23

REFERENCE DRAWINGS		FACILITY: TSM- TRANSMISSION SYSTEM MAINTENANCE		DESIGN BY: S. VASBINDER	4/10/23
BASIN DRAWING NBR 539-090-T2-005 WORKING LADDER		FACILITY UNIT/COMPLEX/SITE NUMBER: 539-345KV LINE - PIONEER SUB DOUBLE CIRCUIT SEGMENT 540/538		DRAWN BY: A. BURGARD	4/10/23
		CONTRACT/TELECOM LOOP:		DESIGN CHK:	
				DRAFT CHK:	
				APPROVED:	
				SCALE: DO NOT SCALE	
				VENDOR NAME:	
				VENDOR NUMBER:	ORIGINAL REV
				ENG DRAWING NUMBER	REV. NO.
				539-090-T2-004	0B

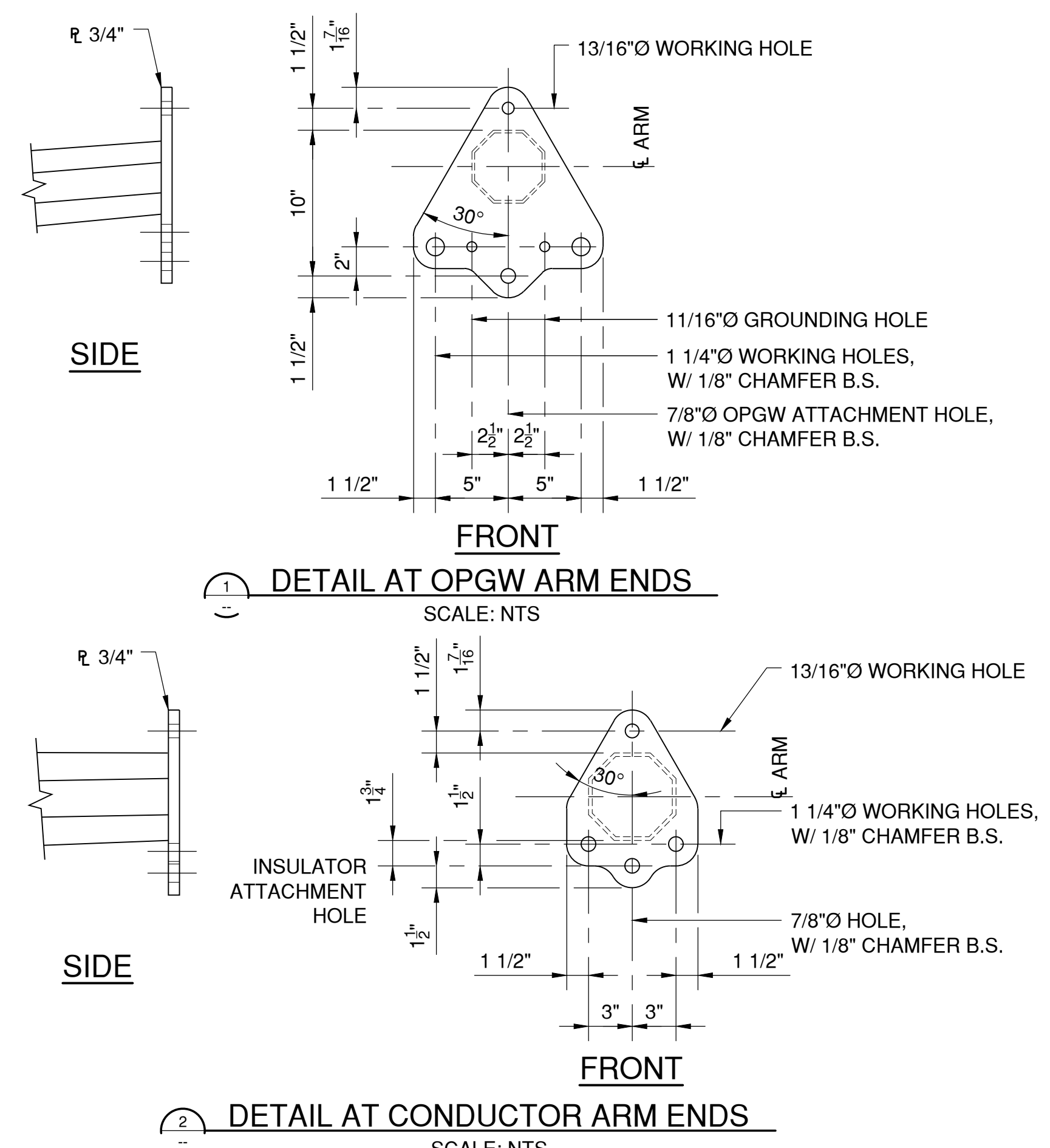


**BASIN ELECTRIC  
POWER COOPERATIVE**  
A Touchstone Energy Cooperative



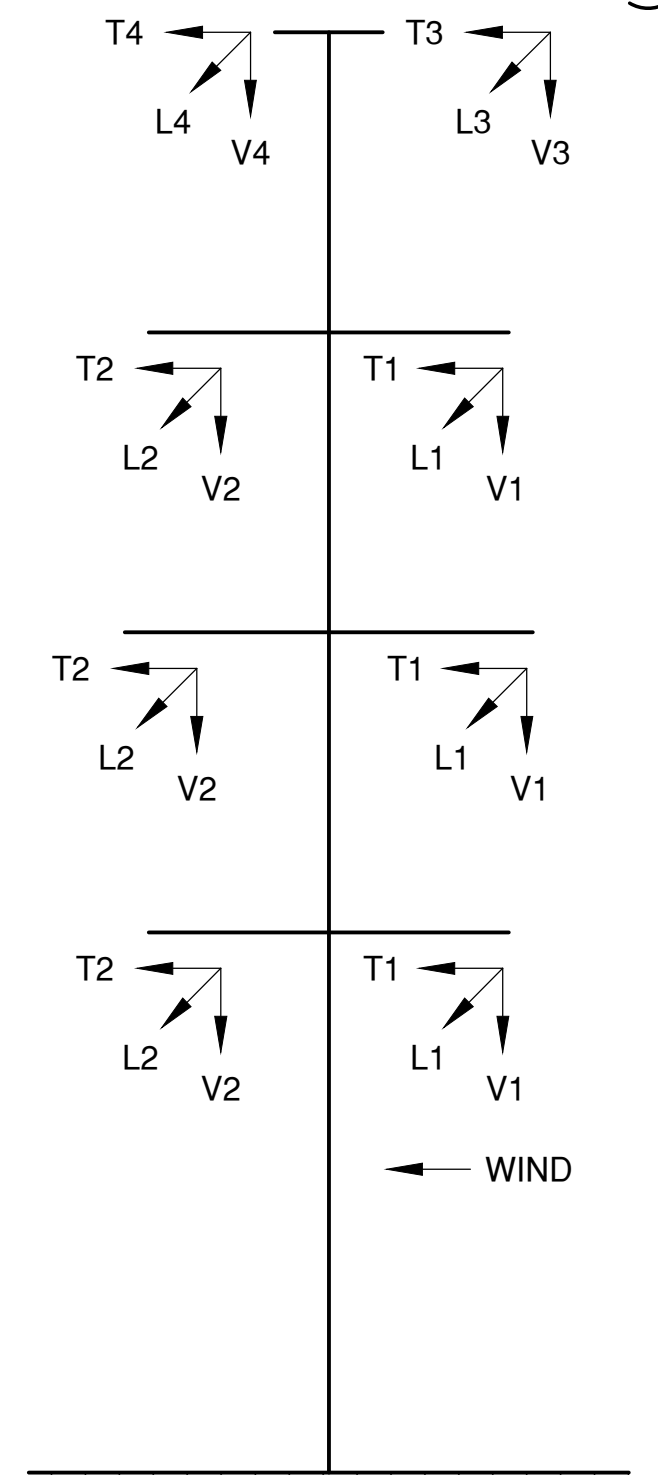


ELEVATION



DETAIL AT OPGW ARM ENDS

DETAIL AT CONDUCTOR ARM ENDS



TYPE 3-3DST-D90  
ALL LOADS ARE IN KIPS, EXCEPT FOR W (WIND ON POLE) WHICH IS PSF  
ALL LOADS INCLUDE OVERLOAD FACTORS

\* STRINGING AND BROKEN WIRE LOADS APPLIED ONLY TO ONE ARM ATTACHMENT AT A TIME

NOTES FOR STEEL POLE:

- POLE AND ARMS SHALL BE GALVANIZED STEEL. POLE SHALL HAVE BASE PLATE AND ANCHOR BOLTS.
- DESIGN CAPACITY WITH 1.72" DIA. 2609 TS KILLDEER CFCC-TW CONDUCTOR, 0.571" OPGW AND 7/16" EHS:  
WIND SPAN..... 1250 FT  
WEIGHT SPAN..... 1450 FT  
DESIGN RULING SPAN..... 1200 FT  
CONDUCTOR HARDWARE..... 1000 LBS/ 400 LBS  
STATIC HARDWARE..... 60 LBS/ 40 LBS  
LINE ANGLE..... 60-90 / 0-3 DEG.  
STRUCTURE IS DESIGNED FOR FULL DEADEND CAPACITY  
SPECIFIC LOAD CASE AND LOADING TREES ARE SHOWN ON THIS DRAWING.
- POLES MAY BE SINGLE PIECE OR HAVE A FABRICATION JOINT. POLE ARM RISE SHALL NOT EXCEED 1" PER 1'-0" OF LENGTH.
- TYPICAL PHASE ATTACHMENT IS SHOWN. DESIGN AND DETAILING OF PHASE ATTACHMENT SHALL BE BY FABRICATOR. END CLOSURES SHALL BE PROVIDED FOR ALL OPEN SECTIONS.
- THE FOLLOWING LIMITING TAPER SHALL APPLY: 0.45" PER FT. MAX. ALTERNATE TAPER MAY BE PROPOSED PROVIDED POLE APPEARANCE IS ACCEPTABLE.
- SLIP JOINTS SHALL BE ASSEMBLED ACCORDING TO POLE MANUFACTURER'S INSTRUCTIONS INCLUDING APPLICATION OF FULL SPECIFIED JACKING FORCE.
- FOUNDATION IS A SEPARATE CONSTRUCTION UNIT.
- PROVIDE COVERS FOR ALL GALVANIZING WEEP HOLES.
- OVERALL LENGTH IS SHOWN BY THE POLE DESIGNATION BELOW.

POLE TYPE	LENGTH (FEET)	EMBEDMENT (FEET)
3-3DST-D90-145	145	FDN

LOAD CASE		OLF'S			COND. 1			COND. 2			OPGW 1			OPGW 2			Wstr (psf)					
		VERT	TRANS	TEN	WIRE TENSION (LBS)	V1 (KIPS)	T1 (KIPS)	L1 (KIPS)	WIRE TENSION (LBS)	V2 (KIPS)	T2 (KIPS)	L2 (KIPS)	WIRE TENSION (LBS)	V3 (KIPS)	T3 (KIPS)	L3 (KIPS)		WIRE TENSION (LBS)	V4 (KIPS)	T4 (KIPS)	L4 (KIPS)	
1. NESC HEAVY	INTACT	0.5" ICE 4 PSF WIND 0 DEG INITIAL	1.50	2.50	1.65	22400	9.19	4.77	0	22400	10.09	39.79	36.96	8300	2.40	2.35	0	8300	3.60	29.84	13.70	10.00
2. NESC HEAVY	DE	0.5" ICE 4 PSF WIND 0 DEG INITIAL	1.50	2.50	1.65	22400	9.19	4.77	0	22400	10.09	39.23	36.96	8300	2.40	2.35	0	8300	3.60	28.70	13.70	10.00
3. EXTREME WIND	INTACT	0" ICE 31 PSF WIND 60 DEG FINAL	1.10	1.10	1.10	24500	4.54	7.52	0	24500	5.20	33.06	26.95	7800	0.70	2.48	0	7800	1.04	20.20	8.58	34.10
4. EXTREME WIND	DE	0" ICE 31 PSF WIND 60 DEG FINAL	1.10	1.10	1.10	24500	4.54	7.52	0	24500	5.20	31.84	26.95	7800	0.70	2.48	0	7800	1.04	18.78	8.58	34.10
5. ICE & WIND	INTACT	0.5" ICE 9.2 PSF WIND 15 DEG INITIAL	1.10	1.10	1.10	23000	6.74	4.19	0	23000	7.40	28.17	25.30	8500	1.76	2.15	0	8500	2.64	21.18	9.35	10.12
6. ICE & WIND	DE	0.5" ICE 9.2 PSF WIND 15 DEG INITIAL	1.10	1.10	1.10	23000	6.74	4.19	0	23000	7.40	27.59	25.30	8500	1.76	2.15	0	8500	2.64	20.02	9.35	10.12
7. EXTREME ICE	INTACT	1.25" ICE 0 PSF WIND 0 DEG INITIAL	1.25	1.10	1.10	33000	13.53	1.90	0	33000	14.28	36.30	36.30	12800	5.92	0.74	0	12800	8.88	28.16	14.08	0.00
8. EXTREME ICE	DE	1.25" ICE 0 PSF WIND 0 DEG INITIAL	1.25	1.10	1.10	33000	13.53	1.90	0	33000	14.28	36.30	36.30	12800	5.92	0.74	0	12800	8.88	28.16	14.08	0.00
9. NORMAL	INTACT	0" ICE 2 PSF WIND 40 DEG FINAL	1.00	1.00	1.00	13400	4.13	1.06	0	13400	4.73	13.76	13.40	3500	0.63	0.30	0	3500	0.95	7.18	3.50	2.00
10. NORMAL	DE	0" ICE 2 PSF WIND 40 DEG FINAL	1.00	1.00	1.00	13400	4.13	1.06	0	13400	4.73	13.69	13.40	3500	0.63	0.30	0	3500	0.95	7.10	3.50	2.00
11. EXTREME COLD	INTACT	0" ICE 0 PSF WIND -40 DEG FINAL	1.00	1.00	1.00	20000	4.13	1.05	0	20000	4.73	20.00	20.00	4500	0.63	0.24	0	4500	0.95	9.00	4.50	0.00
12. EXTREME COLD	DE	0" ICE 0 PSF WIND -40 DEG FINAL	1.00	1.00	1.00	20000	4.13	1.05	0	20000	4.73	20.00	20.00	4500	0.63	0.24	0	4500	0.95	9.00	4.50	0.00
13. STRINGING*	INTACT	0" ICE 4 PSF WIND 0 DEG INITIAL	1.50	1.50	1.50	18500	11.63	2.53	0.54	-	-	-	-	4600	2.30	0.72	0.13	-	-	-	-	6.00
14. BROKEN WIRE*	INTACT	0" ICE 0 PSF WIND 60 DEG FINAL	1.00	1.00	1.00	13000	4.13	0.27	10.40	-	-	-	-	3300	0.63	0.07	2.64	-	-	-	-	0.00

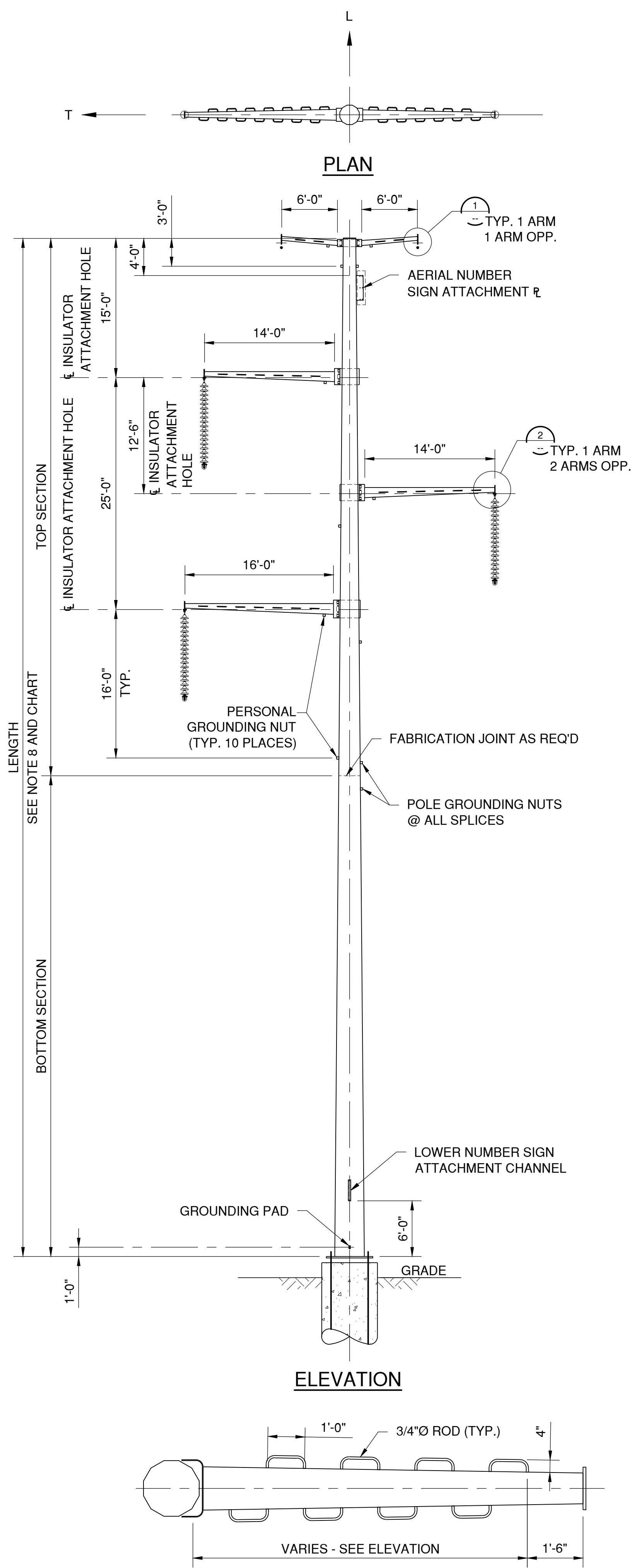
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NO	DESCRIPTION	DRWN	DSGN	APPD	DATE
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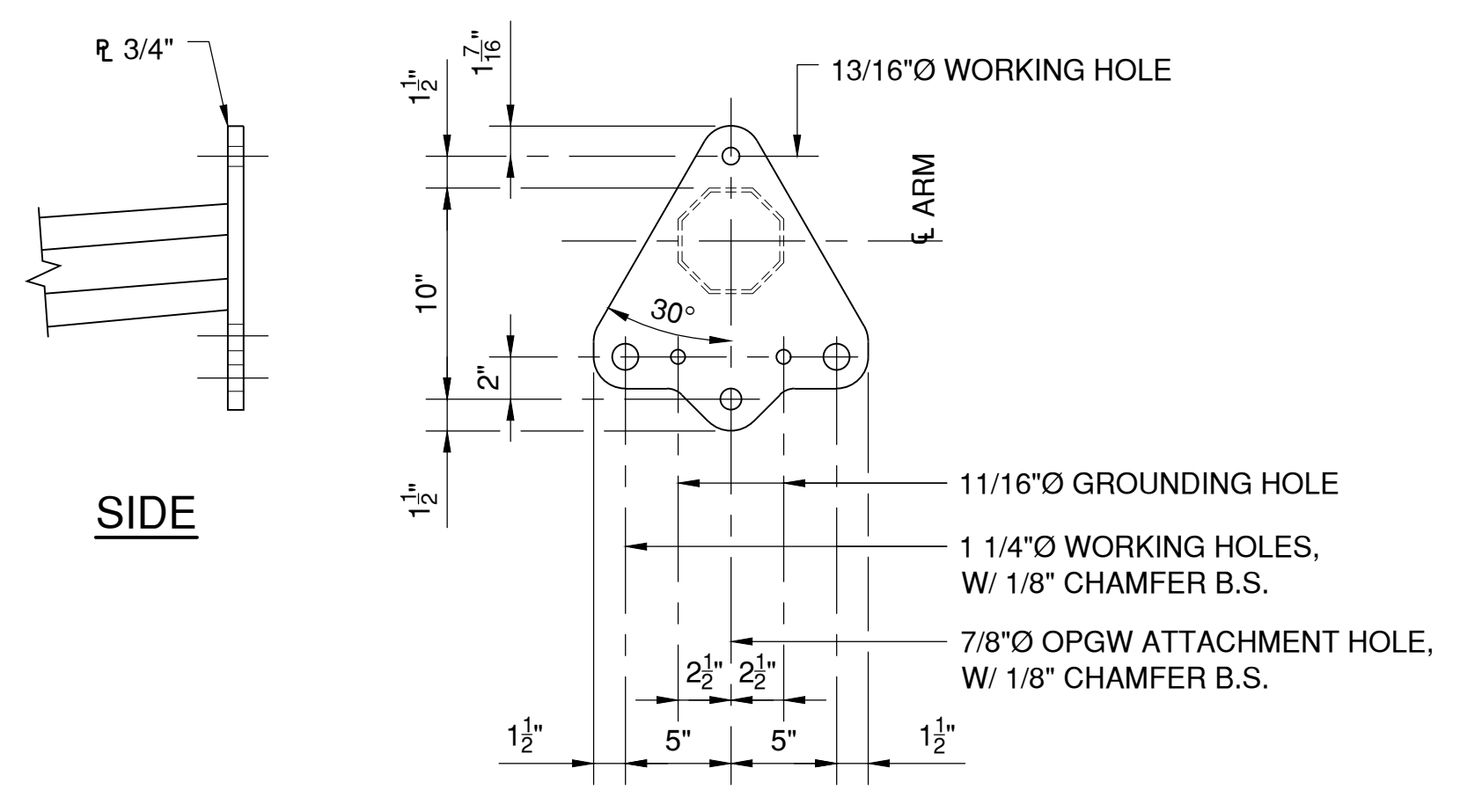
REFERENCE DRAWINGS  
 BASIN DRAWING NBR  
 539-090-T2-003 345/345KV DOUBLE CIRCUIT ANGLE DEADEND  
 STRUCTURE TYPE 3-3DSD90-30 DETAILS  
 539-090-T2-004 345KV STEEL POLE LADDER CLIP CONFIGURATION

FACILITY: TSM - TRANSMISSION SYSTEM MAINTENANCE  
 DESIGN BY: B. WILKINSON 8/3/23  
 DRAWN BY: A. BURGARD 8/3/23  
 DESIGN CHK: S. VASBINDER 8/4/23  
 DRAFT CHK:  
 APPROVED:  
 SCALE: DO NOT SCALE  
 VENDOR NAME:  
 VENDOR NUMBER: ORIGINAL REV  
 ENG DRAWING NUMBER: 539-090-T2-006  
 REV. NO: 0A

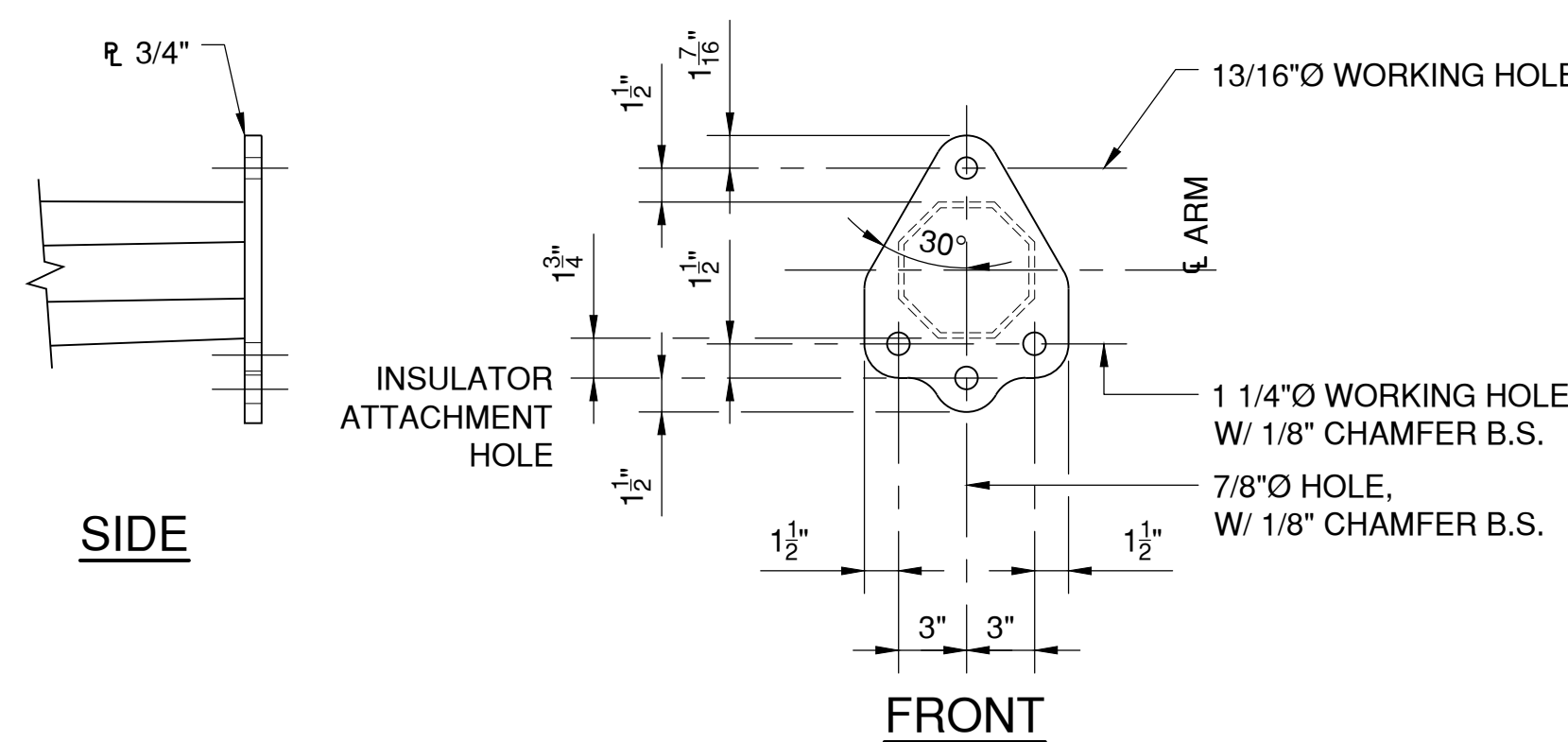
**BASIN ELECTRIC POWER COOPERATIVE**  
 A Touchstone Energy Cooperative



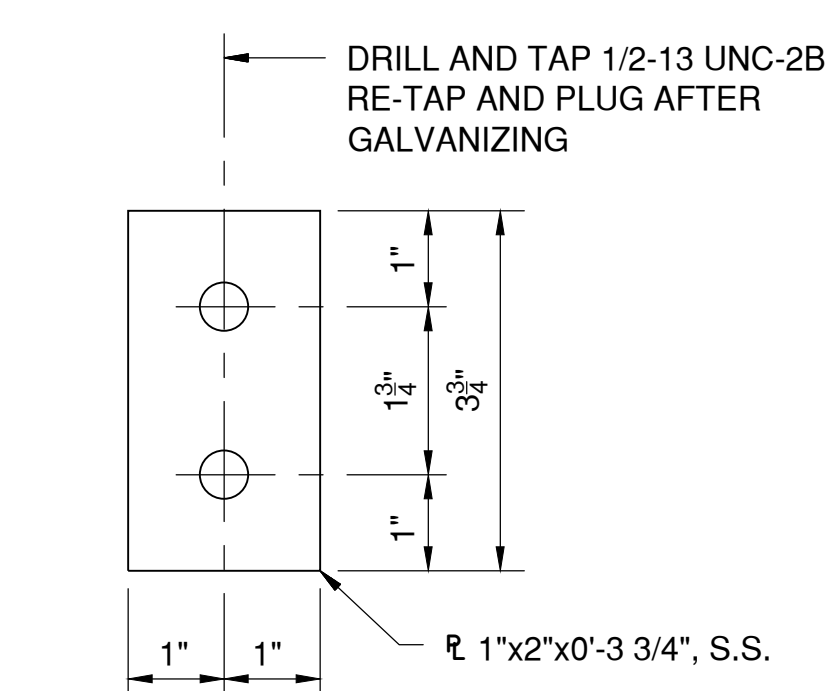
NOTES:  
 1. HAND RINGS TO BE WELDED TO ALL ARMS ON ALTERNATING SIDES.  
 2. RINGS SHALL EXTEND TO WITHIN 1'-0" TO 1'-6" OF ARM CONNECTION TO POLE.



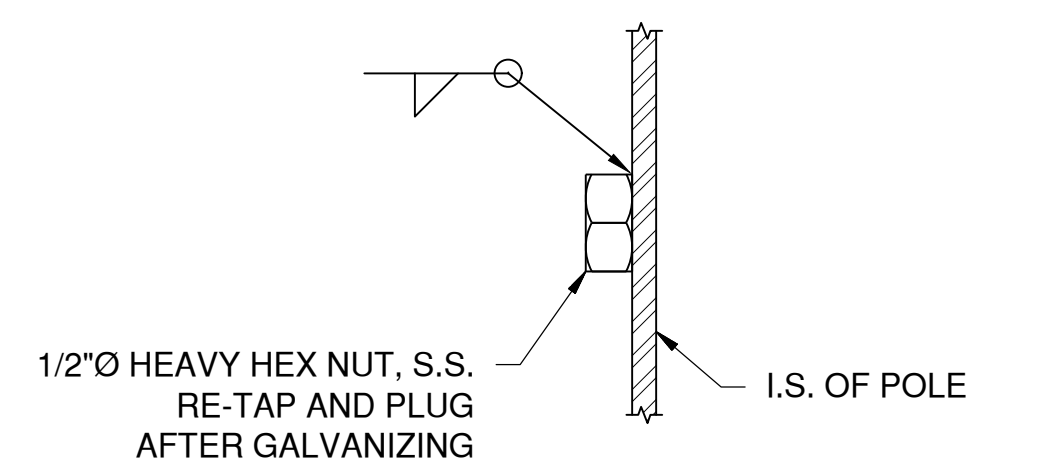
DETAIL AT OPGW ARM ENDS  
 SCALE: NTS



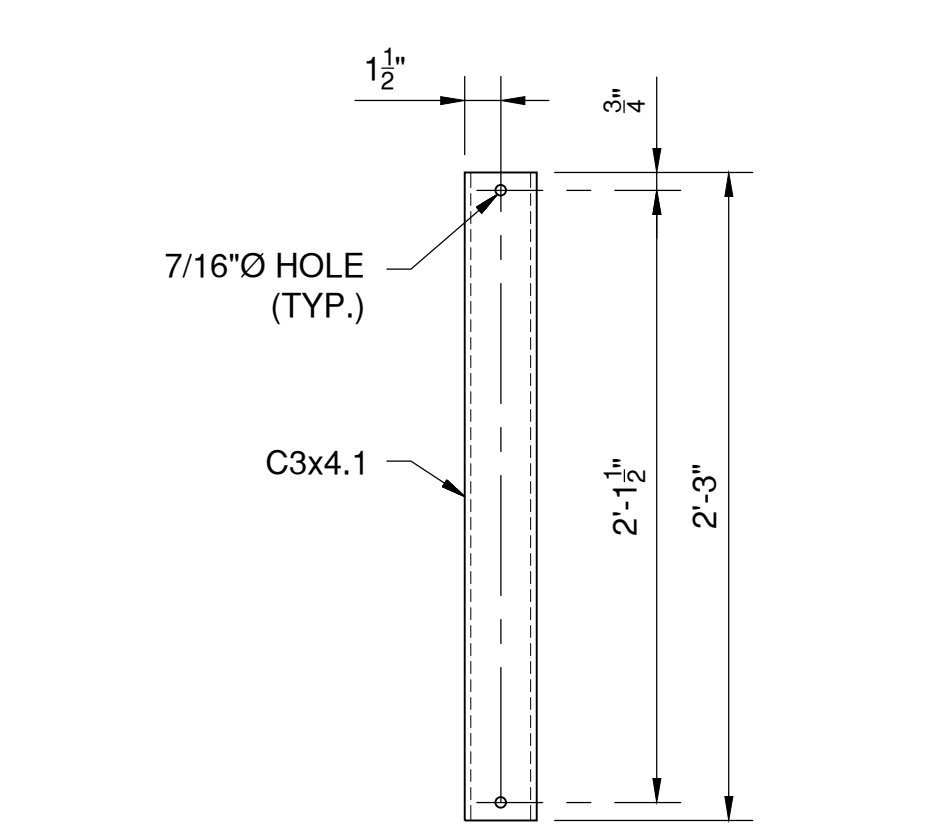
DETAIL AT CONDUCTOR ARM ENDS  
 SCALE: NTS



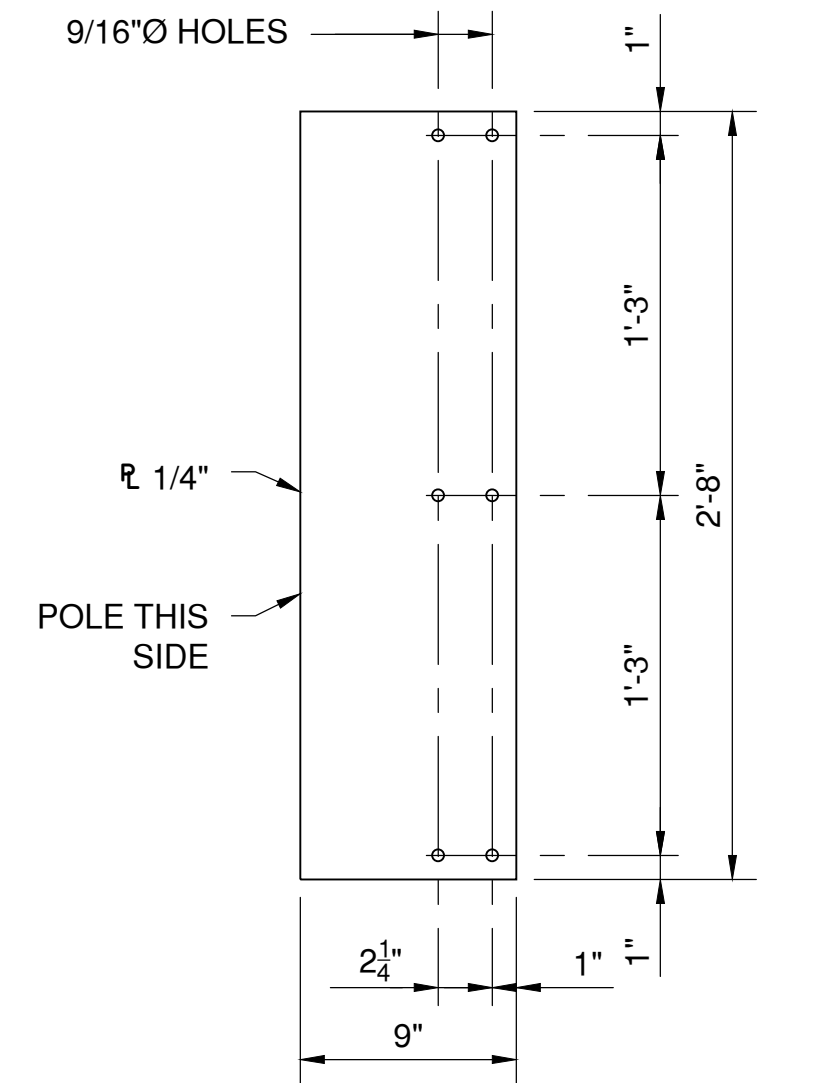
GROUNDING PAD DETAIL  
 SCALE: 6" = 1'-0"



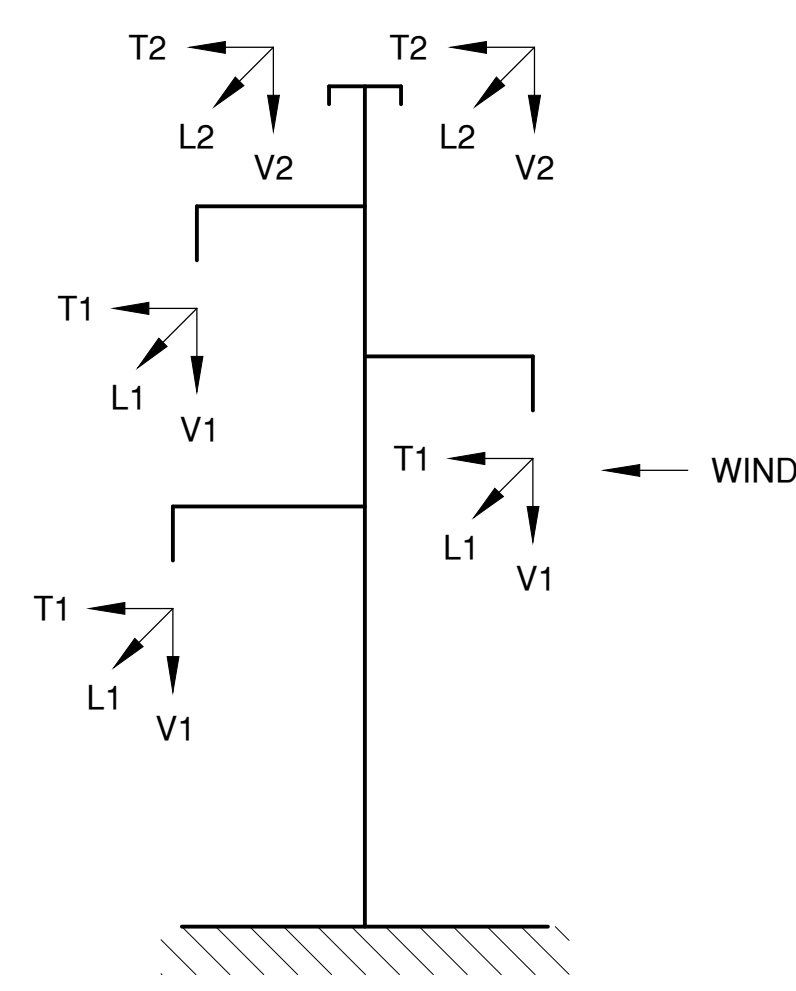
PERSONAL AND POLE GROUNDING NUT  
 SCALE: 6" = 1'-0"



LOWER NUMBER SIGN CHANNEL  
 SCALE: 1 1/2" = 1'-0"



AERIAL NUMBER SIGN PLATE  
 SCALE: 1 1/2" = 1'-0"



TYPE 3ST2  
 ALL LOADS ARE IN KIPS, EXCEPT FOR W (WIND ON POLE) WHICH IS PSF  
 ALL LOADS INCLUDE OVERLOAD FACTORS

**NOTES FOR STEEL POLE:**

- POLE AND ARMS SHALL BE GALVANIZED STEEL. POLE SHALL HAVE BASE PLATE AND ANCHOR BOLTS.
- DESIGN CAPACITY WITH 1.72" DIA. 2609 TS KILLDEER CFCC-TW CONDUCTOR, 0.571" OPGW AND 7/16" EHS:  
 WIND SPAN..... 1250 FT  
 WEIGHT SPAN..... 1450 FT  
 DESIGN RULING SPAN..... 1200 FT  
 CONDUCTOR HARDWARE..... 400 LBS  
 STATIC HARDWARE..... 40 LBS  
 LINE ANGLE..... 0-3 DEG.  
 SPECIFIC LOAD CASE AND LOADING TREES ARE SHOWN ON LOAD AND DESIGN CONDITIONS DRAWING.
- POLES MAY BE SINGLE PIECE OR HAVE A FABRICATION JOINT. POLE ARM RISE SHALL NOT EXCEED 1" PER 1'-0" OF LENGTH.
- TYPICAL PHASE ATTACHMENT IS SHOWN. DESIGN AND DETAILING OF PHASE ATTACHMENT SHALL BE BY FABRICATOR. END CLOSURES SHALL BE PROVIDED FOR ALL OPEN SECTIONS.
- THE FOLLOWING LIMITING TAPER SHALL APPLY: 0.30" PER FT. MAX. ALTERNATE TAPER MAY BE PROPOSED PROVIDED POLE APPEARANCE IS ACCEPTABLE.
- SLIP JOINTS SHALL BE ASSEMBLED ACCORDING TO POLE MANUFACTURER'S INSTRUCTIONS INCLUDING APPLICATION OF FULL SPECIFIED JACKING FORCE.
- FOUNDATION IS A SEPARATE CONSTRUCTION UNIT.
- OVERALL LENGTH IS SHOWN BY THE POLE DESIGNATION BELOW.

POLE TYPE	LENGTH (FEET)	EMBEDMENT (FEET)
3ST2-105	105	FDN
3ST2-110	110	FDN
3ST2-115	115	FDN
3ST2-120	120	FDN
3ST2-125	125	FDN
3ST2-130	130	FDN
3ST2-135	135	FDN
3ST2-140	140	FDN

9. PROVIDE COVERS FOR ALL GALVANIZING WEEP HOLES.

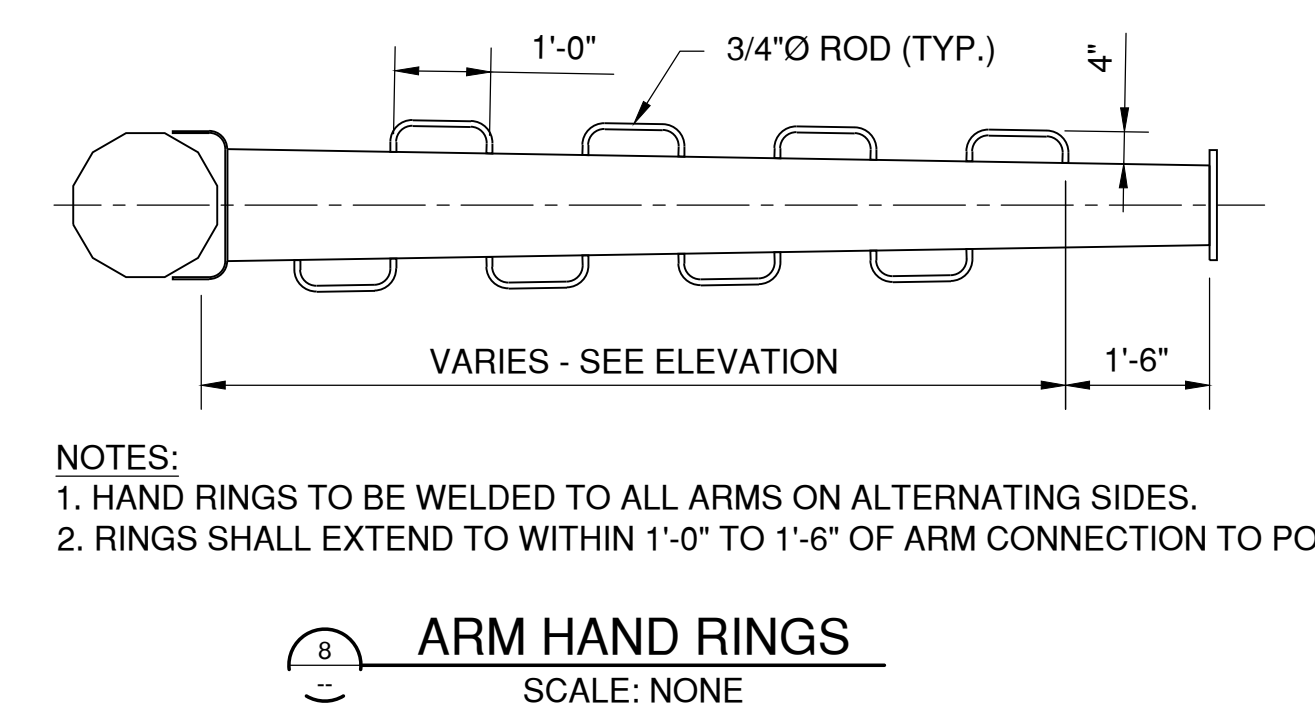
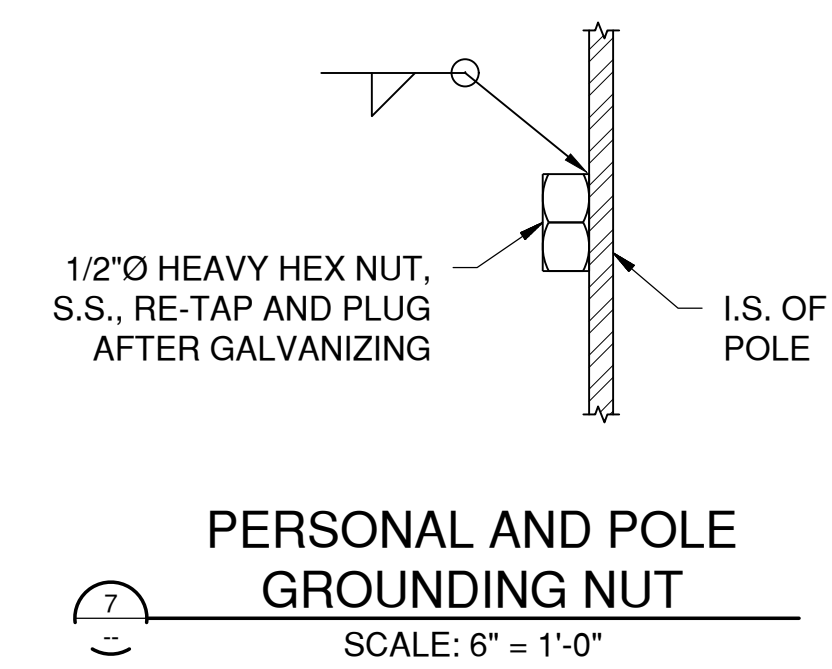
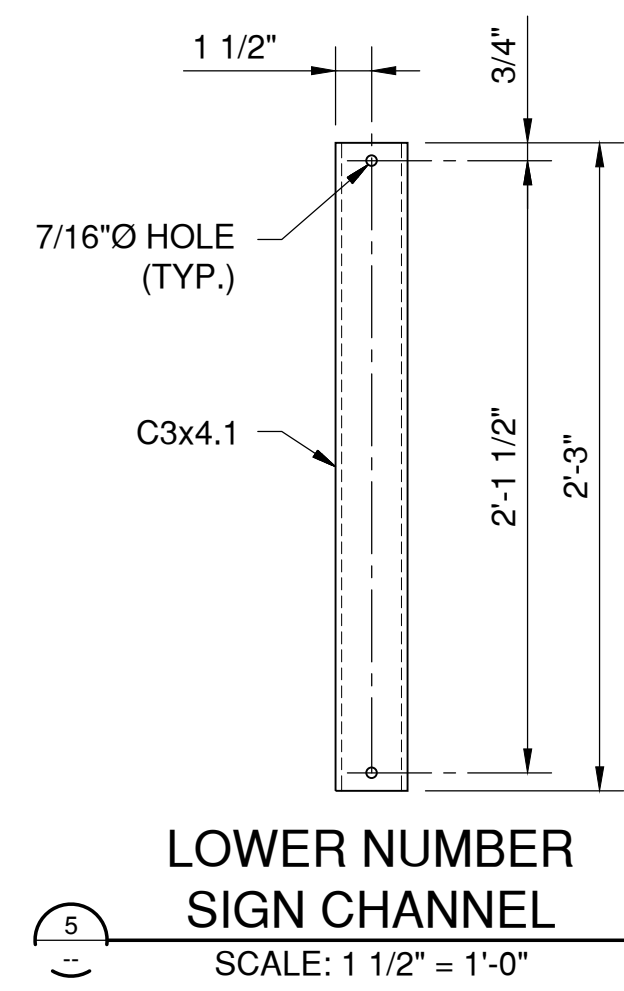
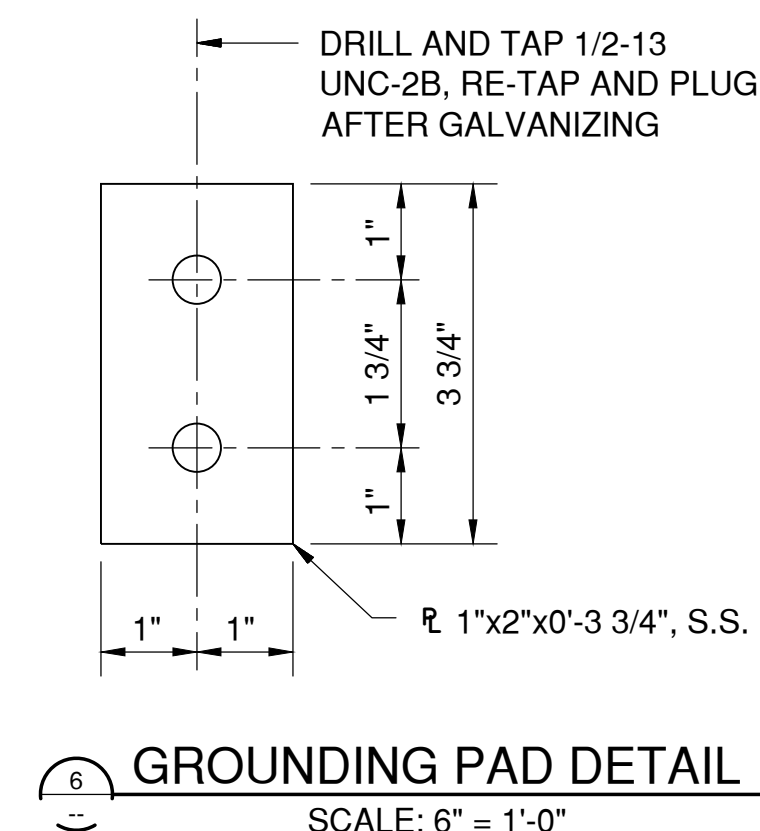
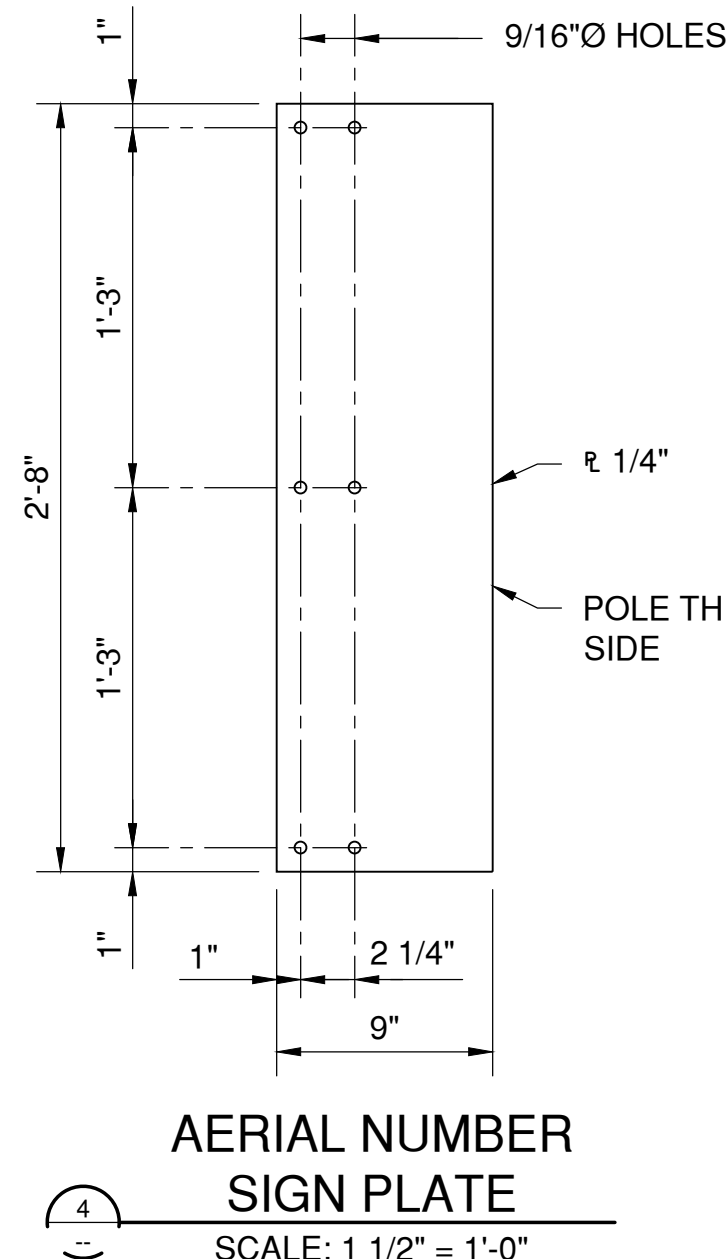
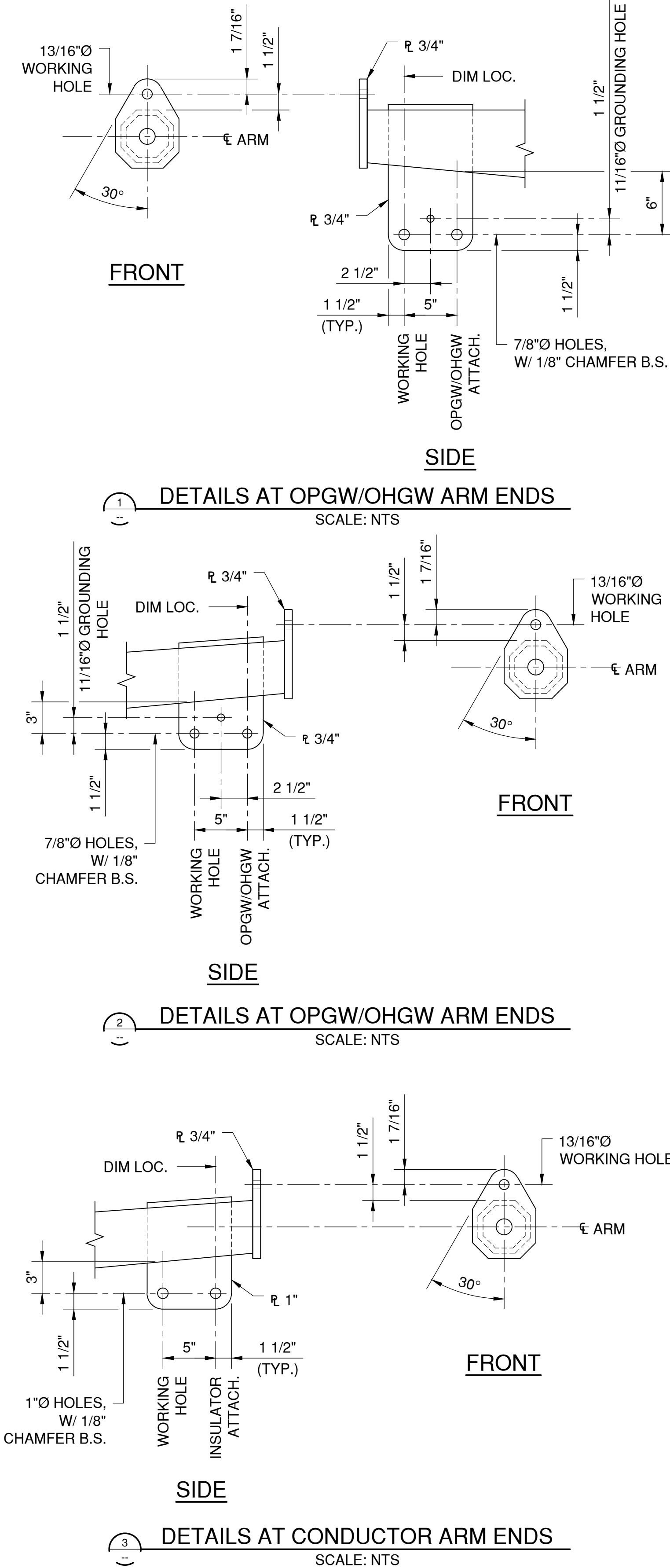
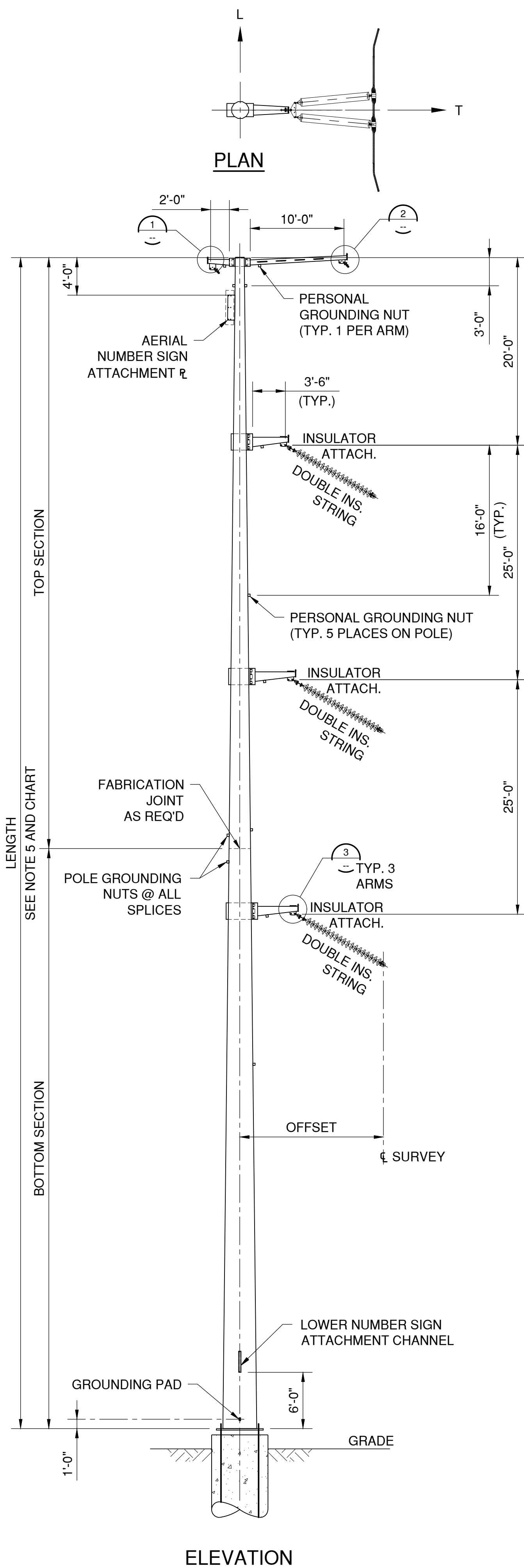
LOAD CASE			OLF'S			COND. 1			OPGW			Wstr (psf)		
			VERT	TRANS	TEN	WIRE TENSION (LBS)	V1 (KIPS)	T1 (KIPS)	L1 (KIPS)	WIRE TENSION (LBS)	V2 (KIPS)		T2 (KIPS)	L2 (KIPS)
1. NESC HEAVY	INTACT	0.5" ICE 4 PSF WIND 0 DEG INITIAL	1.50	2.50	1.65	22400	9.19	4.77	0.00	8300	2.40	2.35	0.00	10.00
2. EXTREME WIND	INTACT	0" ICE 31 PSF WIND 60 DEG FINAL	1.10	1.10	1.10	24500	4.54	7.52	0.00	7800	0.70	2.48	0.00	34.10
3. ICE & WIND	INTACT	0.5" ICE 9.2 PSF WIND 15 DEG INITIAL	1.10	1.10	1.10	23000	6.74	4.19	0.00	8500	1.76	2.15	0.00	10.12
4. EXTREME ICE	INTACT	1.25" ICE 0 PSF WIND 0 DEG INITIAL	1.25	1.10	1.10	33000	13.53	1.90	0.00	12800	5.92	0.74	0.00	0.00
5. NORMAL	INTACT	0" ICE 2 PSF WIND 40 DEG FINAL	1.00	1.00	1.00	13400	4.13	1.06	0.00	3500	0.63	0.30	0.00	2.00
6. EXTREME COLD	INTACT	0" ICE 0 PSF WIND -40 DEG FINAL	1.00	1.00	1.00	20000	4.13	1.05	0.00	4500	0.63	0.24	0.00	0.00
7. STRINGING*	INTACT	0" ICE 4 PSF WIND 0 DEG INITIAL	1.50	1.50	1.50	18500	11.63	2.53	0.54	4600	2.30	0.72	0.13	6.00
8. BROKEN WIRE*	INTACT	0" ICE 0 PSF WIND 60 DEG FINAL	1.00	1.00	1.00	13000	4.13	0.27	10.40	3300	0.63	0.07	2.64	0.00

\* STRINGING AND BROKEN WIRE LOADS APPLIED ONLY TO ONE ARM ATTACHMENT AT A TIME

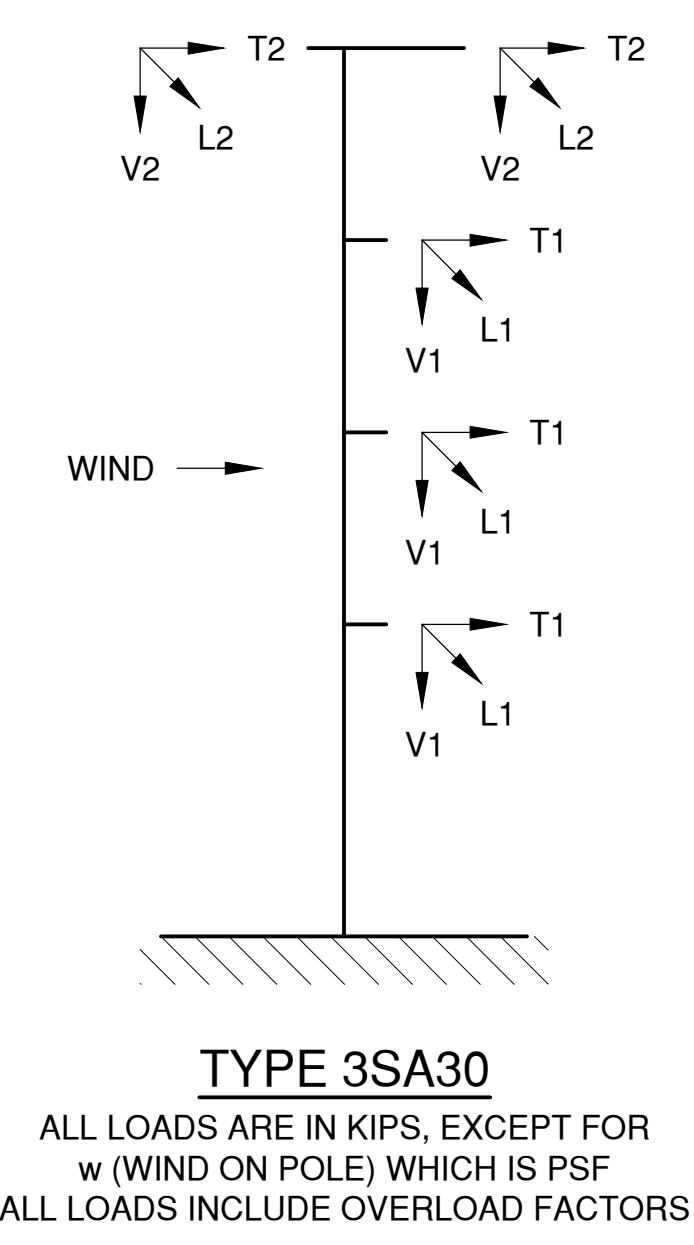
**ISSUED FOR CONSTRUCTION**

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
OB	ISSUED FOR CONSTRUCTION	A. BURGARD	S. VASBINDER		6/6/23
OA	ISSUED FOR BID ONLY - RES 13032	A. BURGARD	S. VASBINDER		5/3/23

REFERENCE DRAWINGS BASIN DRAWING NBR 540-090-T2-006 345KV STEEL POLE LADDER CLIP CONFIGURATION	FACILITY: TSM - TRANSMISSION SYSTEM MAINTENANCE FACILITY UNIT/COMPLEX/SITE NUMBER: 540-345KV LINE - PIONEER SUB TO JUDSON SUB CONTRACT/TELECOM LOOP:	DESIGN BY S. VASBINDER DRAWN BY A. BURGARD DESIGN CHK. DRAFT CHK. APPROVED SCALE: DO NOT SCALE VENDOR NAME:	4/17/22 4/17/22
<b>345KV SINGLE POLE TANGENT STRUCTURE TYPE 3ST2</b>		<b>BASIN ELECTRIC POWER COOPERATIVE</b> A Touchstone Energy Cooperative	
		VENDOR NUMBER: ORIGINAL REV	ENG DRAWING NUMBER REV. NO. 540-090-T2-001 0B



- NOTES FOR STEEL POLE:**
- POLE SHALL BE GALVANIZED STEEL. POLE TO HAVE BASE PLATE AND ANCHOR BOLTS.
  - DESIGN CAPACITY W/ 1.72" DIA. 2609 TS KILLDEER FCFC-TW CONDUCTOR, .571" OPGW & 7/16" EHS:  
WIND SPAN..... 1250 FT.  
WEIGHT SPAN..... 1450 FT.  
RULING SPAN..... 1200 FT.  
CONDUCTOR HARDWARE..... 1000 LBS.  
STATIC HARDWARE..... 40 LBS.  
LINE ANGLE..... 15-30 DEG.  
SPECIFIC LOAD CASES AND LOADING TREES ARE SHOWN ON THIS DRAWING.
  - POLES MAY BE SINGLE PIECE OR HAVE A FABRICATION JOINT.
  - TYPICAL PHASE ATTACHMENT IS SHOWN. DESIGN AND DETAILING OF PHASE ATTACHMENT SHALL BE BY FABRICATOR. END CLOSURES SHALL BE PROVIDED FOR ALL OPEN SECTIONS.
  - OVERALL LENGTH IS SHOWN BY THE POLE DESIGNATION BELOW.
- | POLE TYPE | LENGTH (FEET) | EMBEDMENT (FEET) |
|-----------|---------------|------------------|
| 3SA30-125 | 125           | FDN              |
| 3SA30-135 | 135           | FDN              |
| 3SA30-140 | 140           | FDN              |
| 3SA30-145 | 145           | FDN              |
- THE FOLLOWING LIMITING TAPER SHALL APPLY: 0.45" PER FT. MAX. ALTERNATE TAPER MAY BE PROPOSED PROVIDED POLE APPEARANCE IS ACCEPTABLE.
  - FOUNDATION IS A SEPARATE CONSTRUCTION UNIT.
  - SLIP JOINTS SHALL BE ASSEMBLED ACCORDING TO POLE MANUFACTURER'S INSTRUCTIONS INCLUDING APPLICATION OF FULL SPECIFIED JACKING FORCE.
  - PROVIDE COVERS FOR ALL GALVANIZING WEEP HOLES.



LOAD CASE	INTACT	COND. 1	OLF'S			COND. 1			OPGW			Wstr (psf)		
			VERT	TRANS	TEN	WIRE TENSION (LBS)	V1 (KIPS)	T1 (KIPS)	L1 (KIPS)	WIRE TENSION (LBS)	V2 (KIPS)		T2 (KIPS)	L2 (KIPS)
1. NESC HEAVY	INTACT	COND. 1	1.50	2.50	1.65	22400	10.09	21.97	0.00	8300	2.40	8.73	0.00	10.00
2. EXTREME WIND	INTACT	COND. 1	1.10	1.10	1.10	24500	5.20	20.06	0.00	7800	0.70	6.47	0.00	34.10
3. ICE & WIND	INTACT	COND. 1	1.10	1.10	1.10	23000	7.40	15.96	0.00	8500	1.76	6.50	0.00	10.12
4. EXTREME ICE	INTACT	COND. 1	1.25	1.10	1.10	33000	14.28	18.79	0.00	12800	5.92	7.29	0.00	0.00
5. NORMAL	INTACT	COND. 1	1.00	1.00	1.00	13400	4.73	7.29	0.00	3500	0.63	1.93	0.00	2.00
6. EXTREME COLD	INTACT	COND. 1	1.00	1.00	1.00	20000	4.73	10.35	0.00	4500	0.63	2.33	0.00	0.00
7. STRINGING*	INTACT	COND. 1	1.50	1.50	1.50	18500	12.53	15.44	0.54	4600	2.30	3.93	0.13	6.00
8. BROKEN WIRE*	INTACT	COND. 1	1.00	1.00	1.00	13000	4.73	2.69	10.40	3300	0.63	0.68	2.64	0.00

\* STRINGING AND BROKEN WIRE LOADS APPLIED ONLY TO ONE ARM ATTACHMENT AT A TIME

**ISSUED FOR CONSTRUCTION**

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
0B	ISSUED FOR CONSTRUCTION	A. BURGARD	S. VASBINDER		7/25/23
0A	ISSUED FOR BID ONLY - RES 13032	A. BURGARD	S. VASBINDER		5/3/23

REFERENCE DRAWINGS

BASIN DRAWING NBR 540-090-T2-006 345KV STEEL POLE LADDER CLIP CONFIGURATION

FACILITY: TSM - TRANSMISSION SYSTEM MAINTENANCE

DESIGN BY: S. VASBINDER 2/23/23

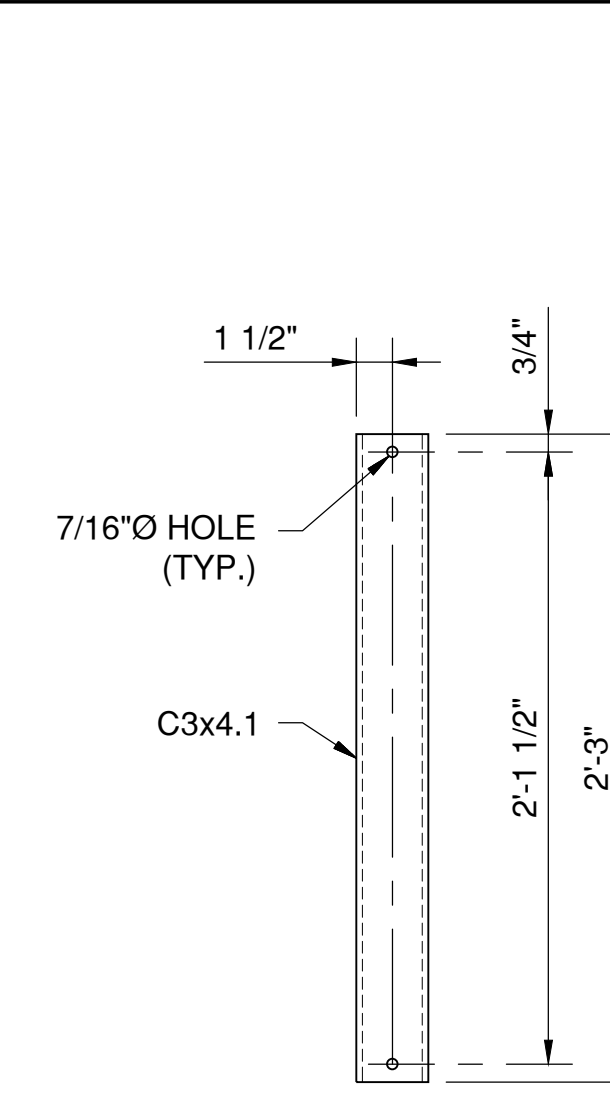
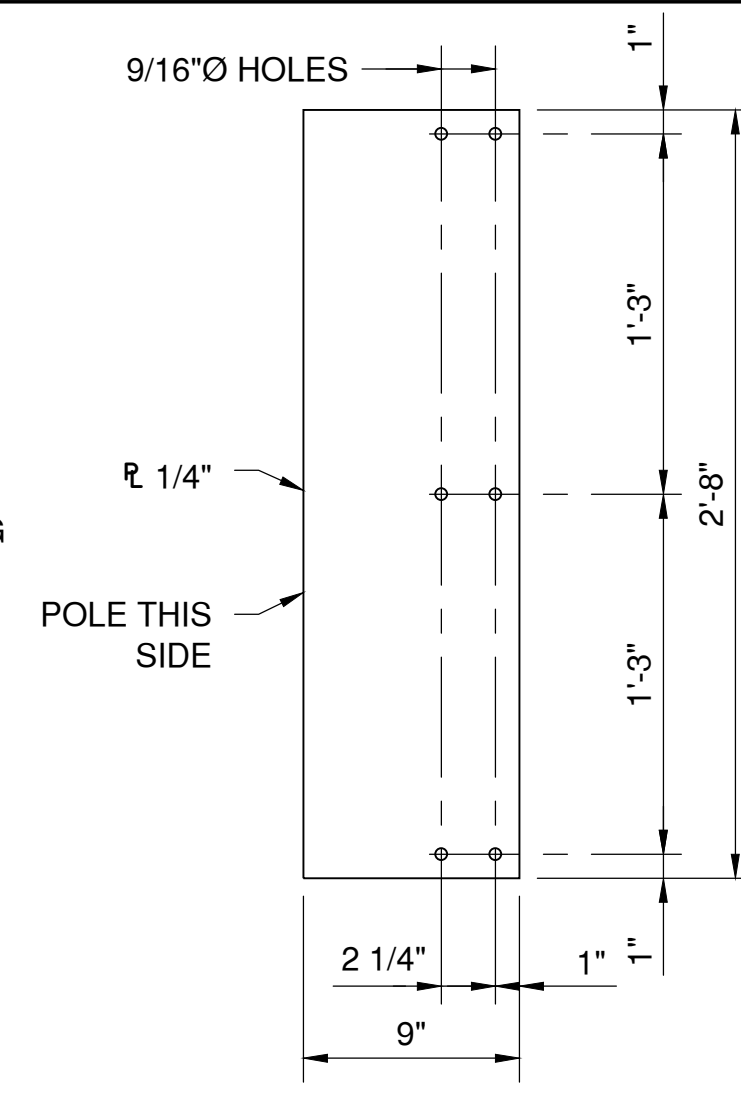
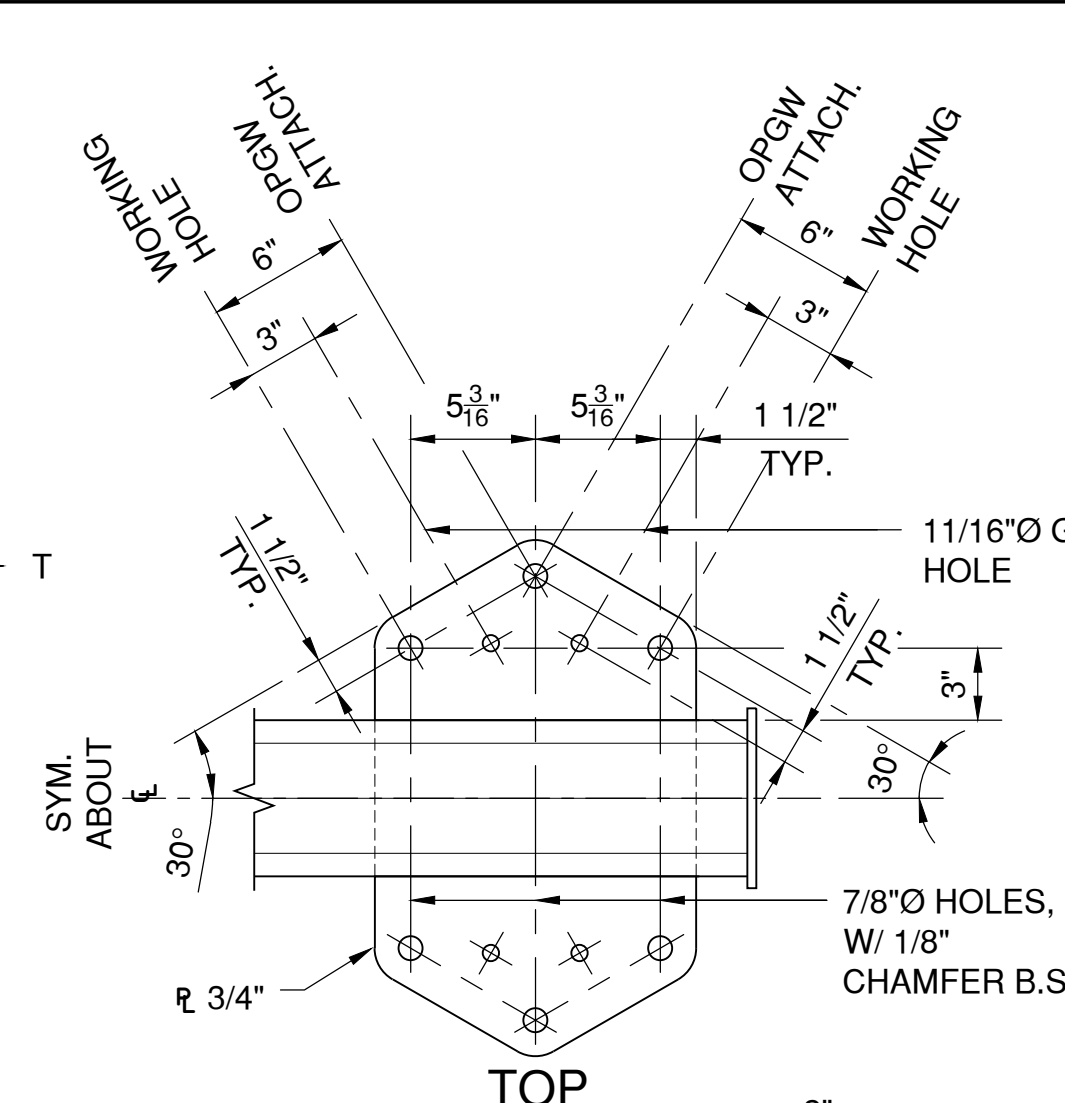
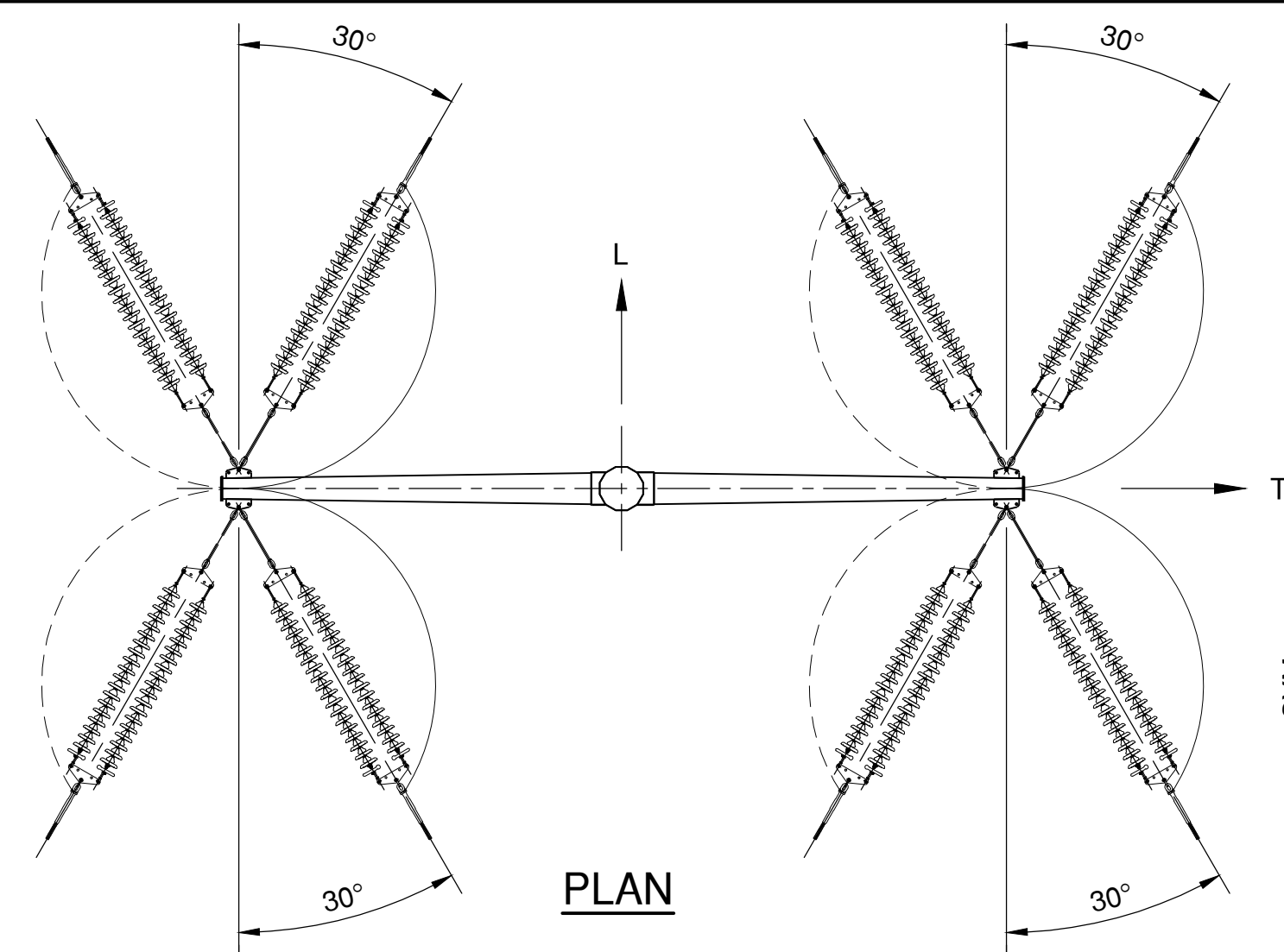
DRAWN BY: A. BURGARD 2/23/23

345KV SINGLE POLE ANGLE STRUCTURE TYPE 3SA30

BASIN ELECTRIC POWER COOPERATIVE

ENG DRAWING NUMBER: 540-090-T2-002

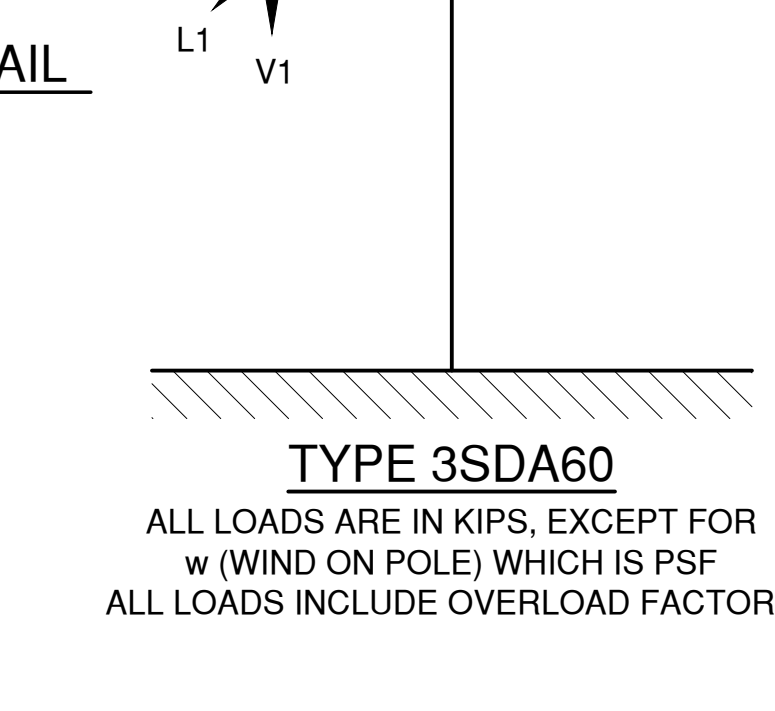
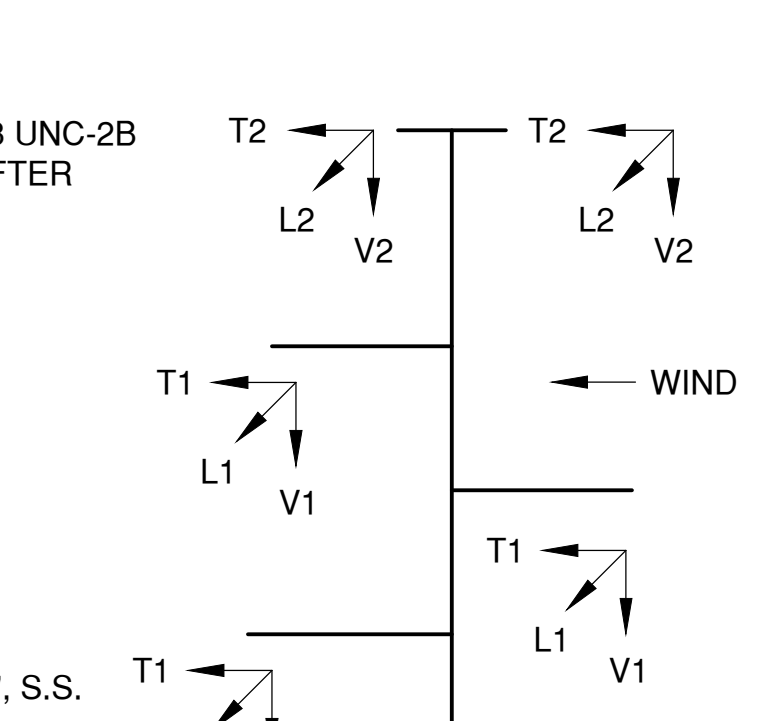
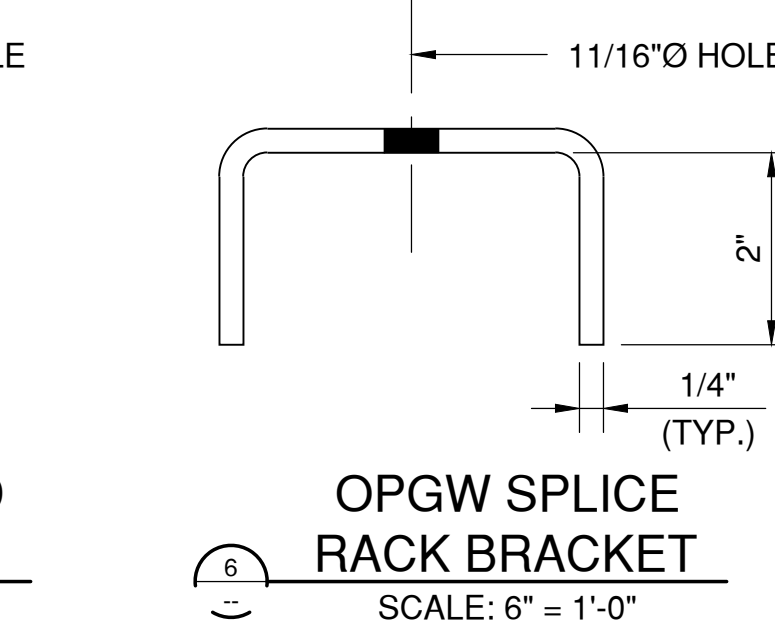
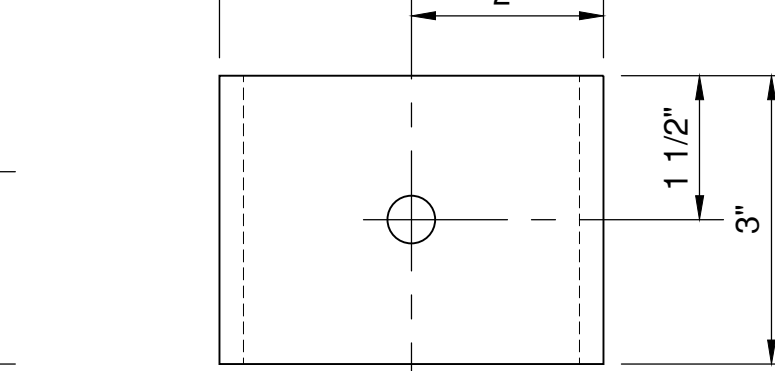
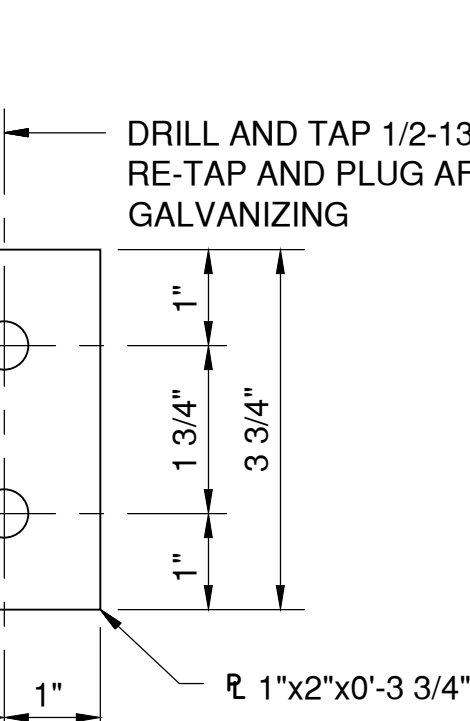
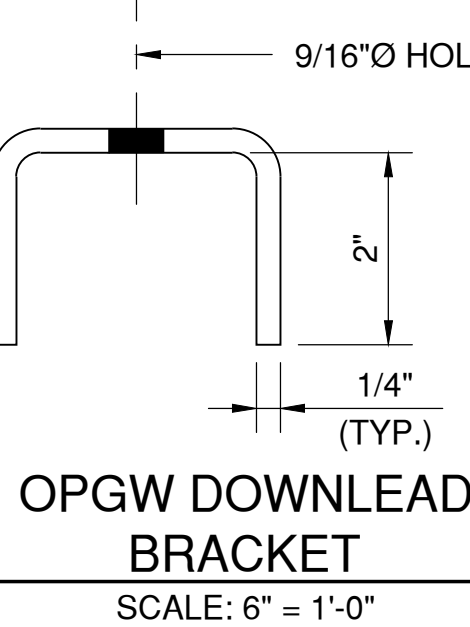
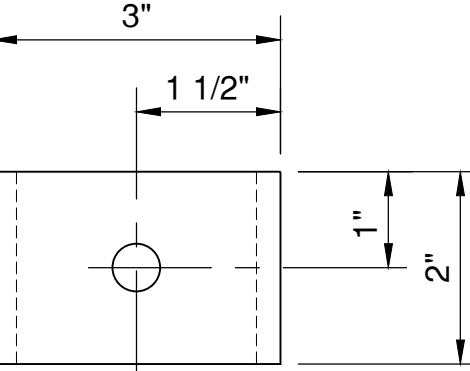
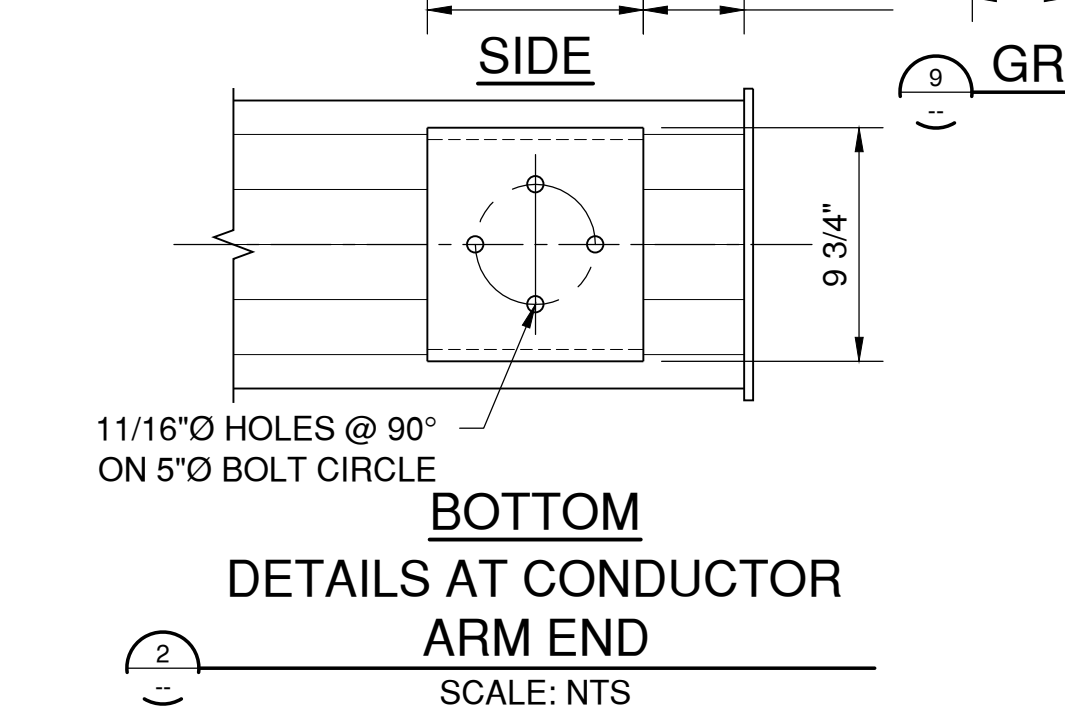
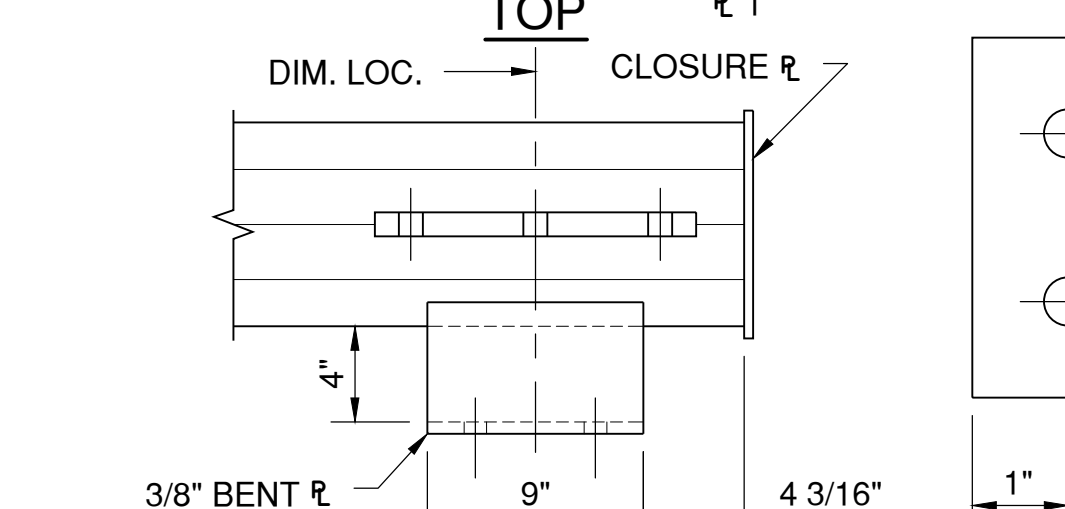
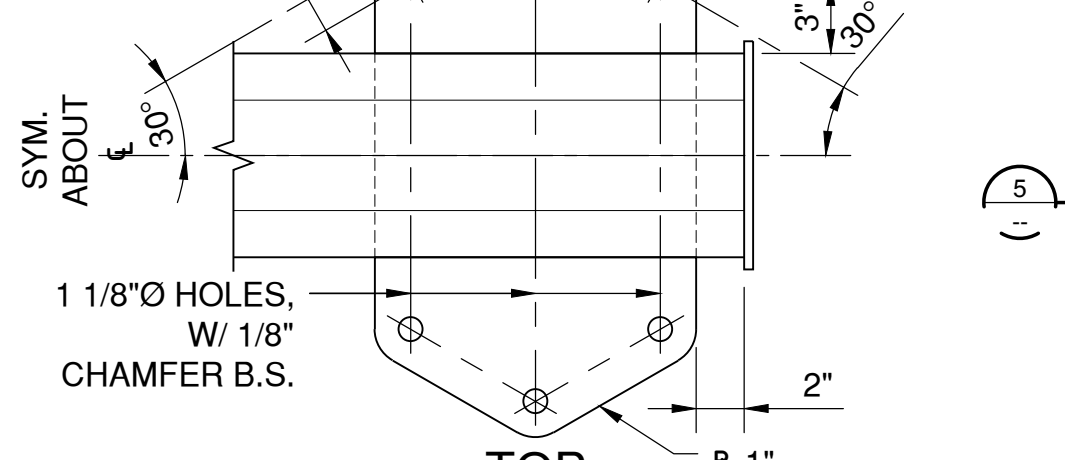
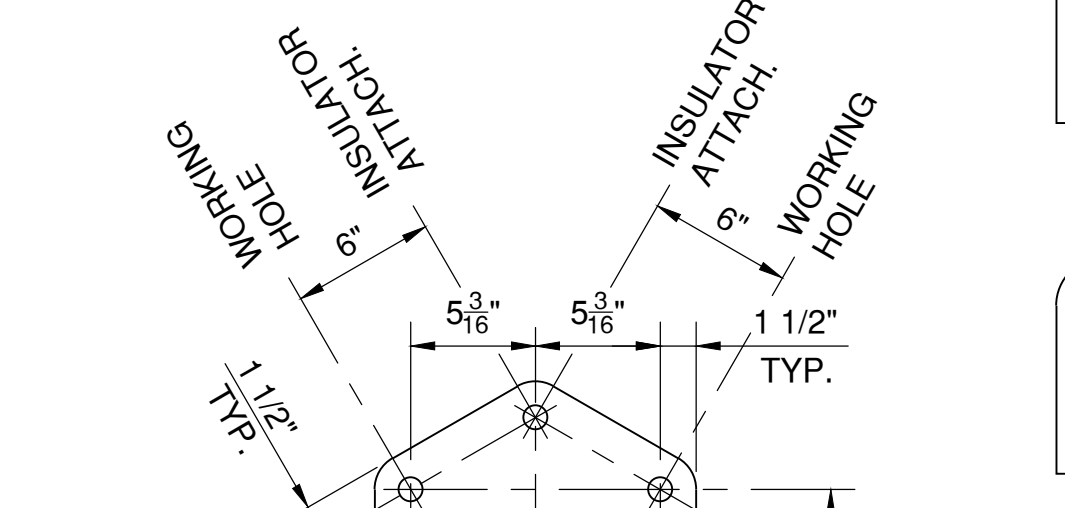
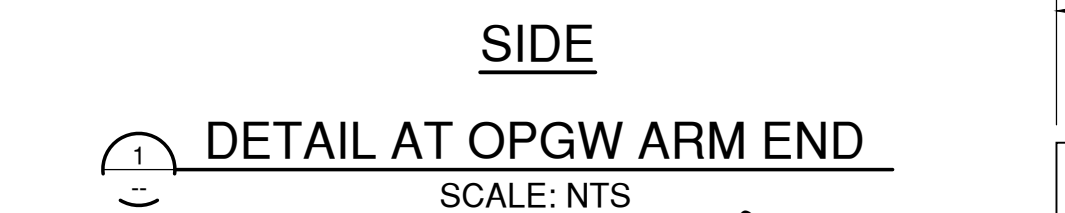
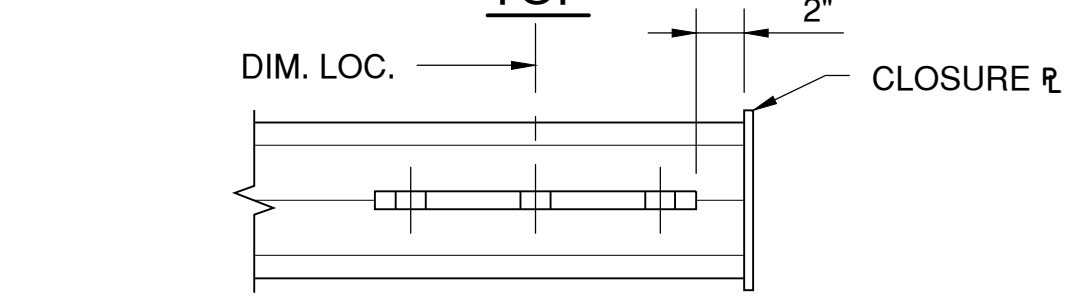
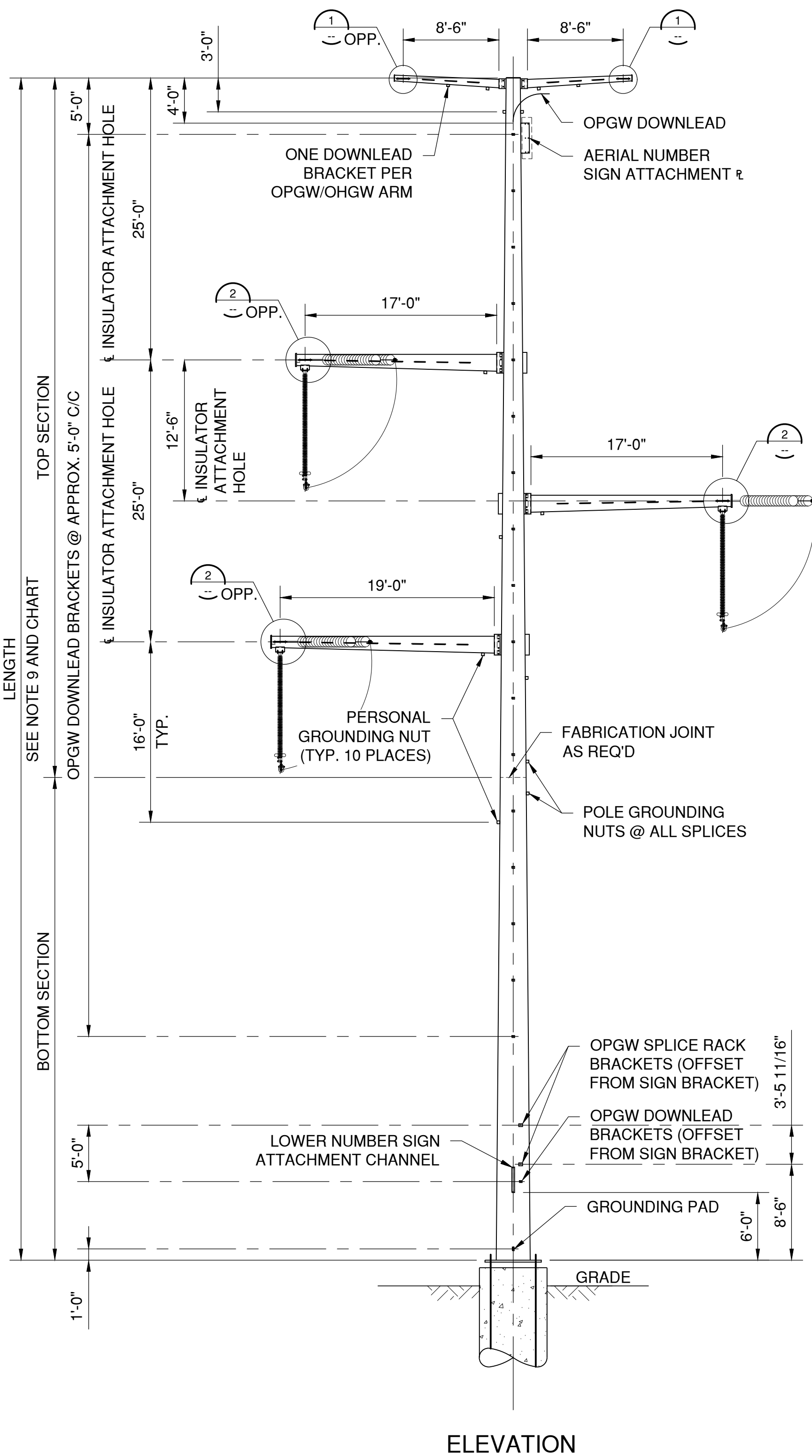
REV. NO: 0B



**NOTES FOR STEEL POLE:**

- POLE AND ARMS SHALL BE GALVANIZED STEEL. POLE SHALL HAVE BASE PLATE AND ANCHOR BOLTS.
- DESIGN CAPACITY WITH 1.72" DIA. 2609 TS KILLDEER FCWC-TW CONDUCTOR, 0.571" OPGW AND 7/16" EHS: WIND SPAN..... 1250 FT. WEIGHT SPAN..... 1450 FT. DESIGN RULING SPAN..... 1200 FT. CONDUCTOR HARDWARE..... 1000 LBS. STATIC HARDWARE..... 40 LBS. LINE ANGLE..... 30-60 DEG. STRUCTURE IS DESIGNED FOR FULL DEADEND CAPACITY SPECIFIC LOAD CASE AND LOADING TREES ARE SHOWN ON THIS DRAWING.
- POLES MAY BE SINGLE PIECE OR HAVE A FABRICATION JOINT. POLE ARM RISE SHALL NOT EXCEED 1" PER 1'-0" OF LENGTH.
- TYPICAL PHASE ATTACHMENT IS SHOWN. DESIGN AND DETAILING OF PHASE ATTACHMENT SHALL BE BY FABRICATOR. END CLOSURES SHALL BE PROVIDED FOR ALL OPEN SECTIONS.
- THE FOLLOWING LIMITING TAPER SHALL APPLY: 0.45" PER FT. MAX. ALTERNATE TAPER MAY BE PROPOSED PROVIDED POLE APPEARANCE IS ACCEPTABLE.
- SLIP JOINTS SHALL BE ASSEMBLED ACCORDING TO POLE MANUFACTURER'S INSTRUCTIONS INCLUDING APPLICATION OF FULL SPECIFIED JACKING FORCE.
- FOUNDATION IS A SEPARATE CONSTRUCTION UNIT.
- PROVIDE COVERS FOR ALL GALVANIZING WEEP HOLES.
- OVERALL LENGTH IS SHOWN BY THE POLE DESIGNATION BELOW.

POLE TYPE	LENGTH (FEET)	EMBEDMENT (FEET)
3SDA60-100	100	FDN



LOAD CASE	INTACT/DE	COND. 1	OLF'S			COND. 1			OPGW			Wstr (psf)		
			VERT	TRANS	TEN	WIRE TENSION (LBS)	V1 (KIPS)	T1 (KIPS)	L1 (KIPS)	WIRE TENSION (LBS)	V2 (KIPS)		T2 (KIPS)	L2 (KIPS)
1. NESC HEAVY	INTACT	0.5" ICE 4 PSF WIND 0 DEG INITIAL	1.50	2.50	1.65	22400	10.09	39.79	0.00	8300	2.40	15.33	0.00	10.00
2. NESC HEAVY	DE	0.5" ICE 4 PSF WIND 0 DEG INITIAL	1.50	2.50	1.65	22400	10.09	20.75	35.70	8300	2.40	8.16	13.23	10.00
3. EXTREME WIND	INTACT	0" ICE 31 PSF WIND 60 DEG FINAL	1.10	1.10	1.10	24500	5.20	33.06	0.00	7800	0.70	10.61	0.00	34.10
4. EXTREME WIND	DE	0" ICE 31 PSF WIND 60 DEG FINAL	1.10	1.10	1.10	24500	5.20	18.36	26.03	7800	0.70	5.91	8.29	34.10
5. ICE & WIND	INTACT	0.5" ICE 9.2 PSF WIND 15 DEG INITIAL	1.10	1.10	1.10	23000	7.40	28.17	0.00	8500	1.76	11.01	0.00	10.12
6. ICE & WIND	DE	0.5" ICE 9.2 PSF WIND 15 DEG INITIAL	1.10	1.10	1.10	23000	7.40	14.94	24.44	8500	1.76	6.00	9.03	10.12
7. EXTREME ICE	INTACT	1.25" ICE 0 PSF WIND 0 DEG INITIAL	1.25	1.10	1.10	33000	14.28	36.30	0.00	12800	5.92	14.08	0.00	0.00
8. EXTREME ICE	DE	1.25" ICE 0 PSF WIND 0 DEG INITIAL	1.25	1.10	1.10	33000	14.28	18.15	35.06	12800	5.92	7.04	13.60	0.00
9. NORMAL	INTACT	0" ICE 2 PSF WIND 40 DEG FINAL	1.00	1.00	1.00	13400	4.73	13.76	0.00	3500	0.63	3.62	0.00	2.00
10. NORMAL	DE	0" ICE 2 PSF WIND 40 DEG FINAL	1.00	1.00	1.00	13400	4.73	6.99	12.94	3500	0.63	1.84	3.38	2.00
11. EXTREME COLD	INTACT	0" ICE 0 PSF WIND -40 DEG FINAL	1.00	1.00	1.00	20000	4.73	20.00	0.00	4500	0.63	4.50	0.00	0.00
12. EXTREME COLD	DE	0" ICE 0 PSF WIND -40 DEG FINAL	1.00	1.00	1.00	20000	4.73	10.00	19.32	4500	0.63	2.25	4.35	0.00

**ISSUED FOR CONSTRUCTION**

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
OB	ISSUED FOR CONSTRUCTION	A. BURGARD	S. VASBINDER		6/6/23
OA	ISSUED FOR BID ONLY - RES 13032	A. BURGARD	S. VASBINDER		5/3/23

REFERENCE DRAWINGS  
BASIN DRAWING NBR  
540-090-T2-006 345KV STEEL POLE LADDER CLIP CONFIGURATION

FACILITY: TSM - TRANSMISSION SYSTEM MAINTENANCE  
DESIGN BY: S. VASBINDER  
DRAWN BY: A. BURGARD  
4/17/23

345KV SINGLE POLE  
ANGLE DEADEND STRUCTURE  
WITH ARMS TYPE 3SDA60

BASIN ELECTRIC  
POWER COOPERATIVE  
A Touchstone Energy Cooperative

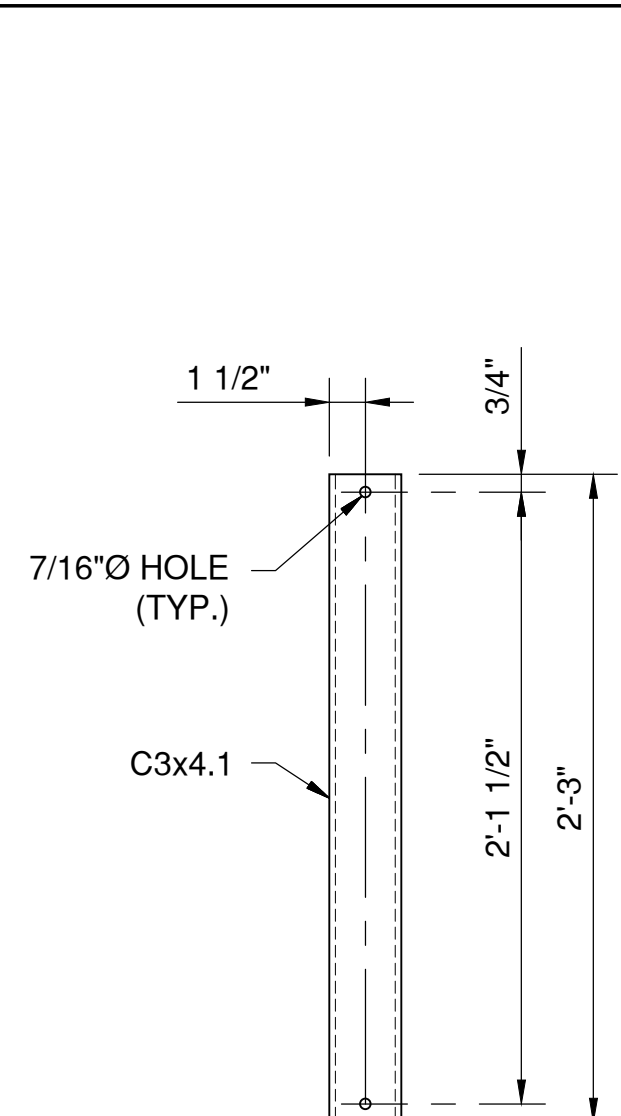
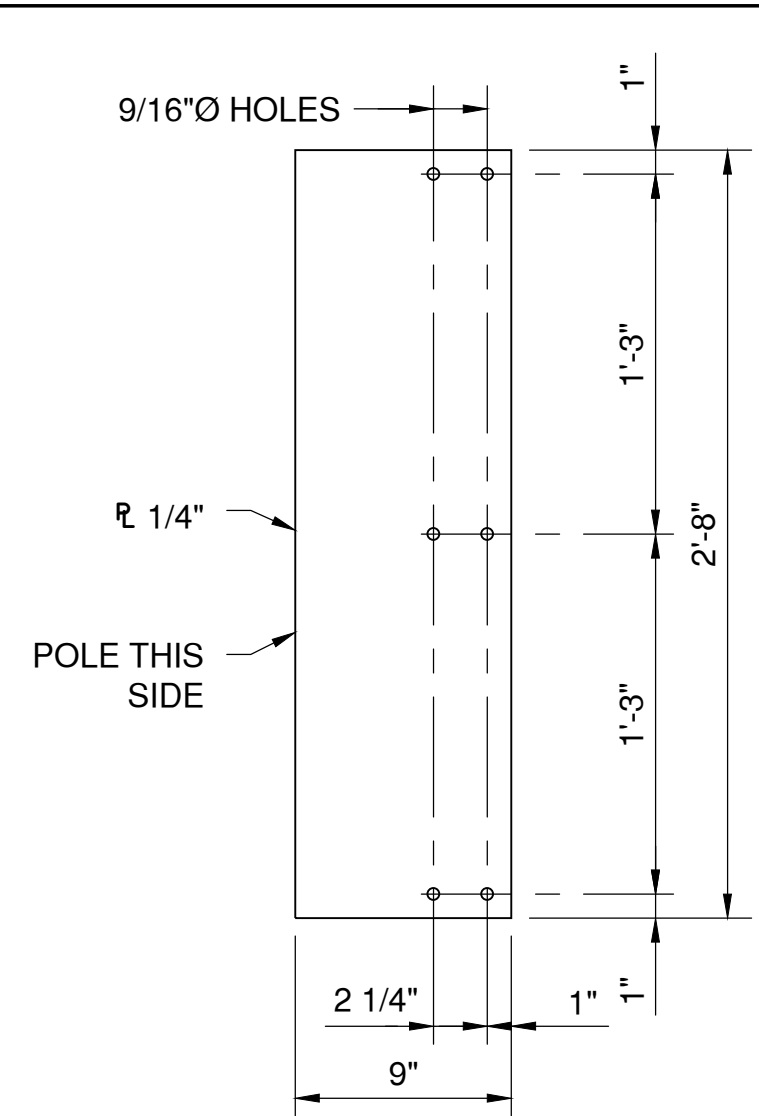
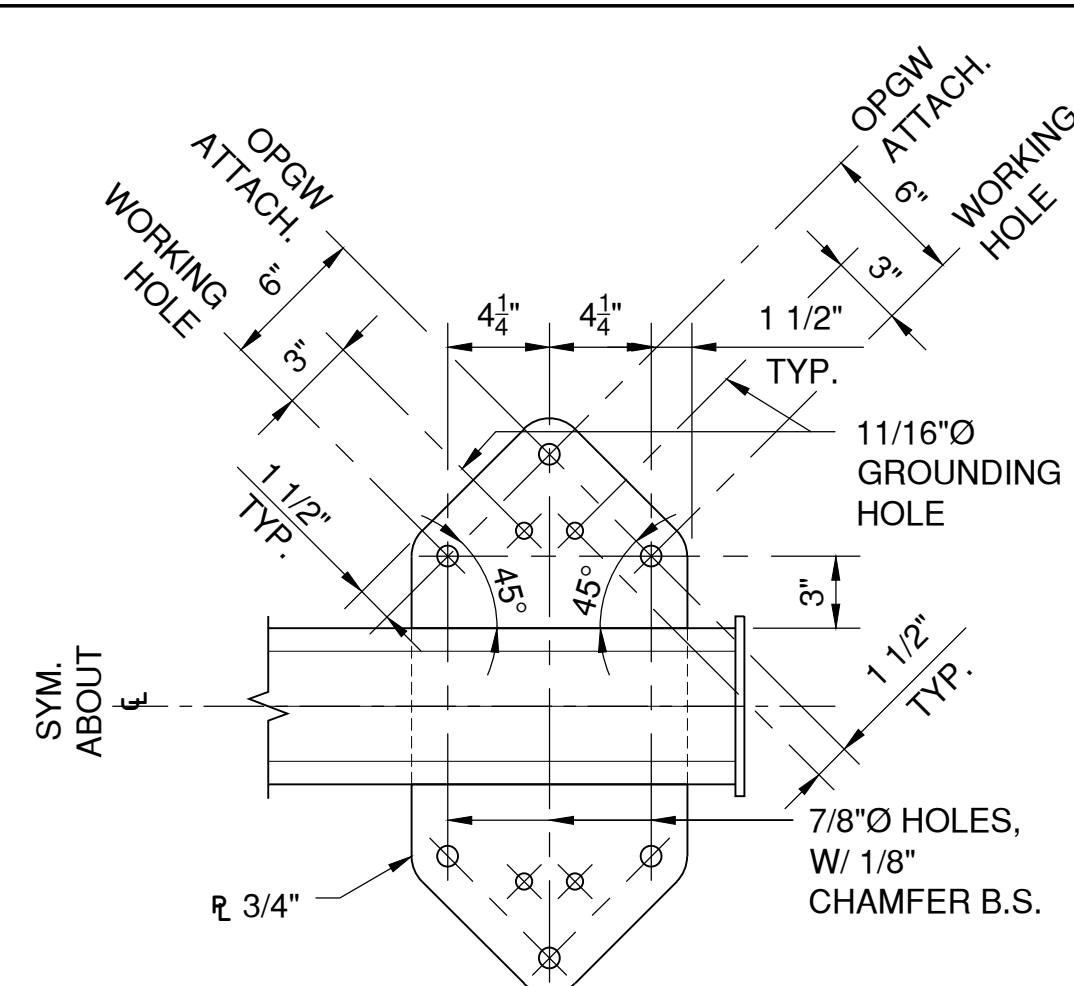
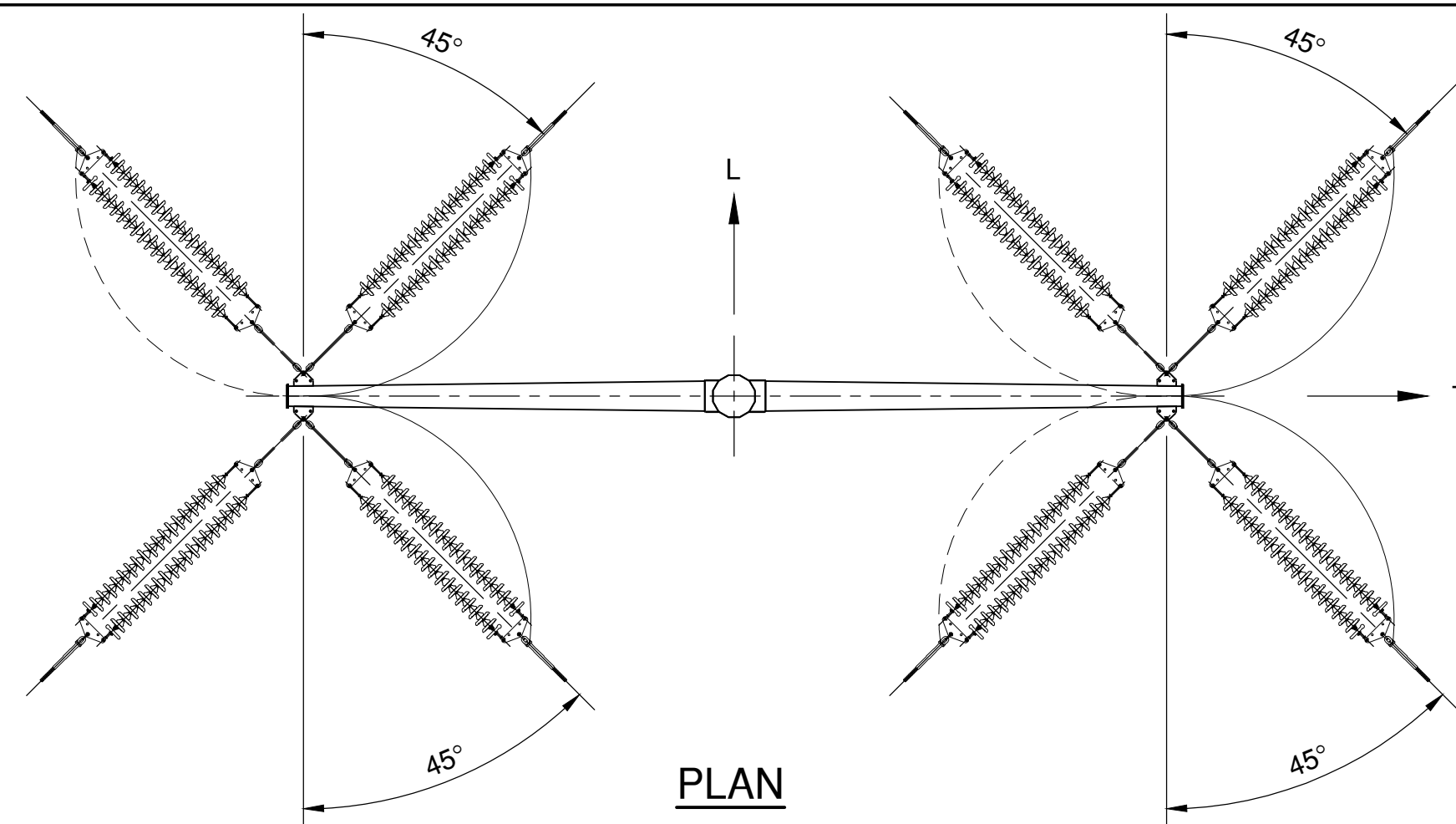
4/17/23

SCALE: DO NOT SCALE

VENDOR NAME:

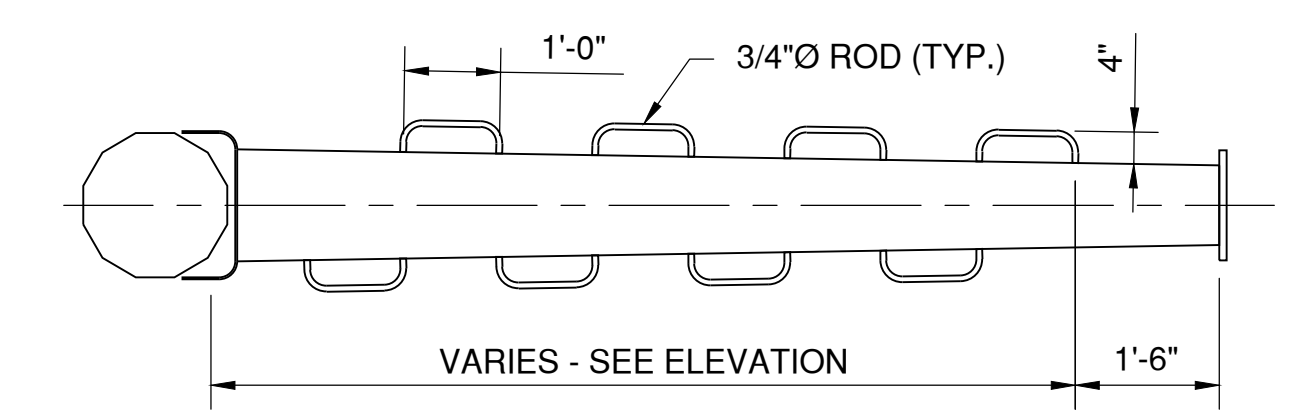
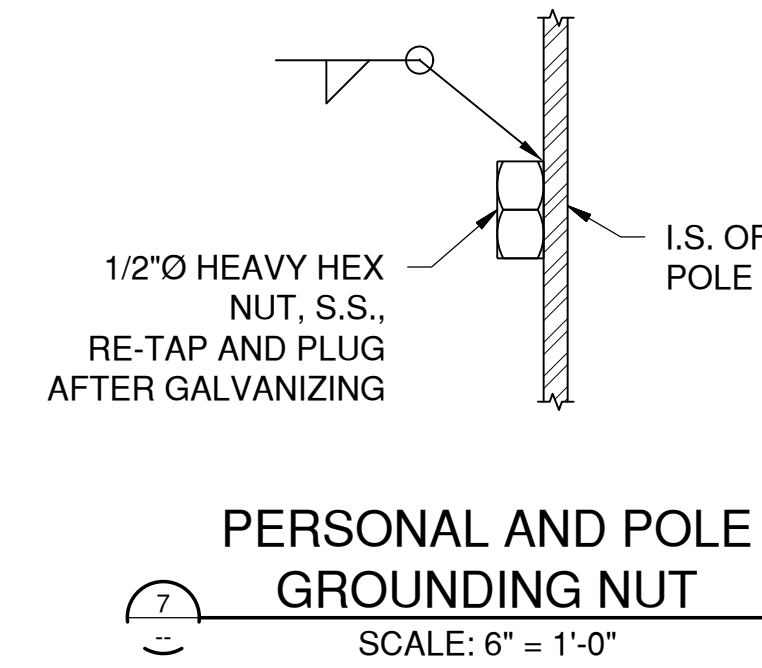
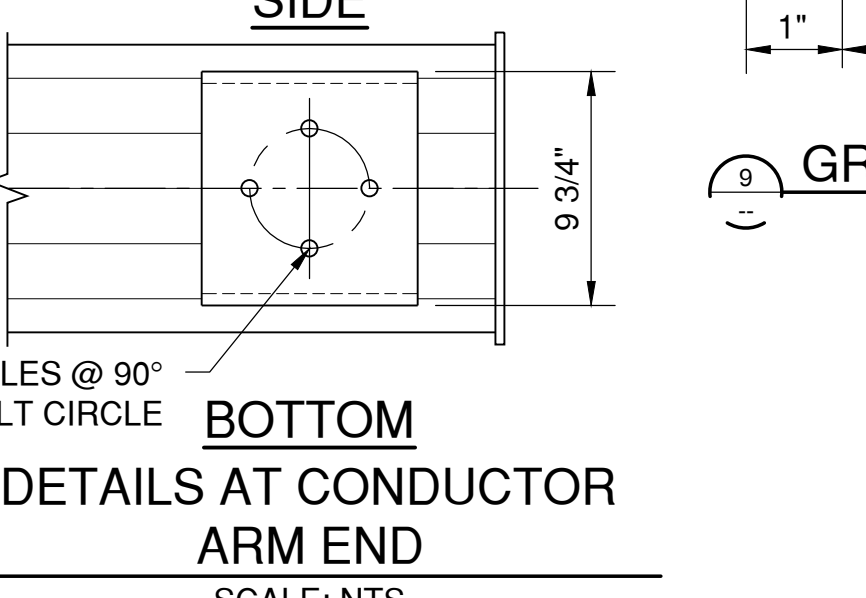
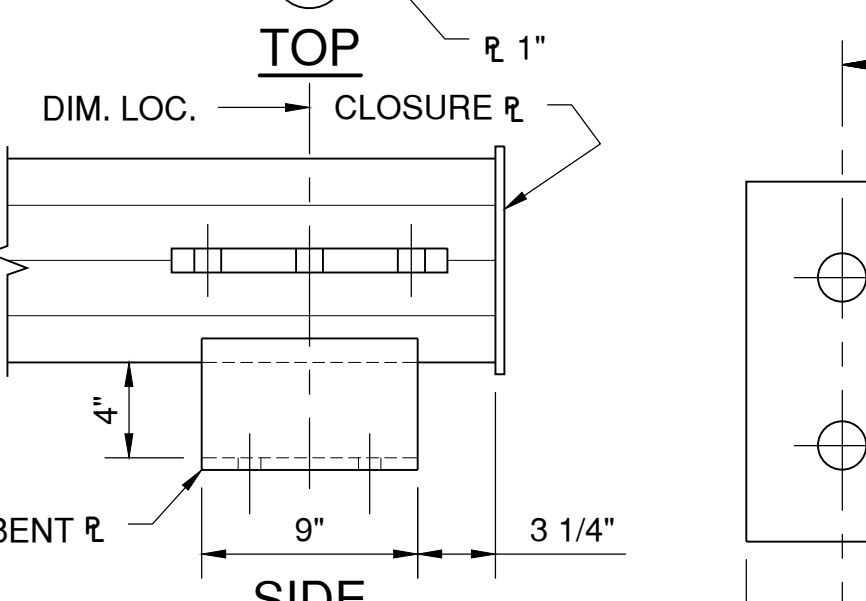
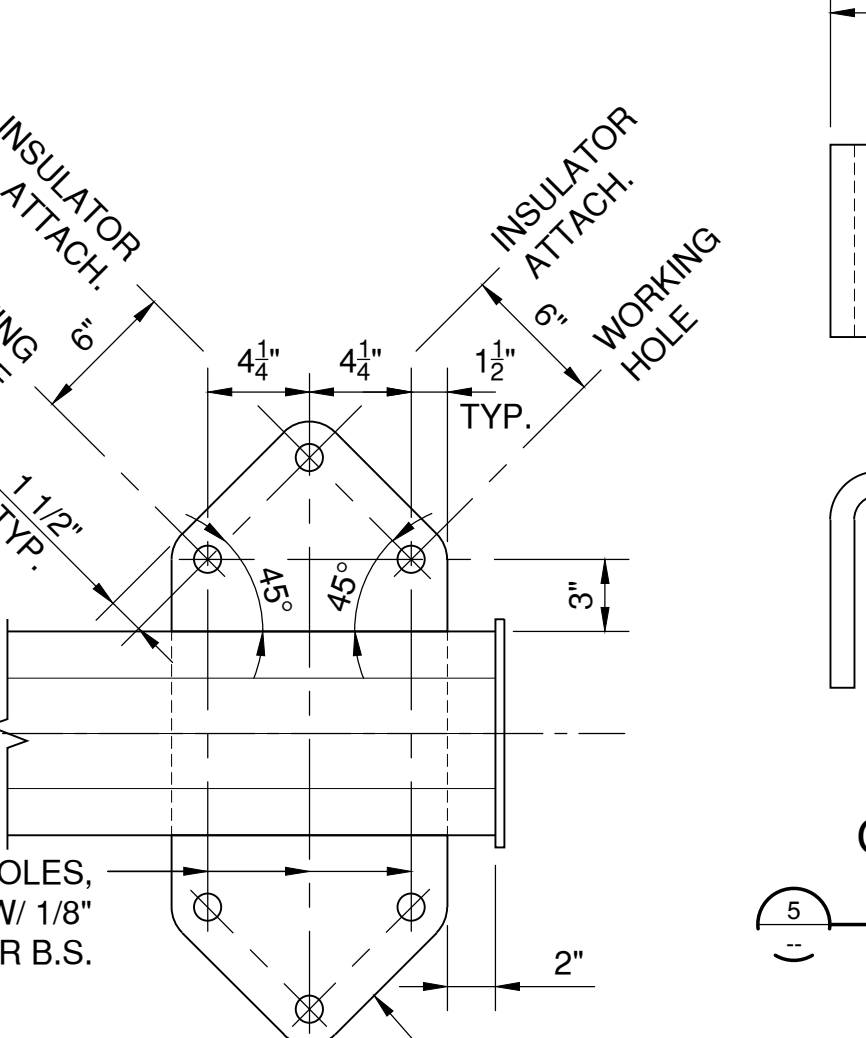
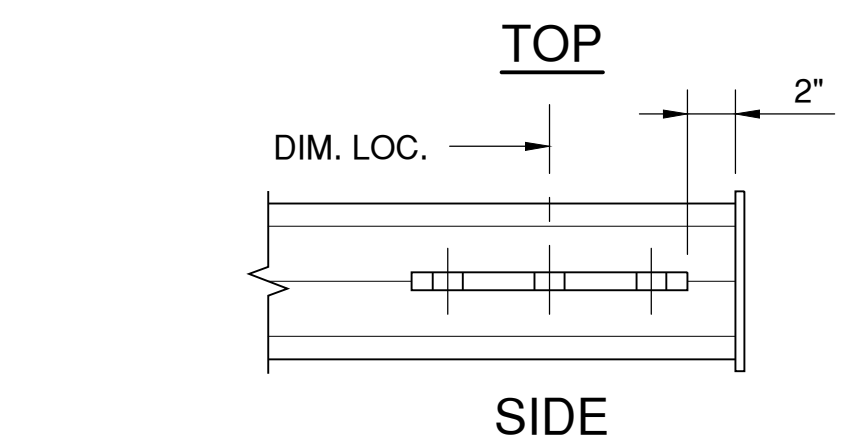
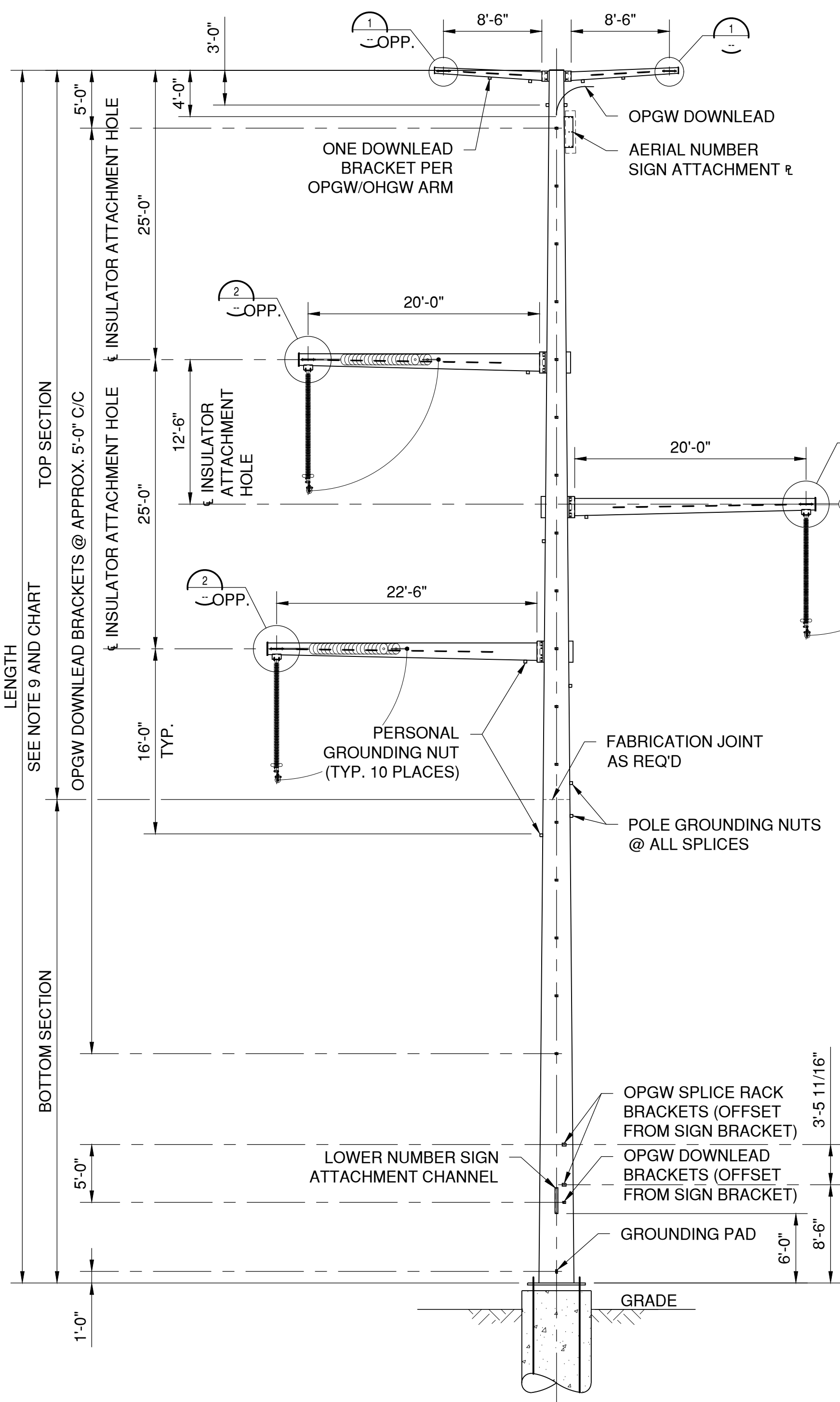
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ENG DRAWING NUMBER: 540-090-T2-003  
REV. NO: 0B

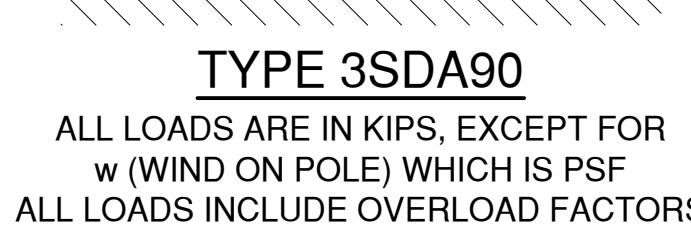


- NOTES FOR STEEL POLE:**
- POLE AND ARMS SHALL BE GALVANIZED STEEL. POLE SHALL HAVE BASE PLATE AND ANCHOR BOLTS.
  - DESIGN CAPACITY W/ 1.72" DIA. 2609 TS KILLDEER FCFC-TW CONDUCTOR, 0.571" OPGW & 7/16" EHS:
    - WIND SPAN..... 1250 FT.
    - WEIGHT SPAN..... 1450 FT.
    - DESIGN RULING SPAN..... 1200 FT.
    - CONDUCTOR HARDWARE..... 1000 LBS.
    - STATIC HARDWARE..... 40 LBS.
    - LINE ANGLE ..... 60-90 DEG.
  - STRUCTURE IS DESIGNED FOR FULL DEADEND CAPACITY. SPECIFIC LOAD CASE AND LOADING TREES ARE SHOWN ON THIS DRAWING.
  - POLES MAY BE SINGLE PIECE OR HAVE A FABRICATION JOINT. POLE ARM RISE SHALL NOT EXCEED 1" PER 1'-0" OF LENGTH.
  - TYPICAL PHASE ATTACHMENT IS SHOWN. DESIGN AND DETAILING OF PHASE ATTACHMENT SHALL BE BY FABRICATOR. END CLOSURES SHALL BE PROVIDED FOR ALL OPEN SECTIONS.
  - THE FOLLOWING LIMITING TAPER SHALL APPLY: 0.45" PER FT. MAX. ALTERNATE TAPER MAY BE PROPOSED PROVIDED POLE APPEARANCE IS ACCEPTABLE.
  - SLIP JOINTS SHALL BE ASSEMBLED ACCORDING TO POLE MANUFACTURER'S INSTRUCTIONS INCLUDING APPLICATION OF FULL SPECIFIED JACKING FORCE.
  - FOUNDATION IS A SEPARATE CONSTRUCTION UNIT.
  - PROVIDE COVERS FOR ALL GALVANIZING WEEP HOLES.
  - OVERALL LENGTH IS SHOWN BY THE POLE DESIGNATION BELOW.

POLE TYPE	LENGTH (FEET)	EMBEDMENT (FEET)	POLE TYPE	LENGTH (FEET)	EMBEDMENT (FEET)
3SDA90-095	95	FDN	3SDA90-115	115	FDN
3SDA90-105	105	FDN	3SDA90-120	120	FDN
3SDA90-110	110	FDN	3SDA90-125	125	FDN



LOAD CASE	INTACT/DE	OLF'S			COND. 1			OPGW			Wstr (psf)		
		VERT	TRANS	TEN	WIRE TENSION (LBS)	V1 (KIPS)	T1 (KIPS)	L1 (KIPS)	WIRE TENSION (LBS)	V2 (KIPS)		T2 (KIPS)	L2 (KIPS)
1. NESC HEAVY	INTACT	1.50	2.50	1.65	22400	10.09	55.10	0.00	8300	2.40	21.01	0.00	10.00
2. NESC HEAVY	DE	1.50	2.50	1.65	22400	10.09	28.40	32.01	8300	2.40	10.99	11.86	10.00
3. EXTREME WIND	INTACT	1.10	1.10	1.10	24500	5.20	44.22	0.00	7800	0.70	14.16	0.00	34.10
4. EXTREME WIND	DE	1.10	1.10	1.10	24500	5.20	23.94	23.34	7800	0.70	7.69	7.43	34.10
5. ICE & WIND	INTACT	1.10	1.10	1.10	23000	7.40	38.65	0.00	8500	1.76	14.88	0.00	10.12
6. ICE & WIND	DE	1.10	1.10	1.10	23000	7.40	20.18	21.91	8500	1.76	7.94	8.10	10.12
7. EXTREME ICE	INTACT	1.25	1.10	1.10	33000	14.28	51.34	0.00	12800	5.92	19.91	0.00	0.00
8. EXTREME ICE	DE	1.25	1.10	1.10	33000	14.28	25.67	31.44	12800	5.92	9.96	12.19	0.00
9. NORMAL	INTACT	1.00	1.00	1.00	13400	4.73	19.31	0.00	3500	0.63	5.07	0.00	2.00
10. NORMAL	DE	1.00	1.00	1.00	13400	4.73	9.76	11.60	3500	0.63	2.57	3.03	2.00
11. EXTREME COLD	INTACT	1.00	1.00	1.00	20000	4.73	28.28	0.00	4500	0.63	6.36	0.00	0.00
12. EXTREME COLD	DE	1.00	1.00	1.00	20000	4.73	14.14	17.32	4500	0.63	3.18	3.90	0.00



**ISSUED FOR CONSTRUCTION**

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
0C	ISSUED FOR CONSTRUCTION	A. BURGARD	S. VASBINDER		6/6/23
0B	REVISED CONDUCTOR SIZE & TYPE & LOAD CHART	A. BURGARD	S. VASBINDER		5/3/23
0A	ISSUED FOR BID ONLY - RES 13032	A. BURGARD	S. VASBINDER		3/20/23

REFERENCE DRAWINGS  
 BASIN DRAWING NBR  
 540-090-T2-006 345KV STEEL POLE LADDER CLIP CONFIGURATION

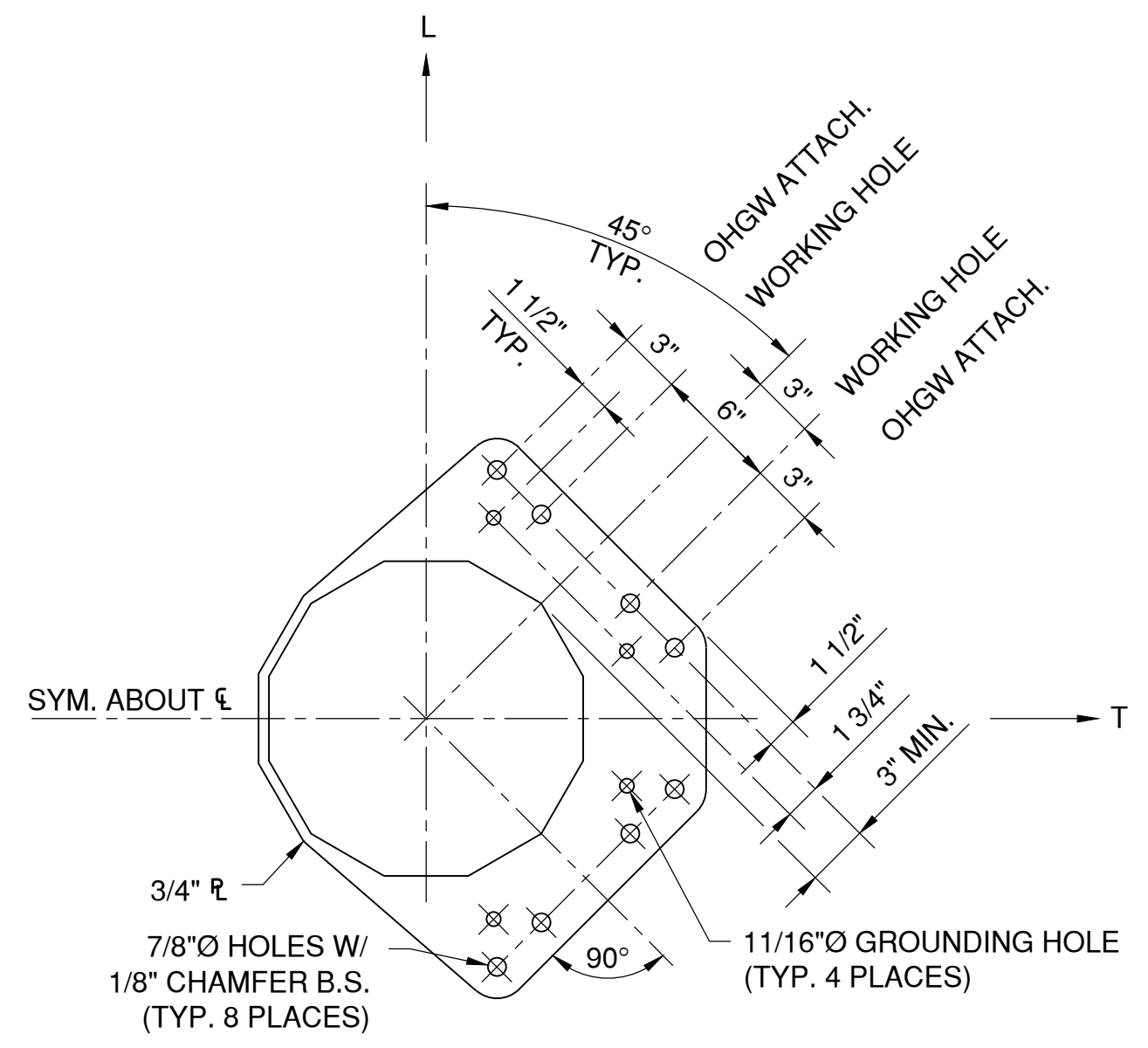
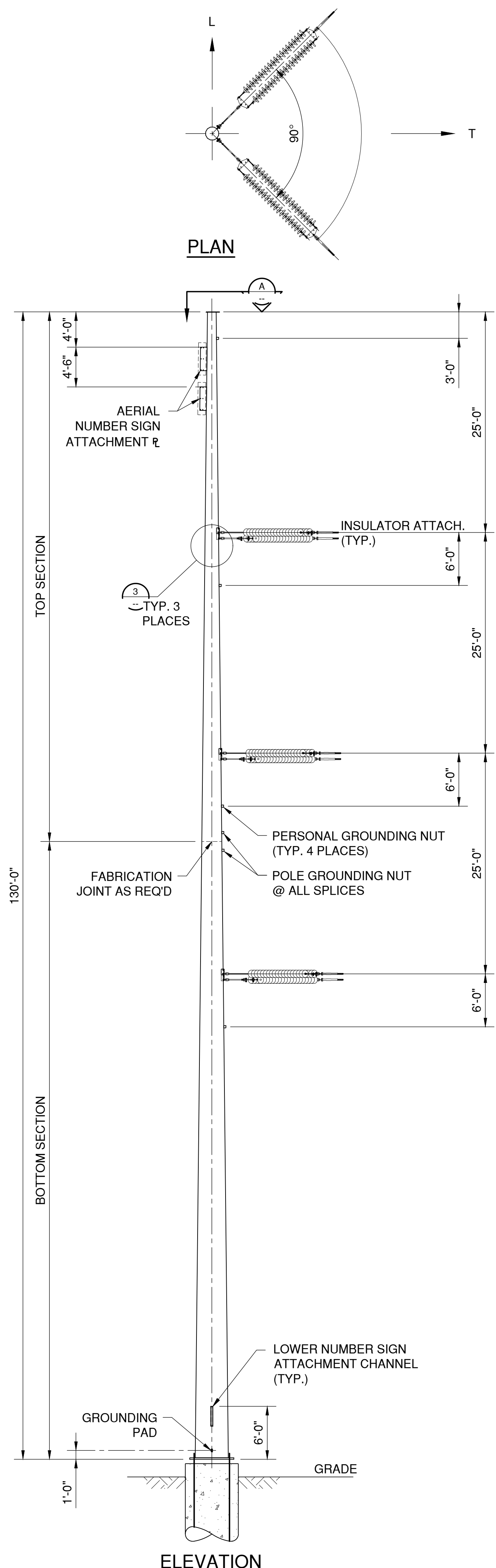
FACILITY: TSM - TRANSMISSION SYSTEM MAINTENANCE  
 FACILITY UNIT/COMPLEX/SITE NUMBER: 540-345KV LINE - PIONEER SUB TO JUDSON SUB  
 CONTRACT/TELECOM LOOP:

DESIGN BY: B. WILKINSON  
 DRAWN BY: A. BURGARD  
 DESIGN CHK: S. VASBINDER  
 DRAFT CHK:  
 APPROVED:  
 SCALE: DO NOT SCALE  
 VENDOR NAME:  
 VENDOR NUMBER: ORIGINAL REV

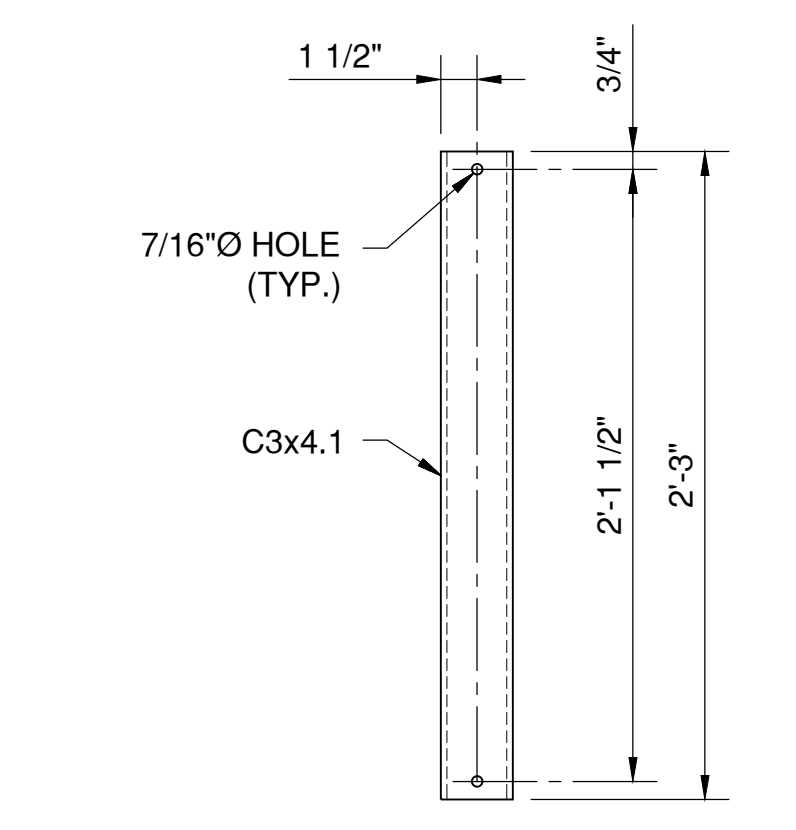
**345KV SINGLE POLE ANGLE DEADEND STRUCTURE WITH ARMS TYPE 3SDA90**

**BASIN ELECTRIC POWER COOPERATIVE**  
 A Touchstone Energy Cooperative

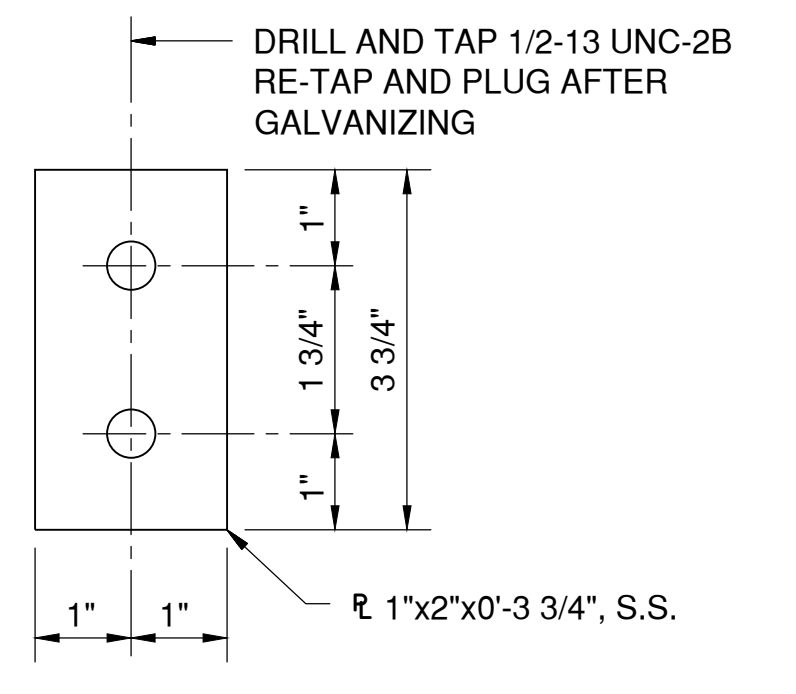
ENG DRAWING NUMBER: 540-090-T2-004  
 REV. NO: 0C



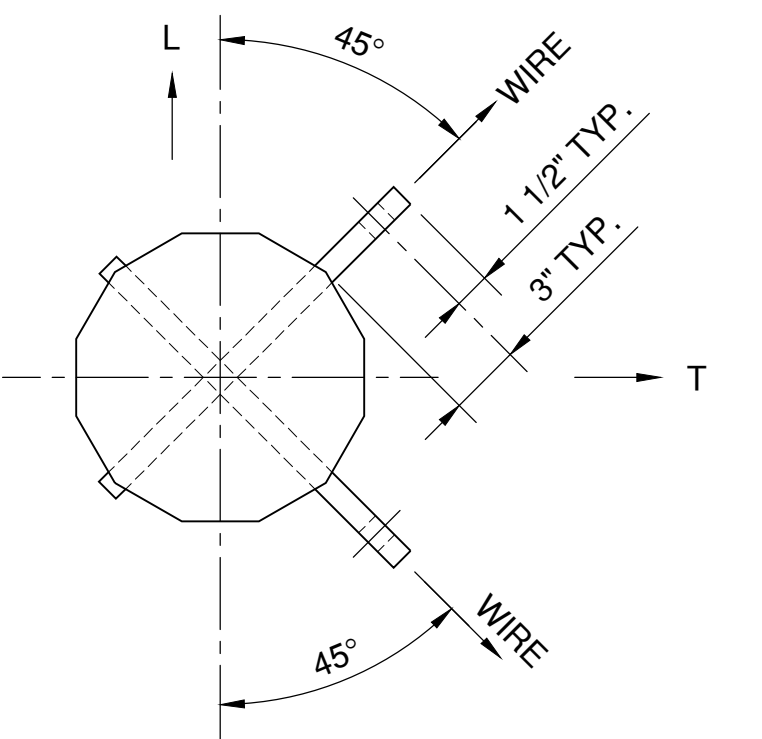
**SECTION AT POLE TOP**  
 SCALE: NTS



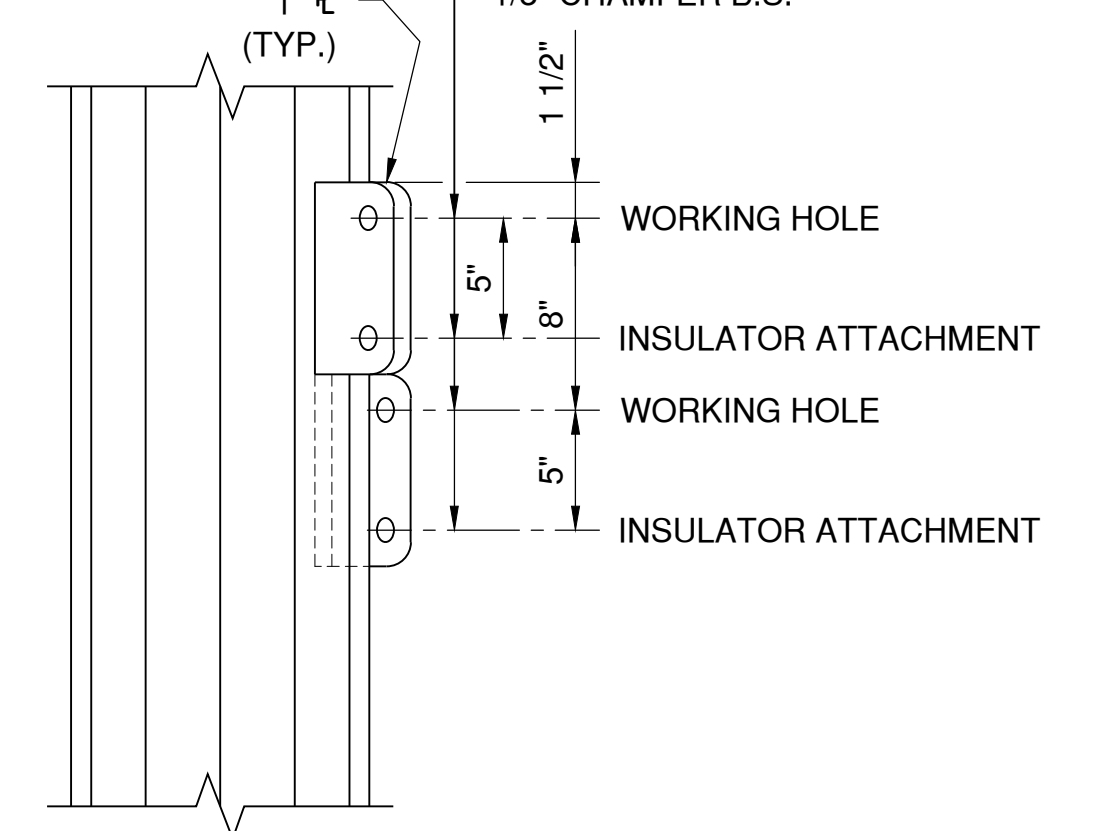
**SECTION AT POLE TOP**  
 SCALE: NTS



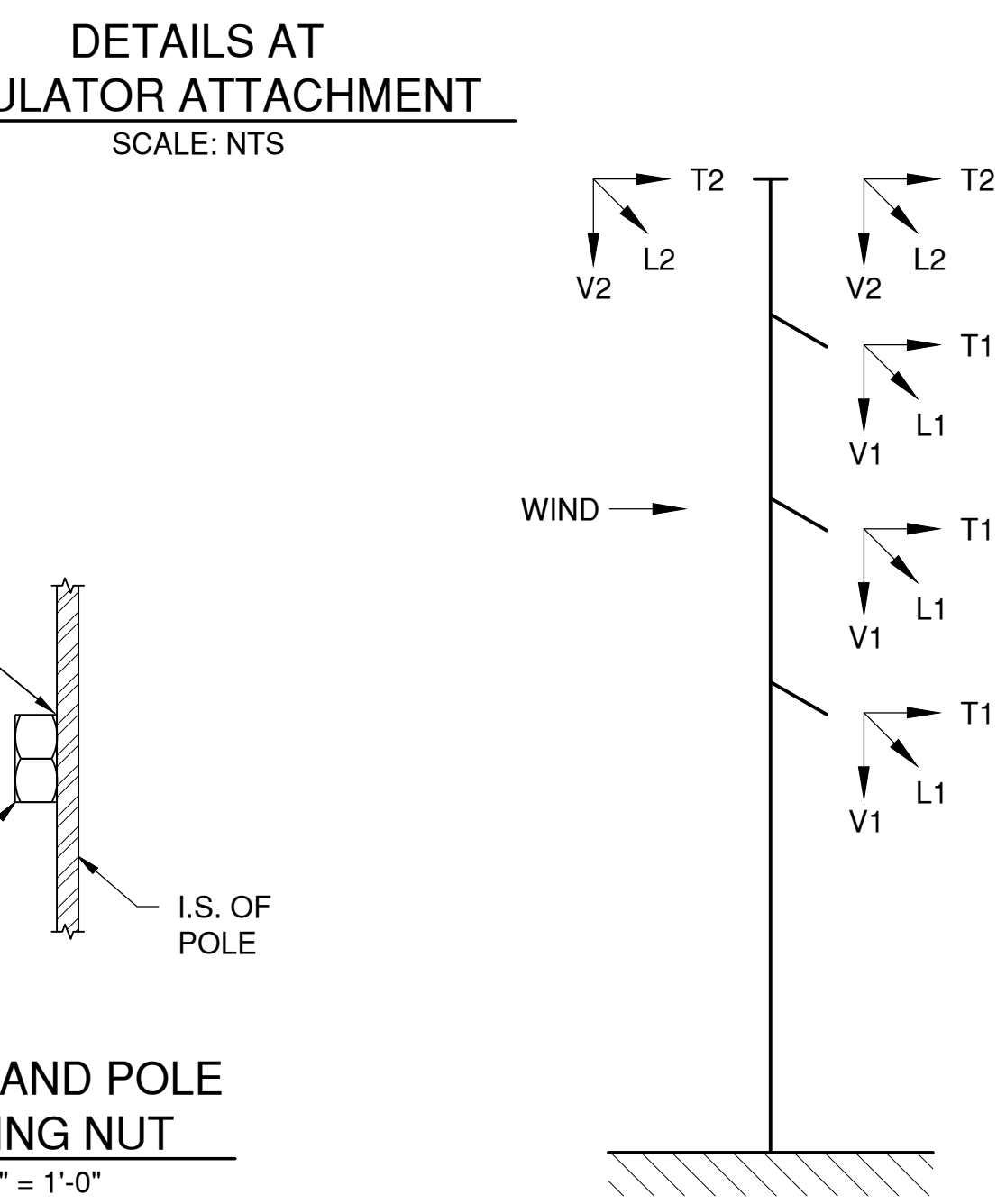
**GROUNDING PAD DETAIL**  
 SCALE: 6" = 1'-0"



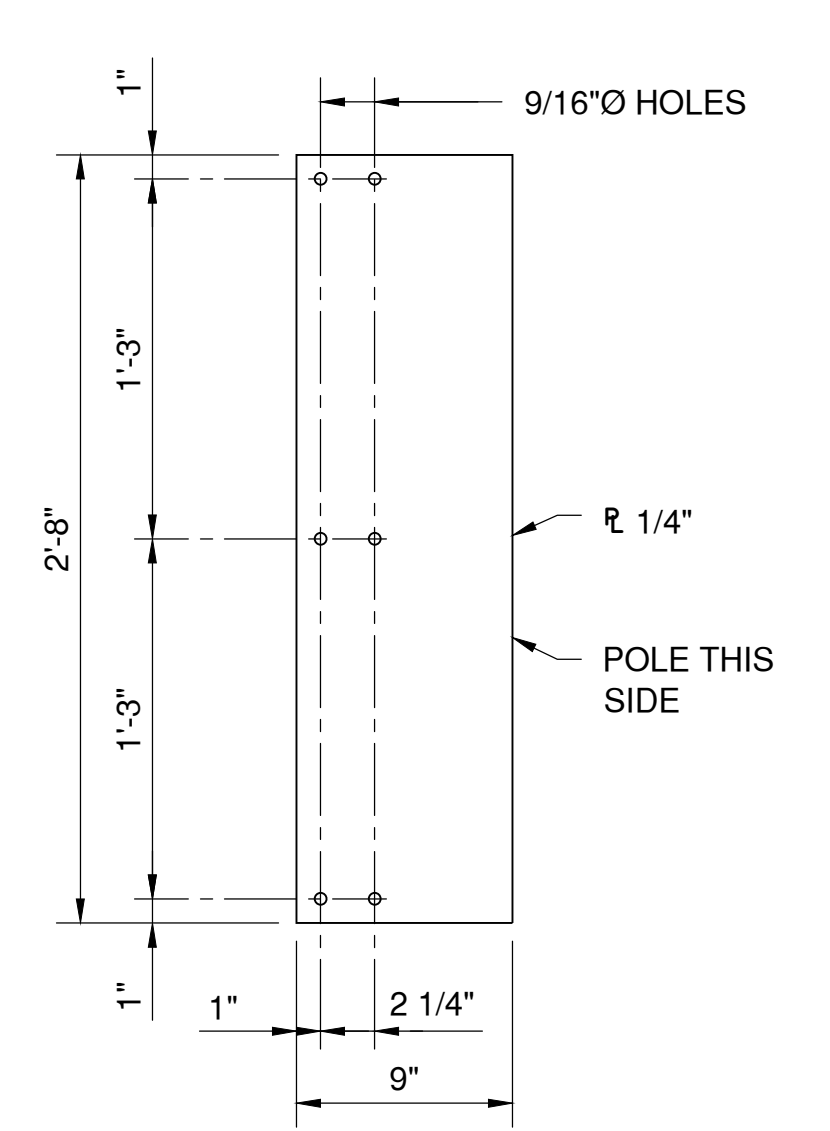
**PLAN**



**DETAILS AT INSULATOR ATTACHMENT**  
 SCALE: NTS



**PERSONAL AND POLE GROUNDING NUT**  
 SCALE: 6" = 1'-0"



**AERIAL NUMBER SIGN PLATE**  
 SCALE: 1 1/2" = 1'-0"

- NOTES FOR STEEL POLE:**
- POLE AND ARMS SHALL BE GALVANIZED STEEL. POLE SHALL HAVE BASE PLATE AND ANCHOR BOLTS.
  - DESIGN CAPACITY W/ 1.72" DIA. 2609 TS KILLDEER CFCC-TW CONDUCTOR, 0.571" OPGW & 7/16" EHS:  
 WIND SPAN..... 1250 FT.  
 WEIGHT SPAN..... 1450 FT.  
 DESIGN RULING SPAN..... 1200 FT.  
 CONDUCTOR HARDWARE..... 1000 LBS.  
 STATIC HARDWARE..... 40 LBS.  
 LINE ANGLE..... 60-90 DEG.  
 STRUCTURE IS DESIGNED FOR FULL DEADEND CAPACITY  
 SPECIFIC LOAD CASE AND LOADING TREES ARE SHOWN ON THIS DRAWING.
  - POLES MAY BE SINGLE PIECE OR HAVE A FABRICATION JOINT. POLE ARM RISE SHALL NOT EXCEED 1" PER 1'-0" OF LENGTH.
  - TYPICAL PHASE ATTACHMENT IS SHOWN. DESIGN AND DETAILING OF PHASE ATTACHMENT SHALL BE BY FABRICATOR. END CLOSURES SHALL BE PROVIDED FOR ALL OPEN SECTIONS.
  - THE FOLLOWING LIMITING TAPER SHALL APPLY: 0.45" PER FT. MAX. ALTERNATE TAPER MAY BE PROPOSED PROVIDED POLE APPEARANCE IS ACCEPTABLE.
  - SLIP JOINTS SHALL BE ASSEMBLED ACCORDING TO POLE MANUFACTURER'S INSTRUCTIONS INCLUDING APPLICATION OF FULL SPECIFIED JACKING FORCE.
  - FOUNDATION IS A SEPARATE CONSTRUCTION UNIT.
  - PROVIDE COVERS FOR ALL GALVANIZING WEEP HOLES.
  - OVERALL LENGTH IS SHOWN BY THE POLE DESIGNATION BELOW.

POLE TYPE	LENGTH (FEET)	EMBEDMENT (FEET)
3SD90-130	130	FDN

LOAD CASE	INTACT	DE	OLF'S			COND. 1			OPGW			Wstr (psf)		
			VERT	TRANS	TEN	WIRE TENSION (LBS)	V1 (KIPS)	T1 (KIPS)	L1 (KIPS)	WIRE TENSION (LBS)	V2 (KIPS)		T2 (KIPS)	L2 (KIPS)
1. NESC HEAVY	INTACT	DE	1.50	2.50	1.65	22400	10.09	55.10	0.00	8300	2.40	21.01	0.00	10.00
2. NESC HEAVY	DE	DE	1.50	2.50	1.65	22400	10.09	28.40	32.01	8300	2.40	10.99	11.86	10.00
3. EXTREME WIND	INTACT	DE	1.10	1.10	1.10	24500	5.20	44.22	0.00	7800	0.70	14.16	0.00	34.10
4. EXTREME WIND	DE	DE	1.10	1.10	1.10	24500	5.20	23.94	23.34	7800	0.70	7.69	7.43	34.10
5. ICE & WIND	INTACT	DE	1.10	1.10	1.10	23000	7.40	38.65	0.00	8500	1.76	14.88	0.00	10.12
6. ICE & WIND	DE	DE	1.10	1.10	1.10	23000	7.40	20.18	21.91	8500	1.76	7.94	8.10	10.12
7. EXTREME ICE	INTACT	DE	1.25	1.10	1.10	33000	14.28	51.34	0.00	12800	5.92	19.91	0.00	0.00
8. EXTREME ICE	DE	DE	1.25	1.10	1.10	33000	14.28	25.67	31.44	12800	5.92	9.96	12.19	0.00
9. NORMAL	INTACT	DE	1.00	1.00	1.00	13400	4.73	19.31	0.00	3500	0.63	5.07	0.00	2.00
10. NORMAL	DE	DE	1.00	1.00	1.00	13400	4.73	9.76	11.60	3500	0.63	2.57	3.03	2.00
11. EXTREME COLD	INTACT	DE	1.00	1.00	1.00	20000	4.73	28.28	0.00	4500	0.63	6.36	0.00	0.00
12. EXTREME COLD	DE	DE	1.00	1.00	1.00	20000	4.73	14.14	17.32	4500	0.63	3.18	3.90	0.00

**ISSUED FOR CONSTRUCTION**

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
0C	ISSUED FOR CONSTRUCTION	A. BURGARD	S. VASBINDER		6/6/23
0B	REVISED CONDUCTOR SIZE & TYPE & LOAD CHART	A. BURGARD	S. VASBINDER		5/3/23
0A	ISSUED FOR BID ONLY - RES 13032	A. BURGARD	S. VASBINDER		3/20/23

REFERENCE DRAWINGS  
 BASIN DRAWING NBR 540-090-T2-006 345KV STEEL POLE LADDER CLIP CONFIGURATION

FACILITY: TSM - TRANSMISSION SYSTEM MAINTENANCE  
 540-345KV LINE - PIONEER SUB TO JUDSON SUB

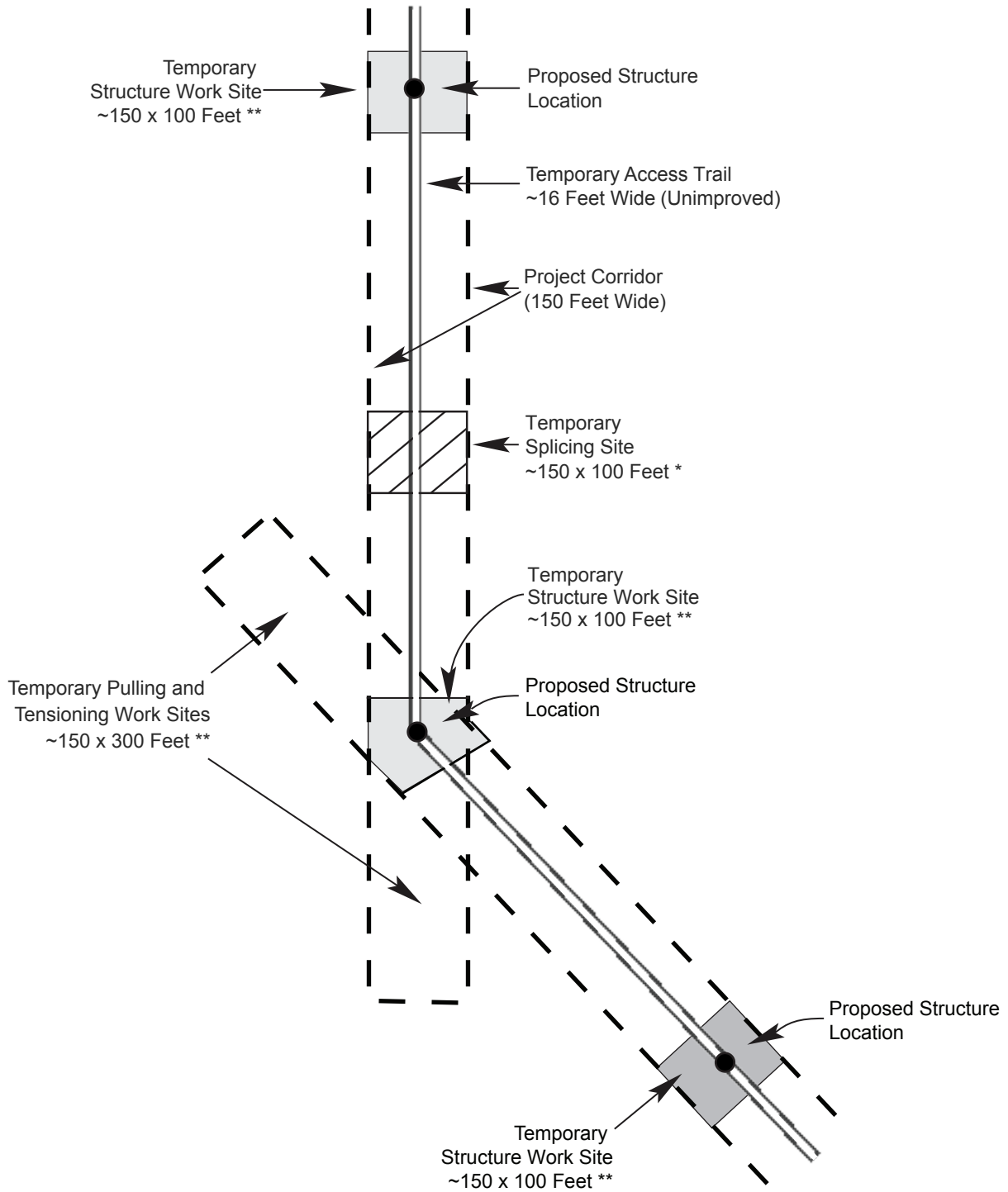
DESIGN BY: B. WILKINSON  
 DRAWN BY: A. BURGARD  
 DESIGN CHK: S. VASBINDER  
 DRAFT CHK: S. VASBINDER

**345KV SINGLE POLE ANGLE DEADEND STRUCTURE TYPE 3SD90**

**BASIN ELECTRIC POWER COOPERATIVE**  
 A Touchstone Energy Cooperative

SCALE: DO NOT SCALE  
 VENDOR NAME:  
 VENDOR NUMBER:  
 ORIGINAL REV

ENG DRAWING NUMBER: 540-090-T2-005  
 REV. NO: 0C



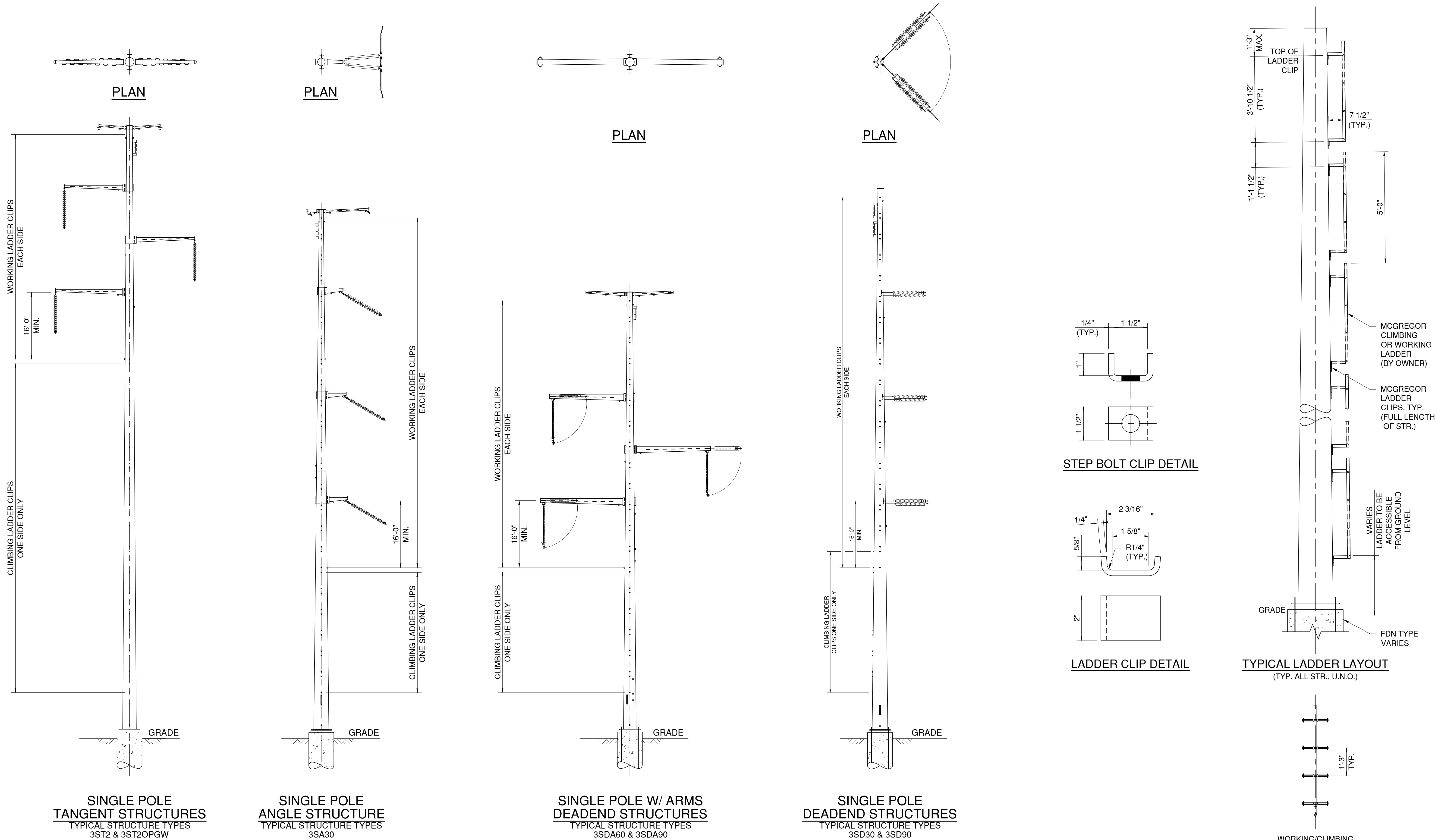
**LEGEND**

\* ~10,000 Feet Intervals

\*\* Tangent and angle/dead end structures require similar temporary work sites

Pioneer to Judson 345-kV  
Transmission Line

Conceptual Construction  
Configuration Diagram



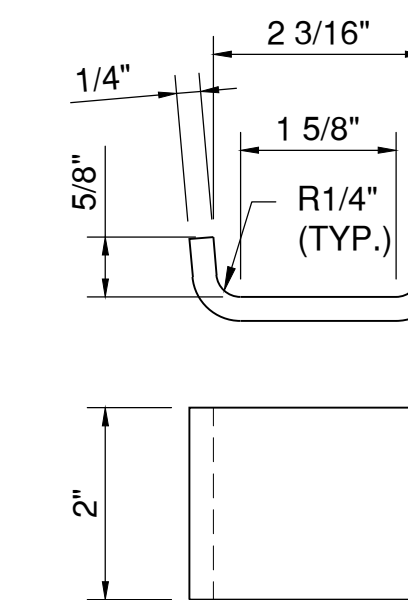
**SINGLE POLE TANGENT STRUCTURES**  
TYPICAL STRUCTURE TYPES  
3ST2 & 3ST2PGW

**SINGLE POLE ANGLE STRUCTURE**  
TYPICAL STRUCTURE TYPES  
3SA30

**SINGLE POLE W/ ARMS DEADEND STRUCTURES**  
TYPICAL STRUCTURE TYPES  
3SDA60 & 3SDA90

**SINGLE POLE DEADEND STRUCTURES**  
TYPICAL STRUCTURE TYPES  
3SD30 & 3SD90

**STEP BOLT CLIP DETAIL**



**LADDER CLIP DETAIL**

**TYPICAL LADDER LAYOUT**  
(TYP. ALL STR., U.N.O.)

WORKING/CLIMBING

**ISSUED FOR CONSTRUCTION** LADDER CONFIGURATION

**LADDER NOTES:**

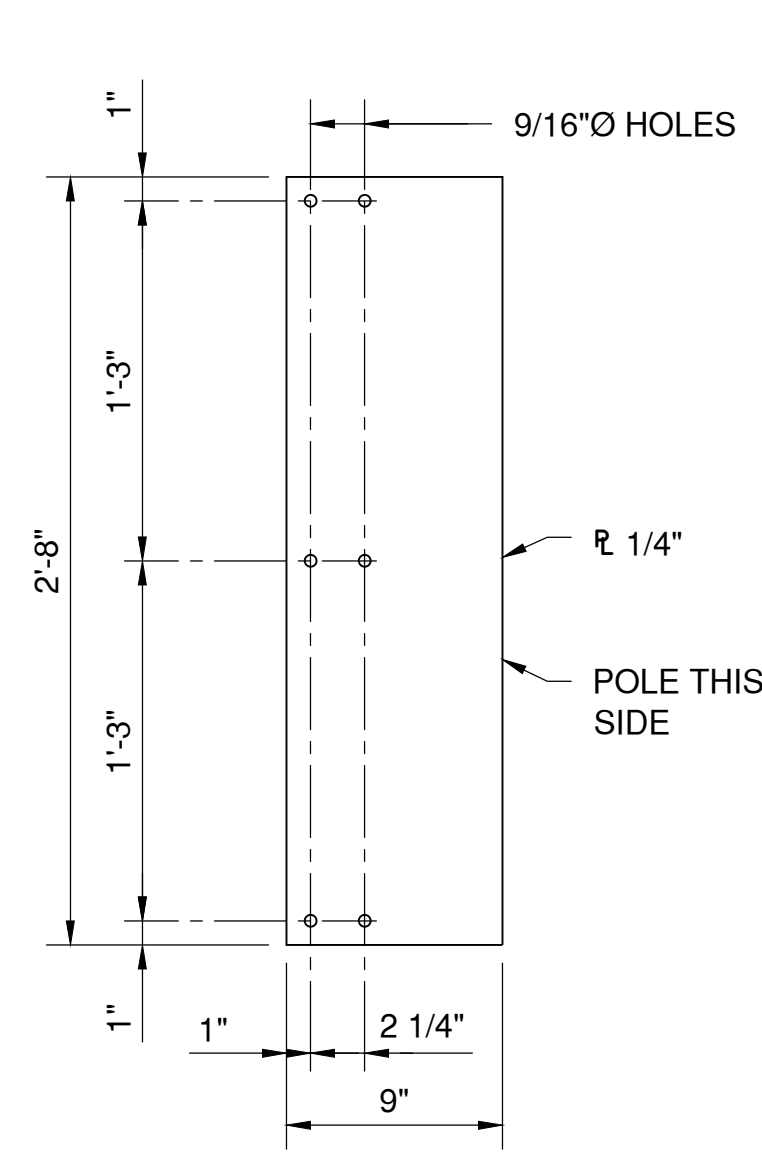
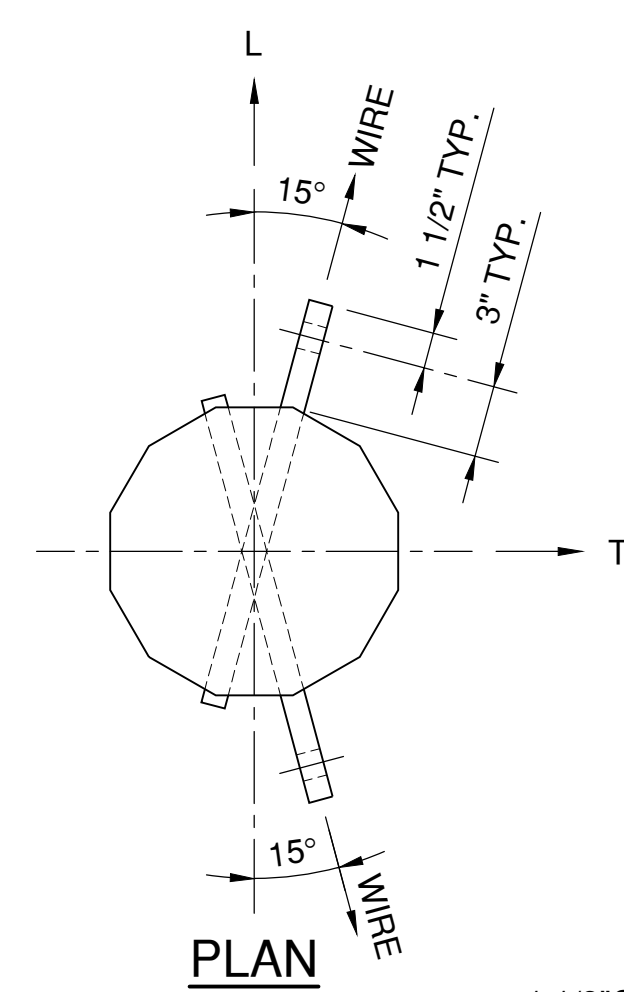
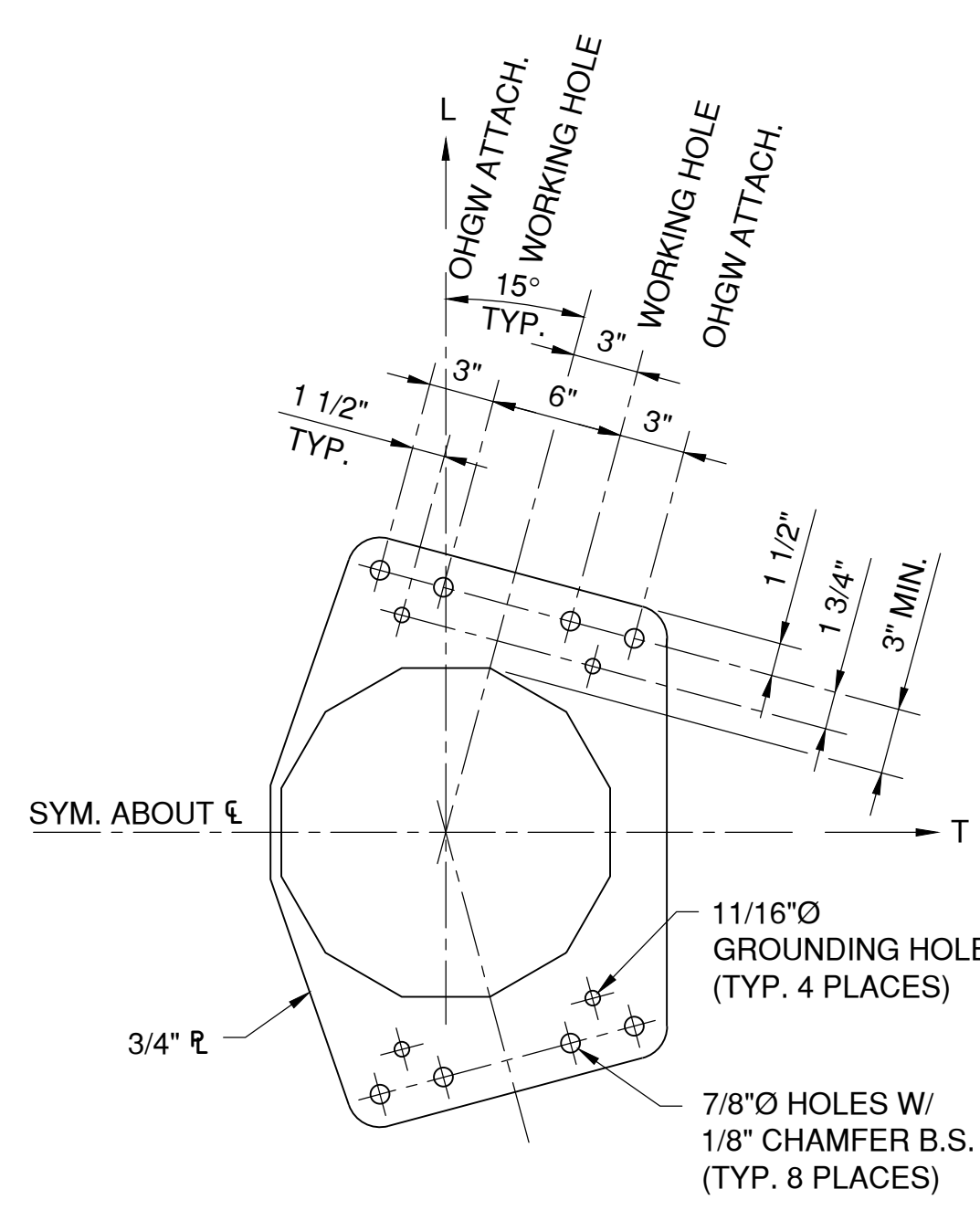
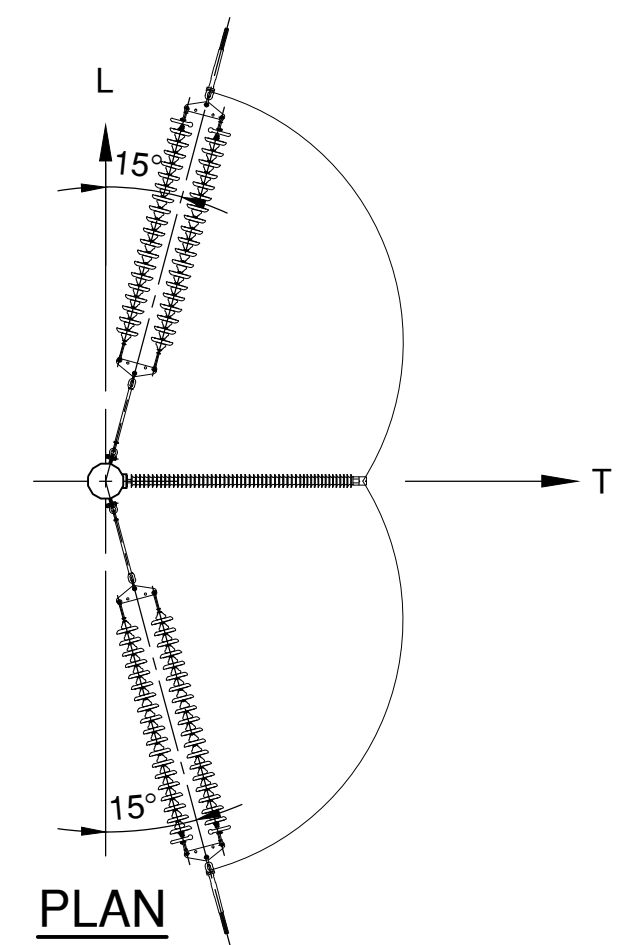
1. PROVIDE TRANSITION STEP CLIPS (SEE DET. THIS DWG.) WITH STEP BOLTS FOR ACCESS TO FAR SIDE LADDERS.
2. STEP BOLTS SHALL BE 3/4" x 7 1/2" LONG WITH 2" DIAMETER BUTTON HEAD AND TWO HEAVY HEX LOCK NUTS. INSTALLATION OF STEP BOLTS WILL BE BY CONSTRUCTION CONTRACTOR.
3. STEP CLIP SHALL BE DESIGNED TO PREVENT BACKUP NUT ROTATION WHILE INSTALLING STEP BOLT. STEP BOLT CLIP DETAIL SHOWN TO BE USED OR OWNER APPROVED EQUAL.
4. ALL LADDERS AND LADDER HARDWARE TO BE HOT-DIPPED GALVANIZED PER A123 AND A153.
5. ALL LADDERS TO BE PROVIDED BY OWNER. STEP BOLTS TO BE PROVIDED BY FABRICATOR.
6. SEE CONSTRUCTION LIST FOR QUANTITY OF LADDERS REQUIRED FOR EACH STRUCTURE.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
0B	ISSUED FOR CONSTRUCTION	A. BURGARD	S. VASBINDER		8/3/23
0A	ISSUED FOR BID ONLY	A. BURGARD	S. VASBINDER		5/4/23

REFERENCE DRAWINGS	
BASIN DRAWING NBR	540-090-T2-007
WORKING LADDER	

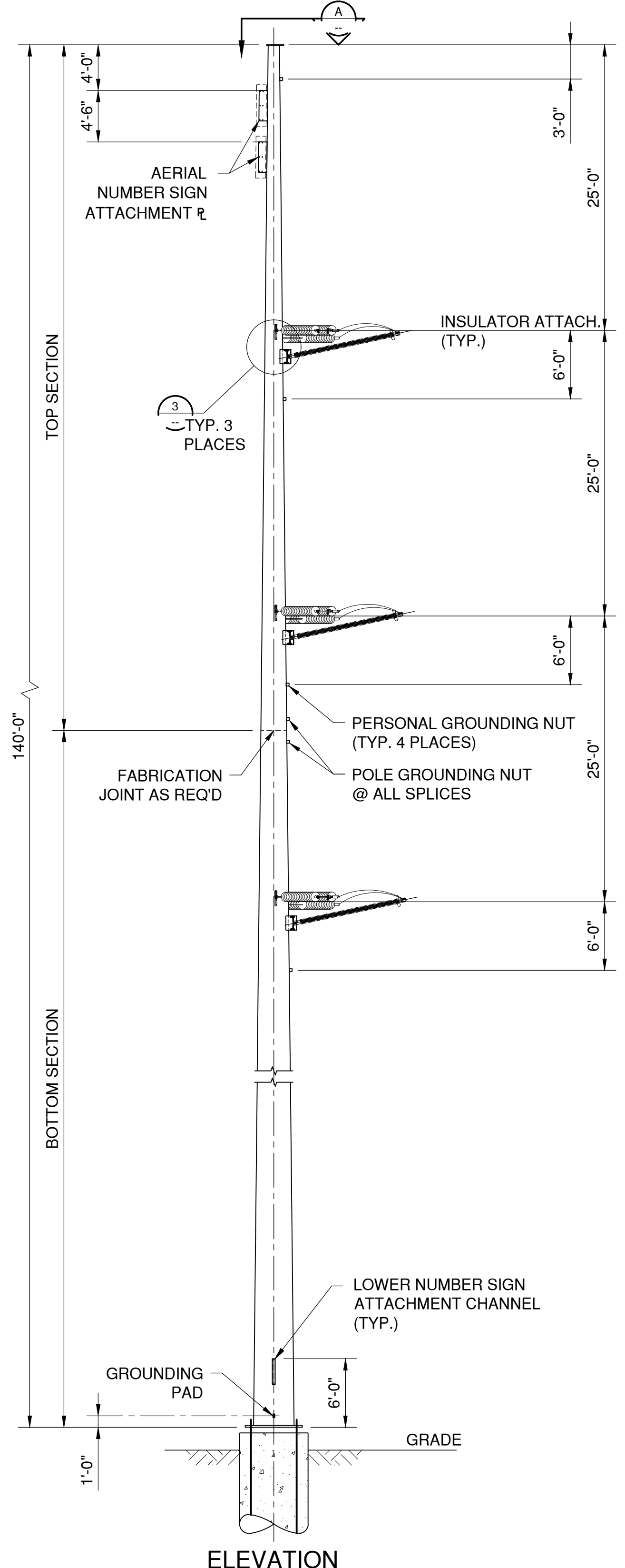
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FACILITY UNIT/COMPLEX/SITE NUMBER:	540-345KV LINE - PIONEER SUB TO JUDSON SUB	DRAWN BY:	A. BURGARD	4/10/23
CONTRACT/TELECOM LOOP:		DESIGN CHK:		
		DRAFT CHK:		
		APPROVED:		
		SCALE:	DO NOT SCALE	
		VENDOR NAME:		
		VENDOR NUMBER:		ORIGINAL REV
		ENG DRAWING NUMBER	540-090-T2-006	REV. NO.
				0B



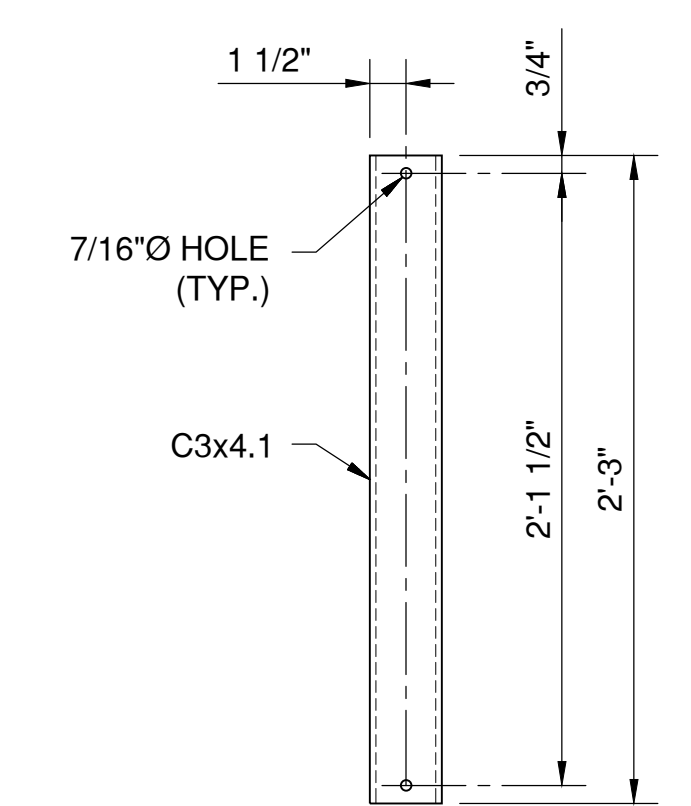


- NOTES FOR STEEL POLE:**
- POLE AND ARMS SHALL BE GALVANIZED STEEL. POLE SHALL HAVE BASE PLATE AND ANCHOR BOLTS.
  - DESIGN CAPACITY W/ 1.72" DIA. 2609 TS KILLDEER CFCC-TW CONDUCTOR, 0.571" OPGW & 7/16" EHS:
    - WIND SPAN..... 1250 FT.
    - WEIGHT SPAN..... 1450 FT.
    - DESIGN RULING SPAN..... 1200 FT.
    - CONDUCTOR HARDWARE..... 1000 LBS.
    - STATIC HARDWARE..... 40 LBS.
    - LINE ANGLE..... 0-30 DEG.
  - STRUCTURE IS DESIGNED FOR FULL DEADEND CAPACITY SPECIFIC LOAD CASE AND LOADING TREES ARE SHOWN ON THIS DRAWING.
  - POLES MAY BE SINGLE PIECE OR HAVE A FABRICATION JOINT. POLE ARM RISE SHALL NOT EXCEED 1" PER 1'-0" OF LENGTH.
  - TYPICAL PHASE ATTACHMENT IS SHOWN. DESIGN AND DETAILING OF PHASE ATTACHMENT SHALL BE BY FABRICATOR. END CLOSURES SHALL BE PROVIDED FOR ALL OPEN SECTIONS.
  - THE FOLLOWING LIMITING TAPER SHALL APPLY: 0.45" PER FT. MAX. ALTERNATE TAPER MAY BE PROPOSED PROVIDED POLE APPEARANCE IS ACCEPTABLE.
  - SLIP JOINTS SHALL BE ASSEMBLED ACCORDING TO POLE MANUFACTURER'S INSTRUCTIONS INCLUDING APPLICATION OF FULL SPECIFIED JACKING FORCE.
  - FOUNDATION IS A SEPARATE CONSTRUCTION UNIT.
  - PROVIDE COVERS FOR ALL GALVANIZING WEEP HOLES.
  - OVERALL LENGTH IS SHOWN BY THE POLE DESIGNATION BELOW.

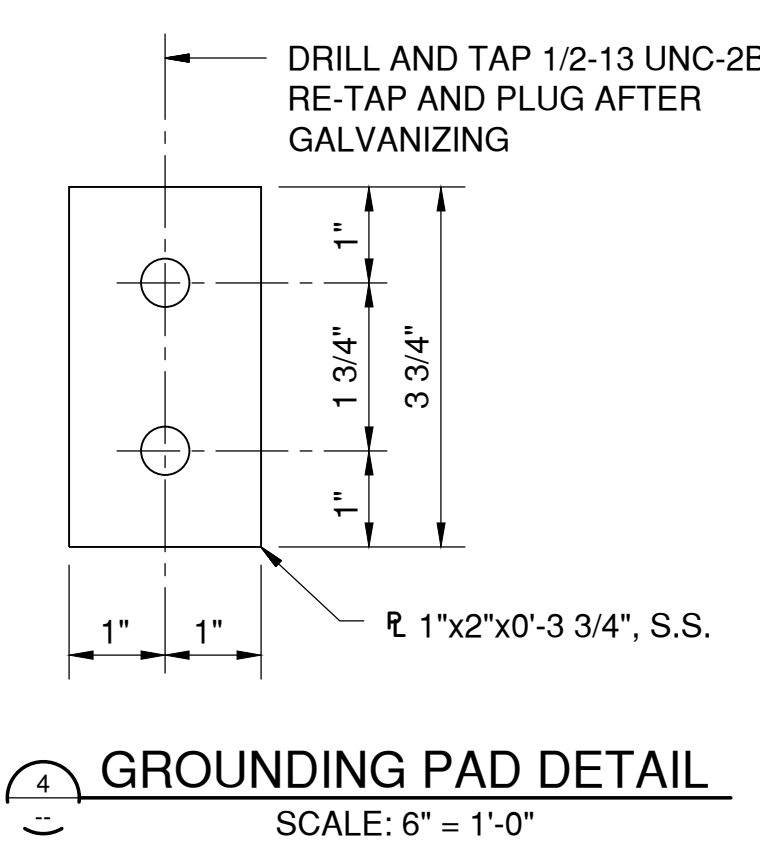
POLE TYPE	LENGTH (FEET)	EMBEDMENT (FEET)
3SD30-140	140	FDN



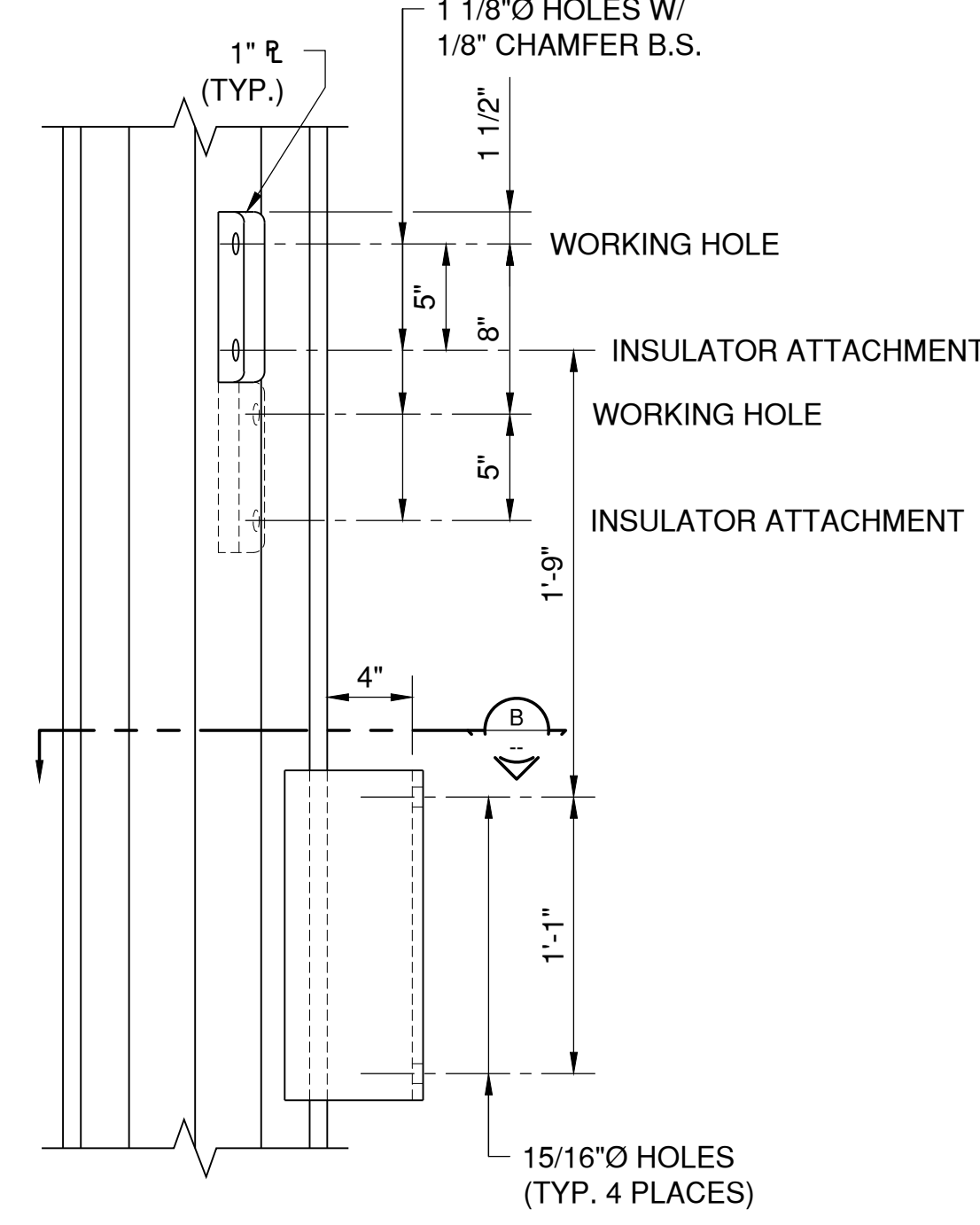
**SECTION AT POLE TOP**  
SCALE: NTS



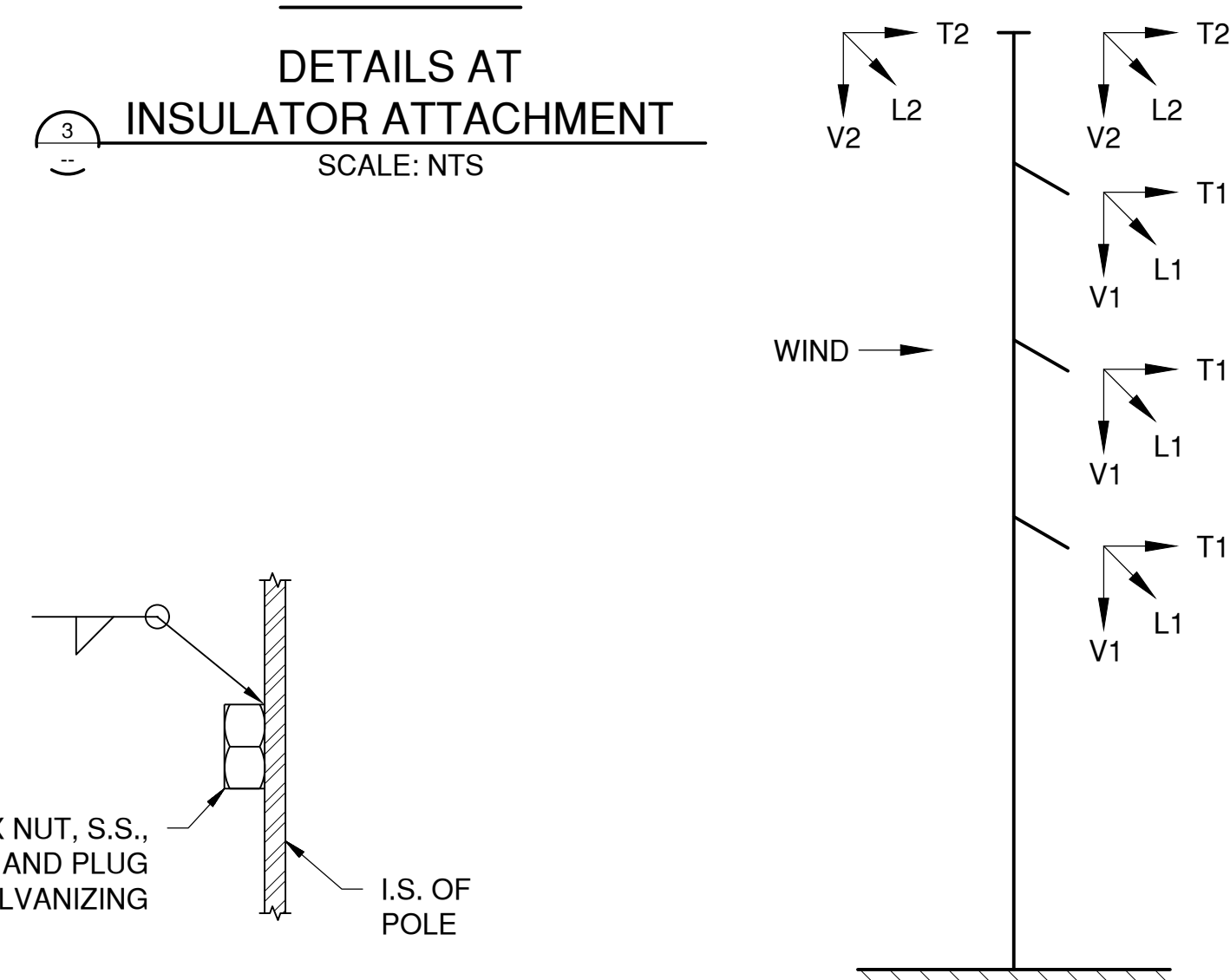
**LOWER NUMBER SIGN CHANNEL**  
SCALE: 1 1/2" = 1'-0"



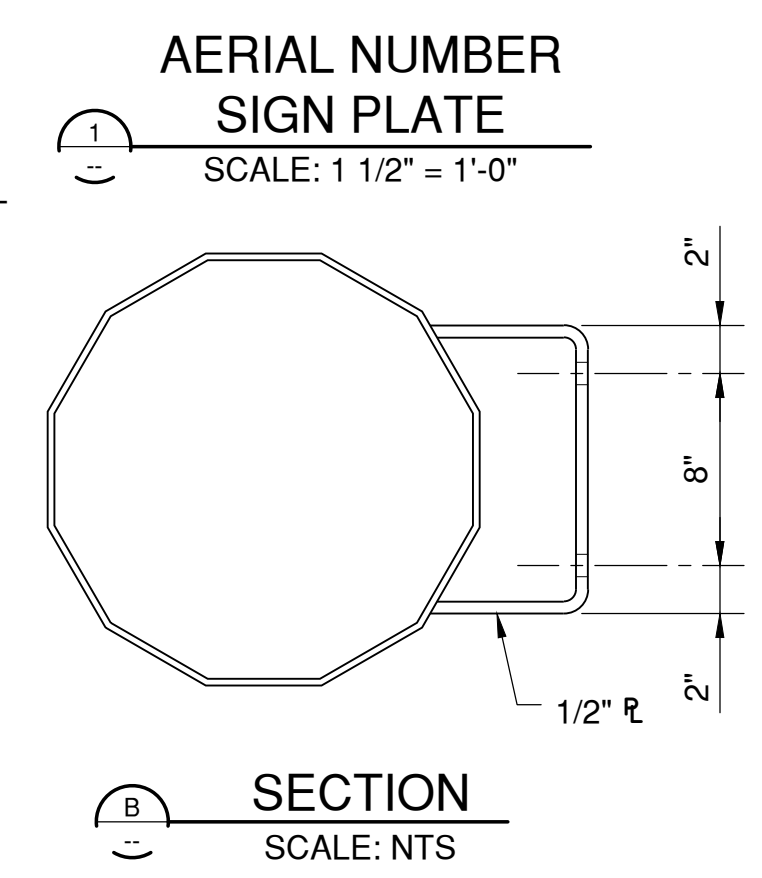
**GROUNDING PAD DETAIL**  
SCALE: 6" = 1'-0"



**ELEVATION DETAILS AT INSULATOR ATTACHMENT**  
SCALE: NTS



**PERSONAL AND POLE GROUNDING NUT**  
SCALE: 6" = 1'-0"

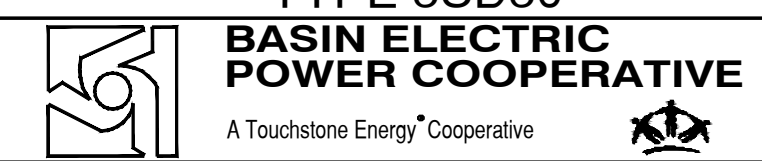


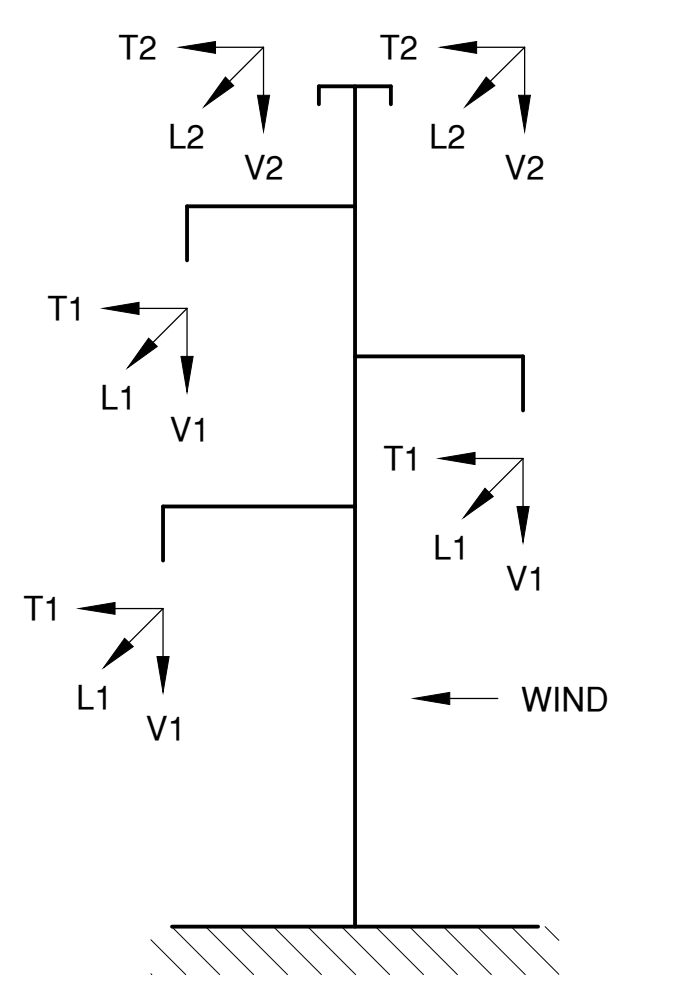
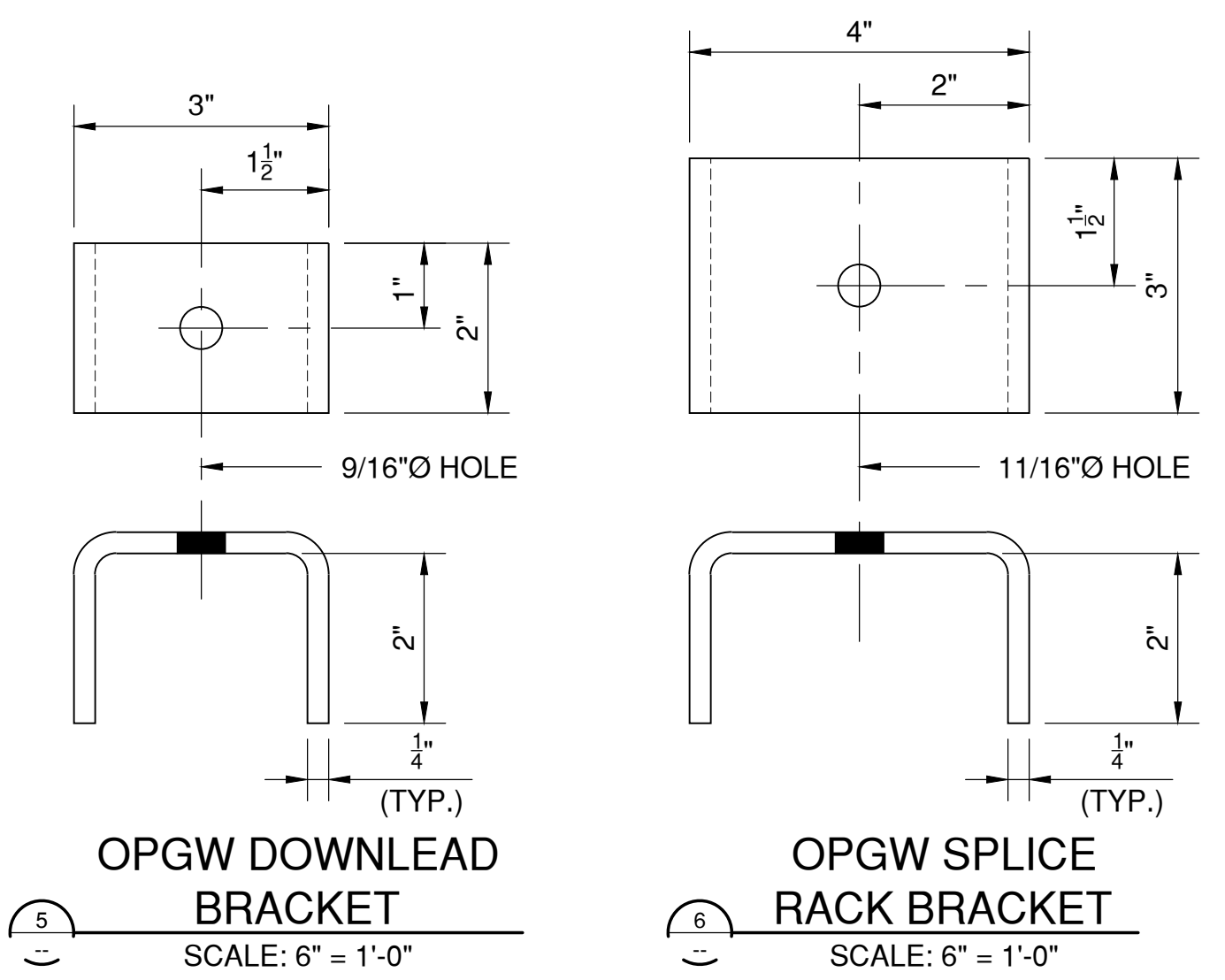
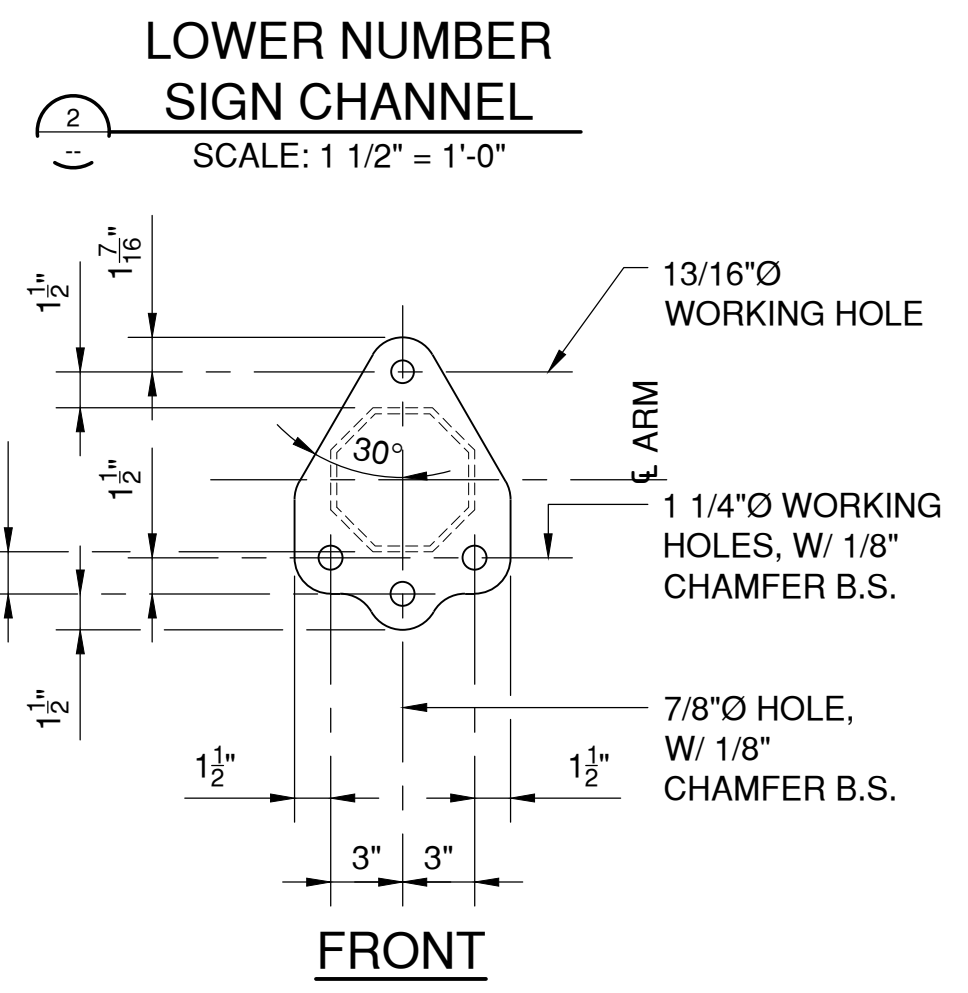
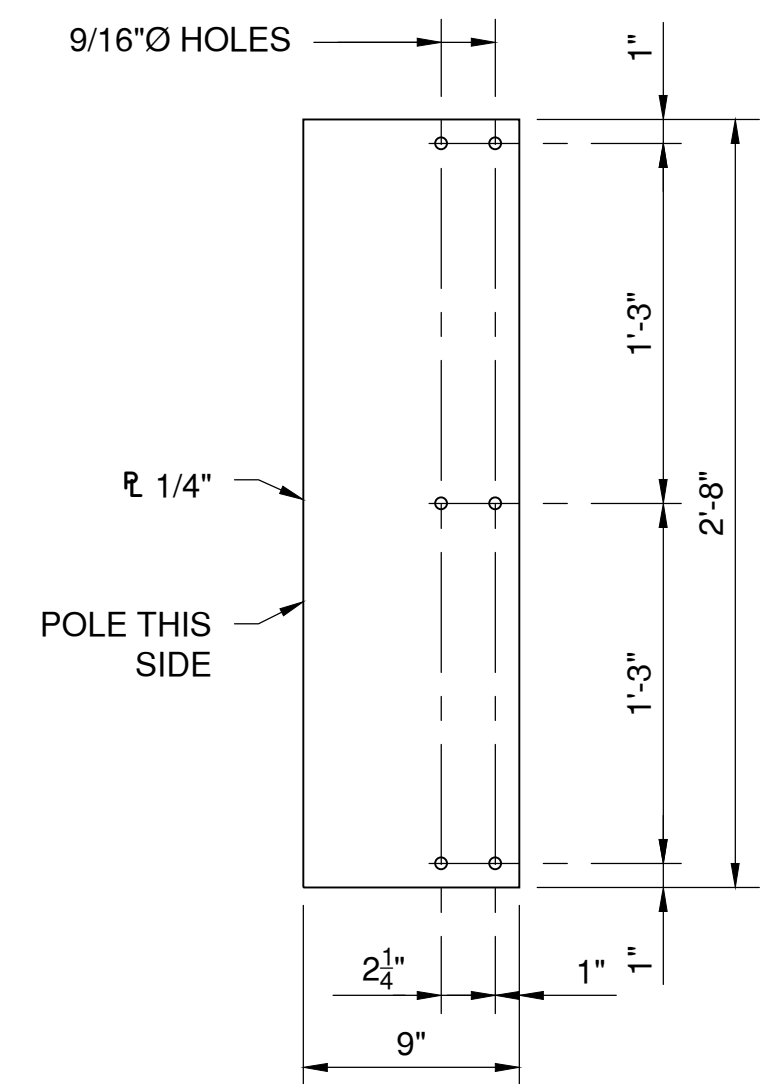
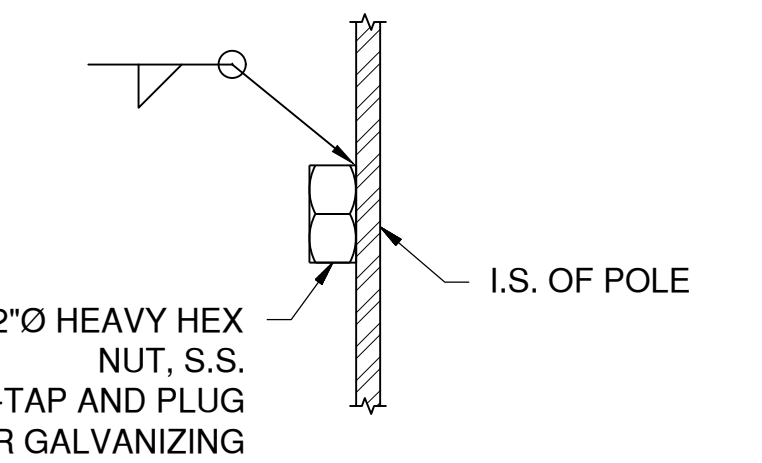
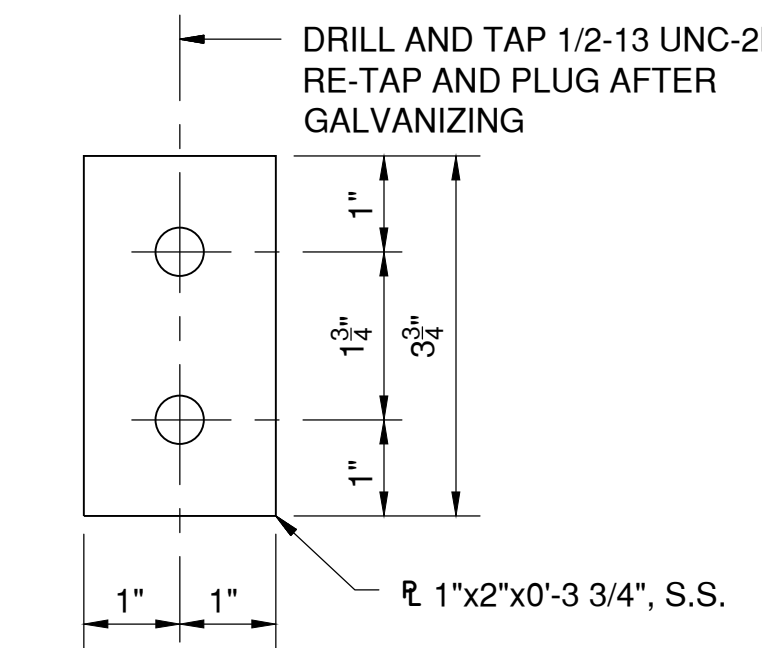
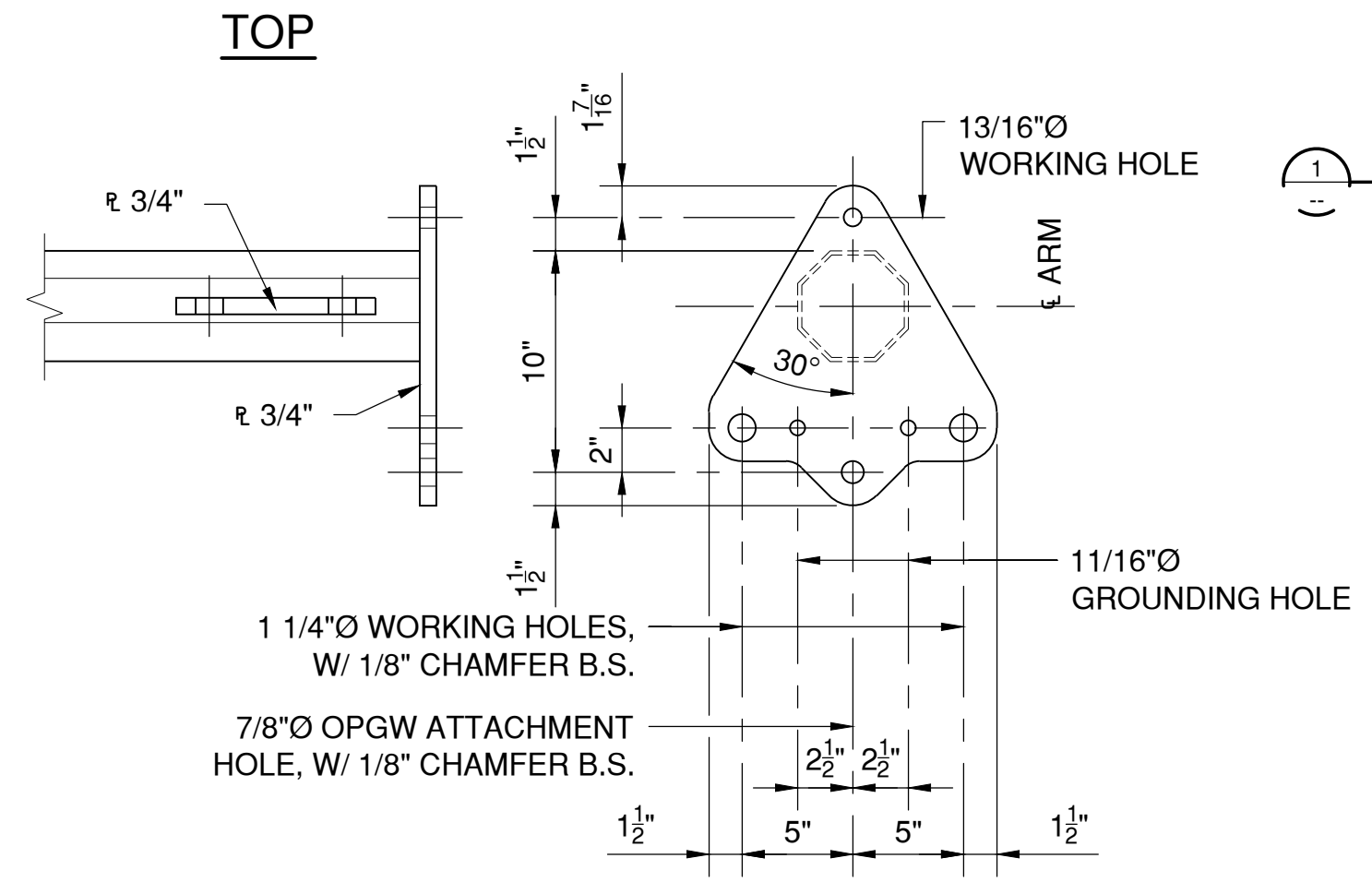
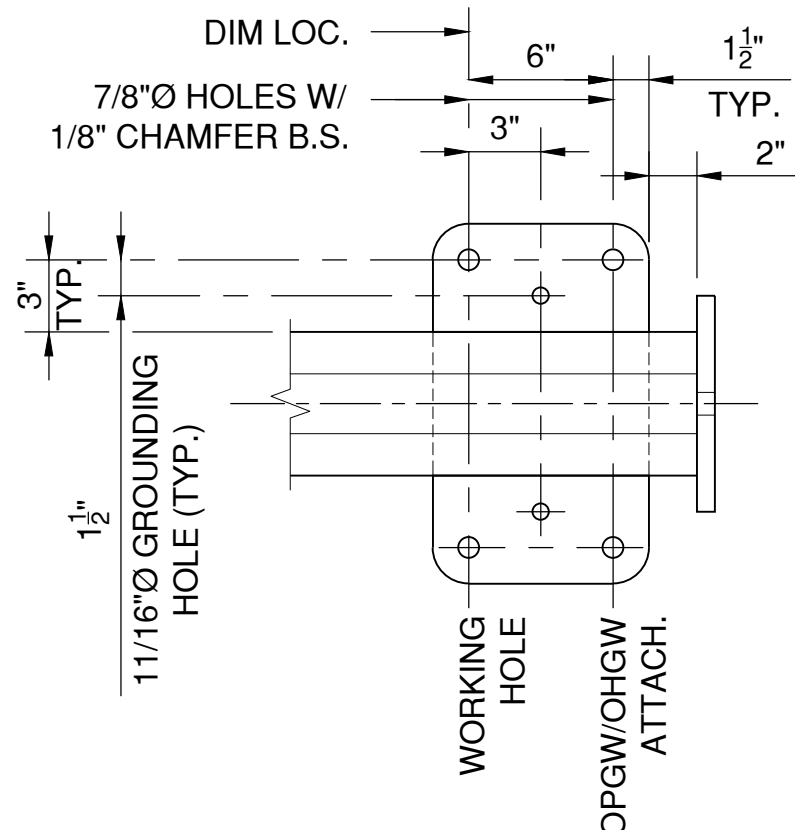
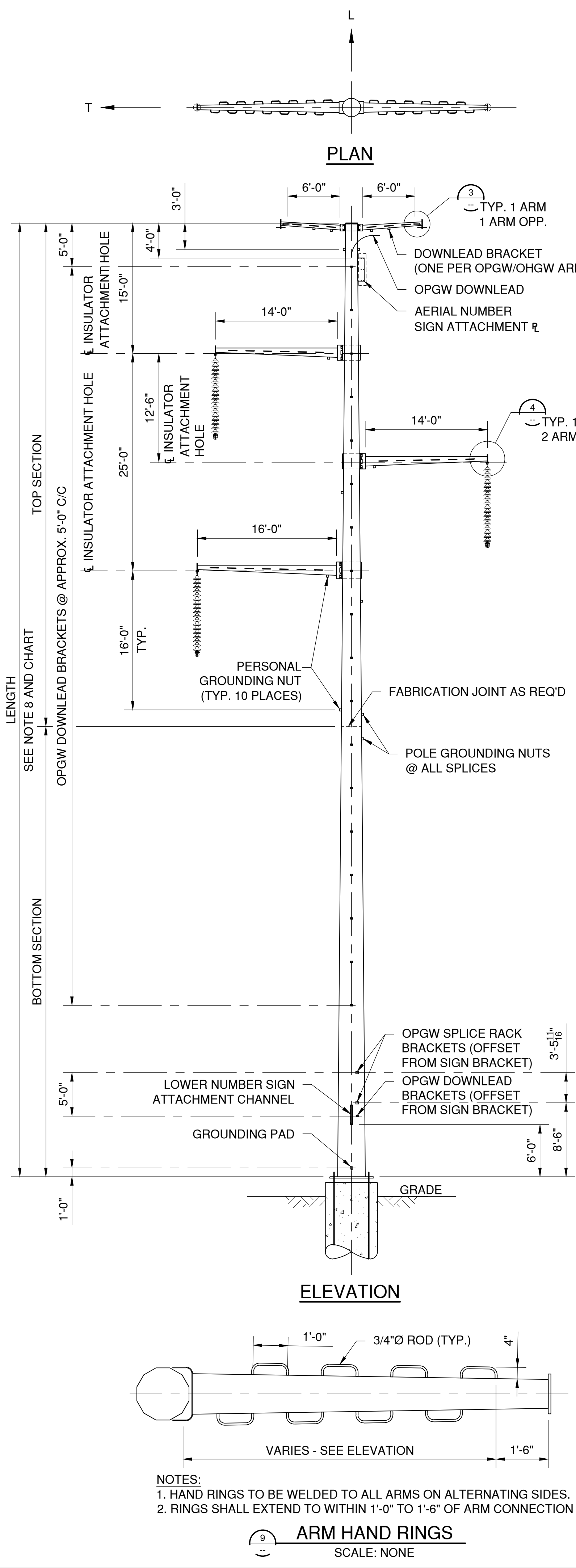
LOAD CASE		COND. 1	OLF'S			COND. 1			OPGW			Wstr (psf)		
			VERT	TRANS	TEN	WIRE TENSION (LBS)	V1 (KIPS)	T1 (KIPS)	L1 (KIPS)	WIRE TENSION (LBS)	V2 (KIPS)		T2 (KIPS)	L2 (KIPS)
1. NESC HEAVY	INTACT	0.5" ICE 4 PSF WIND 0 DEG INITIAL	1.50	2.50	1.65	22400	10.09	21.97	0.00	8300	2.40	8.73	0.00	10.00
2. NESC HEAVY	DE	0.5" ICE 4 PSF WIND 0 DEG INITIAL	1.50	2.50	1.65	22400	10.09	11.83	36.96	8300	2.40	4.85	13.70	10.00
3. EXTREME WIND	INTACT	0" ICE 31 PSF WIND 60 DEG FINAL	1.10	1.10	1.10	24500	5.20	20.06	0.00	7800	0.70	6.47	0.00	34.10
4. EXTREME WIND	DE	0" ICE 31 PSF WIND 60 DEG FINAL	1.10	1.10	1.10	24500	5.20	11.86	26.95	7800	0.70	3.84	8.58	34.10
5. ICE & WIND	INTACT	0.5" ICE 9.2 PSF WIND 15 DEG INITIAL	1.10	1.10	1.10	23000	7.40	15.96	0.00	8500	1.76	6.50	0.00	10.12
6. ICE & WIND	DE	0.5" ICE 9.2 PSF WIND 15 DEG INITIAL	1.10	1.10	1.10	23000	7.40	8.84	25.30	8500	1.76	3.74	9.35	10.12
7. EXTREME ICE	INTACT	1.25" ICE 0 PSF WIND 0 DEG INITIAL	1.25	1.10	1.10	33000	14.28	18.79	0.00	12800	5.92	7.29	0.00	0.00
8. EXTREME ICE	DE	1.25" ICE 0 PSF WIND 0 DEG INITIAL	1.25	1.10	1.10	33000	14.28	9.40	36.30	12800	5.92	3.64	14.08	0.00
9. NORMAL	INTACT	0" ICE 2 PSF WIND 40 DEG FINAL	1.00	1.00	1.00	13400	4.73	7.29	0.00	3500	0.63	1.93	0.00	2.00
10. NORMAL	DE	0" ICE 2 PSF WIND 40 DEG FINAL	1.00	1.00	1.00	13400	4.73	3.75	13.40	3500	0.63	1.00	3.50	2.00
11. EXTREME COLD	INTACT	0" ICE 0 PSF WIND -40 DEG FINAL	1.00	1.00	1.00	20000	4.73	10.35	0.00	4500	0.63	2.33	0.00	0.00
12. EXTREME COLD	DE	0" ICE 0 PSF WIND -40 DEG FINAL	1.00	1.00	1.00	20000	4.73	5.18	20.00	4500	0.63	1.16	4.50	0.00

**ISSUED FOR CONSTRUCTION**

REFERENCE DRAWINGS	FACILITY: TSM - TRANSMISSION SYSTEM MAINTENANCE	DESIGN BY: S. VASBINDER	7/25/23
BASIN DRAWING NBR 540-090-T2-006	FACILITY UNIT/COMPLEX/SITE NUMBER: 540-345KV LINE - PIONEER SUB TO JUDSON SUB	DRAWN BY: A. BURGARD	7/25/23
345KV STEEL POLE LADDER CLIP CONFIGURATION	CONTRACT/TELECOM LOOP:	DESIGN CHK:	
		DRAFT CHK:	
		APPROVED:	
		SCALE: DO NOT SCALE	
		VENDOR NAME:	
		VENDOR NUMBER:	ORIGINAL REV
		ENG DRAWING NUMBER	REV. NO
		540-090-T2-008	0A

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
0A	ISSUED FOR CONSTRUCTION - RES 13032	A. BURGARD	S. VASBINDER		7/25/23





LOAD CASE	INTACT	0.5" ICE 4 PSF WIND 0 DEG INITIAL	OLF'S			COND. 1			OPGW			Wstr (psf)		
			VERT	TRANS	TEN	WIRE TENSION (LBS)	V1 (KIPS)	T1 (KIPS)	L1 (KIPS)	WIRE TENSION (LBS)	V2 (KIPS)		T2 (KIPS)	L2 (KIPS)
1. NESC HEAVY	INTACT	0.5" ICE 4 PSF WIND 0 DEG INITIAL	1.50	2.50	1.65	22400	9.19	4.77	0.00	8300	2.40	2.35	0.00	10.00
2. EXTREME WIND	INTACT	0" ICE 31 PSF WIND 60 DEG FINAL	1.10	1.10	1.10	24500	4.54	7.52	0.00	7800	0.70	2.48	0.00	34.10
3. ICE & WIND	INTACT	0.5" ICE 9.2 PSF WIND 15 DEG INITIAL	1.10	1.10	1.10	23000	6.74	4.19	0.00	8500	1.76	2.15	0.00	10.12
4. EXTREME ICE	INTACT	1.25" ICE 0 PSF WIND 0 DEG INITIAL	1.25	1.10	1.10	33000	13.53	1.90	0.00	12800	5.92	0.74	0.00	0.00
5. NORMAL	INTACT	0" ICE 2 PSF WIND 40 DEG FINAL	1.00	1.00	1.00	13400	4.13	1.06	0.00	3500	0.63	0.30	0.00	2.00
6. EXTREME COLD	INTACT	0" ICE 0 PSF WIND -40 DEG FINAL	1.00	1.00	1.00	20000	4.13	1.05	0.00	4500	0.63	0.24	0.00	0.00
7. STRINGING*	INTACT	0" ICE 4 PSF WIND 0 DEG INITIAL	1.50	1.50	1.50	18500	11.63	2.53	0.54	4600	2.30	0.72	0.13	6.00
8. BROKEN WIRE*	INTACT	0" ICE 0 PSF WIND 60 DEG FINAL	1.00	1.00	1.00	13000	4.13	0.27	10.40	3300	0.63	0.07	2.64	0.00

\* STRINGING AND BROKEN WIRE LOADS APPLIED ONLY TO ONE ARM ATTACHMENT AT A TIME

- NOTES FOR STEEL POLE:**
- POLE AND ARMS SHALL BE GALVANIZED STEEL. POLE SHALL HAVE BASE PLATE AND ANCHOR BOLTS.
  - DESIGN CAPACITY WITH 1.72" DIA. 2609 TS KILLDEER CFCC-TW CONDUCTOR, 0.571" OPGW AND 7/16" EHS:  
 WIND SPAN..... 1250 FT  
 WEIGHT SPAN..... 1450 FT  
 DESIGN RULING SPAN..... 1200 FT  
 CONDUCTOR HARDWARE..... 400 LBS  
 STATIC HARDWARE..... 40 LBS  
 LINE ANGLE..... 0-3 DEG.  
 SPECIFIC LOAD CASE AND LOADING TREES ARE SHOWN BELOW.
  - POLES MAY BE SINGLE PIECE OR HAVE A FABRICATION JOINT. POLE ARM RISE SHALL NOT EXCEED 1" PER 1'-0" OF LENGTH.
  - TYPICAL PHASE ATTACHMENT IS SHOWN. DESIGN AND DETAILING OF PHASE ATTACHMENT SHALL BE BY FABRICATOR. END CLOSURES SHALL BE PROVIDED FOR ALL OPEN SECTIONS.
  - THE FOLLOWING LIMITING TAPER SHALL APPLY: 0.30" PER FT. MAX. ALTERNATE TAPER MAY BE PROPOSED PROVIDED POLE APPEARANCE IS ACCEPTABLE.
  - SLIP JOINTS SHALL BE ASSEMBLED ACCORDING TO POLE MANUFACTURER'S INSTRUCTIONS INCLUDING APPLICATION OF FULL SPECIFIED JACKING FORCE.
  - FOUNDATION IS A SEPARATE CONSTRUCTION UNIT.
  - OVERALL LENGTH IS SHOWN BY THE POLE DESIGNATION BELOW.

POLE TYPE	LENGTH (FEET)	EMBEDMENT (FEET)
3T2OPGW-125	125	FDN

9. PROVIDE COVERS FOR ALL GALVANIZING WEEP HOLES.

**ISSUED FOR CONSTRUCTION**

REFERENCE DRAWINGS	FACILITY: TSM - TRANSMISSION SYSTEM MAINTENANCE	DESIGN BY: B. WILKINSON	8/3/23
BASIN DRAWING NBR 540-090-T2-006 345KV STEEL POLE LADDER CLIP CONFIGURATION	FACILITY UNIT/COMPLEX/SITE NUMBER: 540-345KV LINE - PIONEER SUB TO JUDSON SUB	DRAWN BY: A. BURGARD	8/3/23
	CONTRACT/TELECOM LOOP:	DESIGN CHK:	
		DRAFT CHK:	
		APPROVED:	
		SCALE: DO NOT SCALE	
		VENDOR NAME:	
		VENDOR NUMBER:	ORIGINAL REV
		ENG DRAWING NUMBER:	REV. NO.
		540-090-T2-009	0A

NO.	DESCRIPTION	DRWN	DSGN	APPD	DATE
0A	ISSUED FOR CONSTRUCTION - RES 13032	A. BURGARD	S. VASBINDER		8/3/23



## **Appendix C**

### **Cultural Resources Report (Redacted)**

## MANUSCRIPT DATA RECORD FORM

1. Manuscript Number:
2. SHPO Reference #: 23-0261
3. Author(s): Kimball Banks
4. Title: Basin Electric Power Cooperative: A Class III Cultural Resource Inventory of the Pioneer to Judson 345kV Line, Williams County, North Dakota
5. Report Date: August 2023
6. Number of Pages: 51
7. Type: I
8. List formally tested or excavated sites (not probes): N/A
9. Acres: 477.1 acres surveyed; 540.5 acres total in project area
10. Legal Location(s):

<b>County</b>	<b>TWP</b>	<b>R</b>	<b>SEC</b>	<b>SU</b>
Williams	155	103	20, 28, 29, 33	Garrison
Williams	154	103	4, 9, 10, 11, 12	Garrison
Williams	154	102	7, 8, 9, 15, 16, 22, 23	Garrison

**BASIN ELECTRIC POWER COOPERATIVE: A  
CLASS III CULTURAL RESOURCE INVENTORY OF  
THE PIONEER TO JUDSON 345 kV LINE, WILLIAMS  
COUNTY, NORTH DAKOTA**

By:  
Kimball Banks

Principal Investigator:  
Daniel Salas

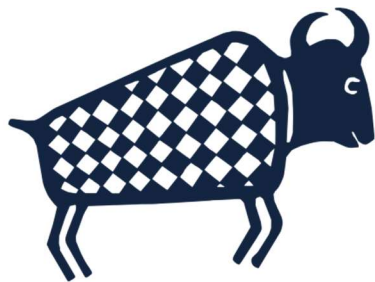


Metcalf Archaeological Consultants, Inc.  
Bismarck, ND

Prepared for:  
Basin Electric Power Cooperative

ND SHPO Ref.: 23-0261  
Metcalf Project No. 2023.ND.027

August 2023



**Metcalf**  
ARCHAEOLOGICAL CONSULTANTS

*Locational information for archaeological and historic sites is protected under North Dakota Century Code § 55-02-07.*  
All reports (Class I, II, III, Testing, or Data Recovery) or any loose maps that will be distributed outside the agency or client should not contain site locational information. Site locational information includes the location of a site on a topographic map or aerial photographs, the location of a site in tables, such as Township, Range, and Section, or photograph of sites. It is acceptable to mention the Smithsonian Trinomial designation (e.g., 32EM0123) as this does not contain locational information, other than state and county.

## ABSTRACT

Basin Electric Power Cooperative plans to construct the Pioneer to Judson above-ground 345 kV electric transmission line in Williams County, North Dakota. The project will be in a construction corridor running between the Pioneer Generation Station and the Judson substation. The corridor will be 15 miles long by 200-feet wide; approximately 477.1 acres out of the 540.5 acres of project area were inventoried; the remaining 63.4 acres will be documented in an addendum report.

Basin Electric Power Cooperative is applying for a permit to construct the project from the North Dakota Public Service Commission, which is responsible for ensuring the project complies with *North Dakota Century Code 55-03 - Protection of Prehistoric Sites and Deposits* - and *Administrative Rule 40-02-02 - Permit for Cultural Resource Investigation*. There is no federal involvement.

Basin Electric Power Cooperative contracted Metcalf Archaeological Consultants, Inc. to conduct a Class III cultural resource inventory of the project area. Principal Investigator Daniel Salas and Archaeological Technicians Scott Tooker and Matt Kolbe undertook the inventory on May 25, 26, and 27 and June 10, 2023. The archaeologists identified four cultural resources – 32WI2482, 32WI2483, 32WIX837, and 32WIX838 and updated site lead forms for 32WIX103 and 32WIX154. On July 28, 2023, Principal Investigator Daan Meens and Archaeological Technician Karin Ohannessian inventoried a short reroute during which they encountered previously recorded site 32WI1201 and updated the site form.

Site Number	Site Type	Significance	Recommendation
32WIX103	Cultural material scatter	Unknown	Not in project area
32WIX154	Cultural material scatter	Unknown	Not in project area
32WI1201	Farmstead	Not significant	Not in project area
32WI2482	Historic dump	Not significant	No further work
32WI2483	Historic dump	Not significant	No further work
32WIX837	Isolated find - flakes	Not significant	No further work
32WIX838	Site lead stone circles	Unknown	Not in project area

Metcalf recommends a finding of *No Significant Sites* (North Dakota Century Code Section 49-22-09). No further work is recommended for the parcels reported on herein; survey of the remaining 63.4 acres will be reported on in an addendum this fall.



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## INTRODUCTION

Basin Electric Power Cooperative (BEPC) proposes to construct the Pioneer to Judson above-ground 345 kV electric transmission line in Williams County, North Dakota (Figure 1). The line will run between the Pioneer Generation Station and the Judson substation. The project area is a construction corridor that will be 15 miles long by 200-feet wide for a total of 477.1 acres out of the 540.5. Approximately 63.4 acres of the project area along various points of the corridor could not be inventoried because of crop cover. These sections will be inventoried in the fall after harvest.

The North Dakota Public Service Commission (PSC) will permit the project. There is no federal involvement. For that reason, PSC is responsible for ensuring that the project complies with *North Dakota Century Code 55-03 - Protection of Prehistoric Sites and Deposits* - and Administrative Rule 40-02-02 - Permit for Cultural Resource Investigation. If human remains and/or burial goods are encountered, then the project must comply with *North Dakota Century Code 23-06-27 - Protection Of Human Burial Sites* – and Administrative Rule 40-02-03 - Protection of Prehistoric and Historic Human Burial Sites, Human Remains, and Burial Goods.

BEPC contracted Metcalf Archaeological Consultants, Inc. to conduct a Class III cultural resource inventory of the project area. Principal Investigator Daniel Salas and Archaeological Technicians Scott Tooker, and Matt Kolbe undertook the inventory on May 25, 26, and 27 and June 10, 2023. On July 28, 2023, Principal Investigator Daan Meens and Archaeological Technician Karin Ohannessian surveyed a short reroute. This report documents inventory of 477.1 acres of the total project area.

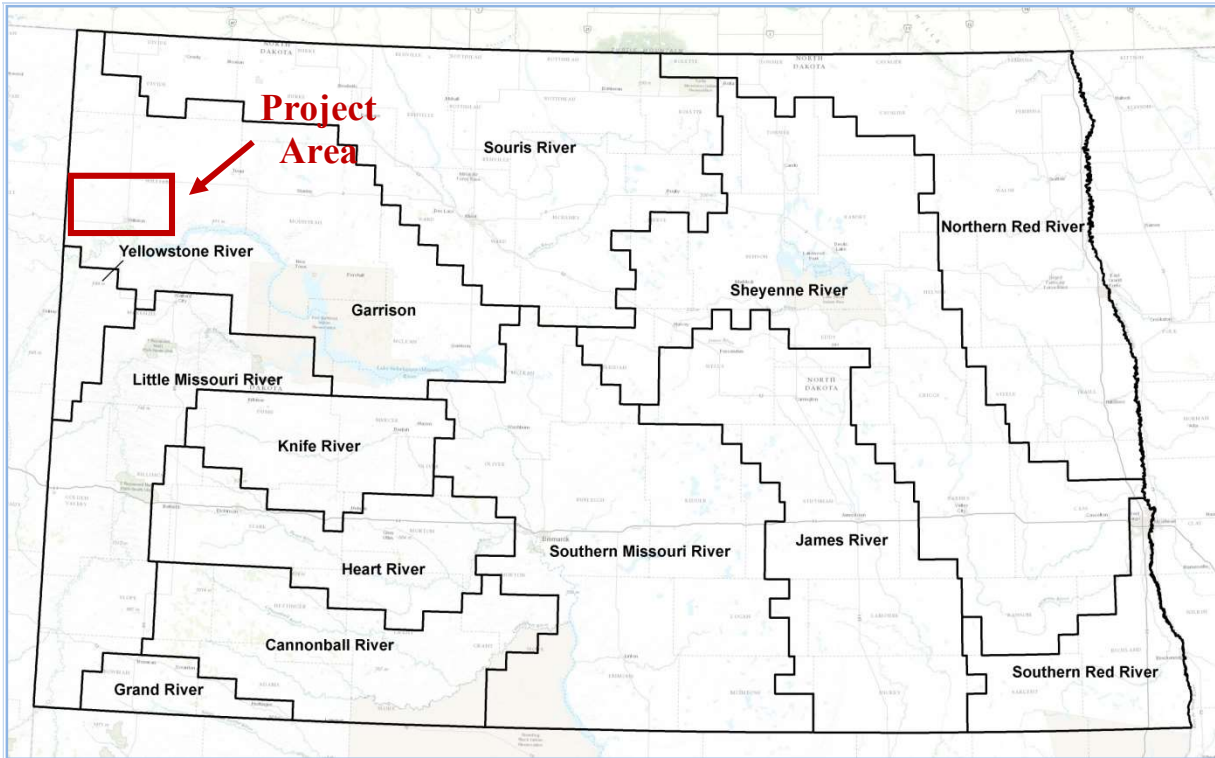
## THE PROJECT

The project involves the construction of a 345 kV electric transmission line that will connect the Pioneer Generation Station and the Judson substation. The project area is a construction corridor that is 15 miles long by 200 feet wide, for a total of 477.1 acres. Table 1 lists the legal description of the project area.

Township	Range	Sections
155	103	20, 28, 29, 33
154	103	4, 9, 10, 11, 12
154	102	7, 8, 9, 15, 16, 22, 23

The project area is depicted on the Trenton NW (1976) and Trenton NE (1976) USGS 7.5' topographic maps (Appendix A).





**Figure 1:** The general location of the project area depicted on a map of North Dakota.

## PROJECT SETTING

The project area is in the Coteau Slope unit of the Great Plains Physiographic Region (Bluemle 2016). Archaeologically, it is within the Garrison Study Unit, as defined in the *North Dakota Comprehensive Plan for Historic Preservation: Archeological Component* (SHSND 2021). Overviews of the geology, environment, and archaeology are discussed in these references.

### ***Environment***

The project area crosses rolling uplands north of the Missouri River and Painted Woods Creek towards the southern end. About half the area comprises gently rolling prairie grasslands and half cultivated fields. There are very few, if any, severe topographic changes (Figures 2 and 3). The grasslands contain both native and non-native grasses and have a ground surface visibility (GSV) between 10 and 30%. The cultivated areas are planted in various crops and have a GSV between 40 and 80%. The most distinctive topographic feature is Painted Woods Creek that crosses the center of the project area. Finally, areas of construction were encountered along the project area (Figure 4).





**Figure 2:** Pioneer to Judson 345 kV transmission line project area, view north (Image #SMT\_167, 5/25/23)



**Figure 3:** Pioneer to Judson 345 kV transmission line project area, View north (Image #SMT\_212, 5/27/23)





**Figure 4:** Construction area along the Pioneer to Judson 345 kV transmission line project area, view north (Image #SMT\_215, 5/27/23)

### ***Garrison Study Unit***

This study unit lies in northwestern North Dakota east and west of the Missouri River now inundated by Lake Sakakawea, which was created by U.S. Army Corps of Engineers' construction of Garrison Dam. The unit includes areas of the Missouri Coteau and Coteau Slope. While the Coteau Slope comprises gently rolling hills cut by numerous tributaries to the Missouri River, the Missouri Coteau features knob-and-kettle glaciated terrain with numerous pothole lakes and sloughs (Gregg, Bleier, and Swenson 2021).

As of 2020 the Archaeology and Historic Preservation Division of the State Historical Society of North Dakota, has records of 5,106 archaeological sites and 2,848 isolated finds and archaeological site leads in this study unit (Gregg et al 2021). Only the Knife River Study Unit has a greater number of recorded sites, isolated finds, and site leads. Most of sites in the Garrison Unit are found on high ground, such as ridges or hill/knoll/bluffs (Gregg, Bleier, and Swenson 2021). The next most likely landform to contain sites is upland plains. The low number of sites on floodplains undoubtedly is attributable to inundation by Lake Sakakawea, erosion, and burial by river sediment (Gregg et al 2021).

The most plentiful site type is stone circles, followed by cultural material scatters (CMS) and cairns. Other site types include eagle trapping pits, earthlodge villages, and graves; the last three are relatively more frequent than in the other study units. The diversity of site types is as great as other study units. Lithic materials used by Precontact populations, such as Knife River Flint (KRF), quartzites, jaspers and cherts, agatized woods, Yellowstone agate, porcellanite, basalt, granite, and limestone, can be found in glacial fill and alluvium or were acquired through trade.



Testing of stone circle sites reveal temporal/cultural affiliations with Early Plains Archaic, Duncan, Pelican Lake, Besant, Avonlea, McKean Complex, Middle Plains Woodland, Plains Woodland, Late Prehistoric, Old Woman's Complex, Samantha/Prairie side notched, Plains Village, and Equestrian Nomadic periods. This shows a continuity of use of stone circles by plains cultures for hundreds of years (Gregg, Bleier, and Swenson 2021).

Again, as of 2020, the Archaeology and Historic Preservation Division has records for 3,497 Class III cultural resource inventories in the unit (Gregg, Bleier, and Swenson 2021). Most inventories are associated with oil and gas exploration and development. These inventories have covered 18% of the unit. Only the Little Missouri and Yellowstone units have experienced more coverage (Gregg, Bleier, and Swenson 2021).

## PROJECT GOALS

The purpose of the Class III cultural resource inventory was to:

- 1) provide the PSC with information necessary to comply with applicable *North Dakota Century Code* and Administrative Rules.
- 2) recommend which cultural resources appear to be significant per the Century Codes and Administrative Rules
- 3) identify any resources that need additional work to determine significance and activities needed to determine significance.
- 4) For those resources recommended significant, identify appropriate avoidance measures or if avoidance is not possible, mitigation measures
- 5) provide BEPC planners and engineers cultural resource data so that historic properties can be considered during planning of the project.

To achieve these objectives, the Class III pedestrian inventory was conducted to locate, identify, and recommend significance of precontact, postcontact, and historic architectural resources within the project area.

## FILES SEARCH

On April 3, 2023, prior to the Class III inventories, Metcalf staff Dierdre Bostyan searched the site and manuscript files at the State Historical Society of North Dakota to identify any cultural resources that have been recorded or any cultural resource projects that have been conducted within the project area and the surrounding mile. The search area totaled 38 square miles. The results of the file search are mapped on the project maps in Appendix A and presented in Appendix B, Tables B1 and B2.

The site files search revealed that 123 cultural resources have been recorded in the search area (Appendix B, Table B1). The recorded resources consist of 94 sites, 28 isolated finds (IFs) or site leads (SLs), and one Cultural Heritage (CH) resource in the search area. The majority of resources are Precontact and include stone circles, cairns, and cultural material scatters, and combinations of these. Historic resources include schoolhouses, bridges, farmsteads, among others.



The manuscript files search revealed that 59 cultural resource projects have been conducted in the search area (Appendix B, Table B2). Projects were associated with road and highway improvements, construction of transmission lines and utilities, and oil development and production.

**FIELD METHODS**

Metcalf archaeologists inventoried the project area on May 25, 26, and 27, June 10, and July 28, 2023. All but 2 miles, comprising four quarter sections or 48 acres at various points along the project area, were inventoried. Planted crops precluded inventorying these quarter sections; these will be inventoried in the fall after harvest. Finally, two shovel probes were dug on the west side of Painted Woods Creek. Shovel probe (SP) 11 was excavated on the terrace edge at the location of a proposed transmission line tower. SP 12 was dug 15 m to the northwest along the terrace edge. Both shovel probes on the West Bank were negative for cultural materials (Table 2).

Shovel Probe	Depths (cmbs)	Horizon	Munsell Color	Texture	Sediment Type	Transition	Positive?	Notes
SP 11	0-39	A	10YR 3/2	Sandy Loam	Residuum	Abrupt (0.5 to <2 cm)	Negative	Gravels throughout soil.
	39-51	A	10YR 4/3	Fine Sand	Residuum		Negative	Gravels throughout soil.
SP 12	0-27	A	10YR 3/2	Sandy Loam	Residuum	Abrupt (0.5 to <2 cm)	Negative	Gravels throughout soil.
	27-40	A	10YR 4/3	Fine Sand	Residuum		Negative	Gravels throughout soil.

The inventory conformed to *North Dakota’s Guidelines for Cultural Resource Inventories* (SHSND 2020). Archaeologists walked using transects spaced no more than 15 meters apart, paying particular attention to areas of increased visibility such as rodent burrows and erosional features. This methodology was used to inventory the entire project area except those quarter sections where access was denied.

The archaeologists mapped each project area boundary with R1 GPS units, took representative digital photographs of survey conditions and took detailed field notes. If cultural resources were encountered, the crew would photograph the resource(s) in its setting, record measurements, take detailed notes, complete a North Dakota Cultural Resources Survey (NDCRS) form, create a field sketch map, and recorded information via the GPS units. Copies of all photos, NDCRS forms, maps, GPS data, and field notes are on file at the Metcalf Bismarck office.



## RESULTS

### *Site Lead 32W1x103*

Figures 5 – 7, Append A Map A3

Precontact resource 32W1x103 is a site lead of a cultural material scatter that Benson coded. Thad Hecker apparently reported in 1938 that a campsite was at this location. No evidence of a “campsite” was found during the inventory, but Metcalf archaeologists did not have permission to inventory outside the project area. The survey ran along the western edge of the site lead; however, much of the area where the site lead was reportedly located has been disturbed and vegetation removed, resulting in a GSV of 90 to 100%. The rest of the project area crosses a cultivated field with a GSV greater than 70% or native prairie grassland with a GSV between 10 and 30%.

### *Integrity and Significance Recommendations*

No evidence of the site lead was encountered so neither the integrity nor the significance of the lead could be evaluated per the *North Dakota Century Code*. Because no evidence was encountered, avoidance is not necessary. The site lead is not in the project area.



**Figure 5:** 32W1x103, view southwest from corner of lead location (Image #DMS\_508, 5/26/23)





**Figure 6:** 32WIX103, view from northwest corner of lead (Image #DMS\_507, 5/26/23)

**Figure 7:** Reported site boundary of 32WIX103 depicted on aerial imagery (MAP REDACTED).



### ***Site Lead 32W1x154***

Figures 8 and 9, Appendix A Map A1

Precontact resource 32W1x154 is a site lead of a cultural material scatter that Benson coded. Thad Hecker apparently reported a campsite in that location in 1938. No evidence of a “campsite” was found during the inventory, but Metcalf archaeologists did not have permission to inventory outside the project area.

#### ***Integrity and Significance Recommendations***

No evidence of the site lead was encountered, so neither the integrity nor significance of the lead could be evaluated per the North Dakota Century Code. Because no evidence was encountered, avoidance is not necessary.



**Figure 8:** Overview of 32W1x154, view north (Image #SMT\_216, 05/27/23).

**Figure 9:** Site boundary of 32W1x154 depicted on aerial imagery. (MAP REDACTED)

### ***Site 32WI1201***

Figures 10 through 12, Appendix A Map A2

Architectural site 32WI1201 was recorded by Palmer in 2011. As recorded, this farmstead probably dates to the 1940s and consists of a two-story, wood-framed farmhouse, a garage, a wellhouse, and a windmill. The house has undergone significant alterations since it was built. The farmstead is currently occupied. This architectural resource appears to be unchanged from when



Palmer recorded it in 2011, though slightly more worn by time. The house, garage, pump house, and windmill are not in the project area and Metcalf archaeologists did not have permission to inventory outside the project area.

#### *Integrity and Significance Recommendations*

Because of these alterations, Palmer recommended that the site does not qualify for inclusion in the National Register of Historic Places. The site is outside the project area and will not be directly affected by its construction.

**Figure 10:** Overview of 32WI1201, view southwest (Image #DMS\_612, 7/28/23). (IMAGE REDACTED)

**Figure 11:** Overview of 32WI1201, view southeast (Image #DMS\_615, 7/28/23). (IMAGE REDACTED)

**Figure 12:** Sketch map of 32WI1201 depicted on aerial imagery. (MAP REDACTED)

#### ***Site 32WI2482***

Figures 13 through 15, Appendix A Map A2

Postcontact site 32WI2482 consists of a historic dump and stone pile along the top and south-facing slope of a gentle rise at the edge of a cultivated field. A north/south running barbed wire fence bisects the site, with most of the cultural material being east of the fence line. Artifacts consist of over a hundred metal fragments, including Budweiser and Hamms beer cans. Similarly, over a hundred bottles and bottle fragments, including Vicks Vapor Rub, and Hilex bottles along with glass with Owens-Illinois makers mark dating to 1950, are interspersed in the dump. Other artifacts consist of mattress parts and barbed wire, along with recently deposited material. The stones probably come from clearing the cultivated field.

#### *Integrity and Significance Recommendations*

The site retains integrity of design as the spatial patterning and composition of the artifacts result in the site being easily recognizable as a dump. The site does not retain integrity of workmanship it does not reflect the labor, craft and skill of the people created it, rather it represents a random repeated discard of objects over time. The site does not retain integrity of materials as modern items are intermixed with historic artifacts and many of the historic artifacts are broken or in pieces. Metcalf recommends the site is not significant according to the *North Dakota Century Code*, no further work is needed, and avoidance is not necessary.





**Figure 13:** Overview of site 32WI2482 from the south, view facing north (Image # SMT\_180, 05/25/2023)



**Figure 14:** Overview of site 32WI2482 from east, view facing west (Image # SMT\_183, SMT 05/25/2023).

**Figure 15:** Site boundary of 32WI2482 depicted on aerial imagery.(MAP REDACTED)



**Site 32WI2483**

Figures 16 through 18, Appendix A Map A1

Post contact site 32WI2483 consists of a historic dump containing remnants of farm equipment and accumulation of wood planks. The dump is situated atop an upland plain that gently slopes to the north and south. Vegetation consists of native and non-native grasses with a GSV between 0 and 10%. The farm equipment, located at the north end of the dump, includes threshers and two 1940s Ford trucks; the collection of plank wood is at the south end. Glass bottles, pull tab cans, car rims, miscellaneous car parts, toilet parts, and unidentifiable metal fragments are scattered throughout the site. Other than the Ford trucks, no datable artifacts were identified.

*Integrity and Significance Recommendations*

The site retains integrity of design as the spatial patterning and composition of the artifacts result in the site being easily recognizable as a dump. The site does not retain integrity of workmanship it does not reflect the labor, craft and skill of the people created it, rather it represents a random repeated discard of objects over time. The site does not retain integrity of materials as modern items are intermixed with historic artifacts and many of the historic artifacts are broken or in pieces. Metcalf recommends the site is not significant according to the *North Dakota Century Code* and no further work is needed. Avoidance is not necessary.



**Figure 16:** View south over 32WI2483 (Image #SMT\_190, 5/26/23).





**Figure 17:** View west over 32WI2483 (Image #SMT\_191, 5/26/23).

**Figure 18:** Site boundary of 32WI2483 depicted on aerial imagery. (MAP REDACTED)

### ***Isolated Find 32WIX837***

Figures 19 through 23, Appendix A Map A3

Precontact isolated find 32WIX837 is on a terrace edge overlooking the east bank of Painted Woods Creek in a rolling pasture of native prairie grasses with an open viewshed. The landowner informed the crew that stone circles are in an area southwest of the location (32WIX838), but no stone features were observed in the project area. No artifacts were identified on the surface, but because GSV was between 0 and 15%, the site setting, proximity to the creek, and nearby stone circles, the archaeologists excavated 10 shovel probes looking for subsurface content (Table 3).

Two shovel probes (SPs) yielded cultural material: SP3 and SP8 (Table 3). SP 3 was one of the first probes dug and produced a KRF tertiary flake and SP8 returned a KRF secondary flake. After finding the flake in SP3, probes were dug at 15 m radials to the west, north, and east of that probe. Because these three shovel probes were negative, probes were excavated at 7.5 m radials in four cardinal directions around SP3 (Figure 23). Only SP 8, the west radial probe, yielded cultural material, a KRF secondary flake. To delineate horizontal site extent, shovel probes were dug 7.5 m west of SP4 and 15 m west to place two negative shovel probes in each cardinal direction.

### ***Integrity and Significance Recommendations***



The integrity of 32WIX837 could not be determined based on two positive probes out of 10. Although these shovel probes found subsurface cultural material, given the paucity of the collection and distribution over 78 square meters, Metcalf considers that 32WIX837 is an isolated find and is not significant per the *North Dakota Century Code*.

<b>Table 3: Shovel Probe Results at 32WIX837.</b>				
<b>Shovel Probe</b>	<b>Depths (cmbs)</b>	<b>Horizon</b>	<b>Munsell Color</b>	<b>Results</b>
SP 2	0-28	A	10YR 3/2	Negative
	28-38	B	10YR 6/3	Negative
SP 3	0-32	A	10YR 3/2	Positive
	32-52	B	10YR 6/3	Negative
SP 4	0-35	A	10YR 3/2	Negative
	35-41	B	10YR 6/3	Negative
SP 5	0-25	A	10YR 3/2	Negative
	25-55	B	10YR 5/4	Negative
SP 6	0-45	A	10YR 3/2	Negative
SP 7	0-37	A	10YR 3/2	Negative
	37-50	B	10YR 6/3	Negative
SP 8	0-38	A	10YR 3/2	Positive
	38-48	B	10YR 6/3	Negative
SP 9	0-36	A	10YR 3/2	Negative
	36-46	B	10YR 6/3	Negative
SP 10	0-46	A	10YR 3/2	Negative
	46-48	B	10YR 6/3	Negative

**Figure 19:** Overview of site 32WIX837 looking north towards 32WIX838 (Image# DMS\_624, 06/10/2023). (IMAGE REDACTED)

**Figure 20:** Overview of site 32WIX837, view looking east (Image # DMS\_625, 06/10/2023) (IMAGE REDACTED)





**Figure 21:** Knife River Flint tertiary flake from SP3 (Image # DMS\_611, 06/10/2023)



**Figure 22:** KRF secondary flake from SP8 (Image # DMS\_616, 06/10/2023).

**Figure 23:** Site boundary of 32WIX837 depicted on aerial imagery. (MAP REDACTED).

***Site Lead 32WIX838***

Figures 24 through 26, Appendix A Map A3



Postcontact resource 32Wix838 is a site lead for a stone circle site reportedly located on the west side of Painted Woods Creek in native prairie grassland outside of the project area. The landowner said that stone circles were nearby. During the survey, the crew observed two stone circles just outside the project area. It appeared that more stone circles could be present beyond the project area but due to limiting the inventory to the project area, their presence could not be confirmed. 32WIX837, isolated find, is across the river from this location, so it is possible the stone circle site and the isolated find are related.

*Integrity and Significance Recommendations*

Because this is a site lead that has not been confirmed, neither its integrity nor its significance per the *North Dakota Century Code* cannot be evaluated at this time. The site lead is outside the project area and will be avoided.



**Figure 24:** Overview of site lead 32Wix838, view east (Image# DMS\_622, 06/10/2023).





**Figure 25:** Overview of site lead 32Wix838, view west (Image# DMS\_624, 06/10/2023).

**Figure 26:** 32Wix838 – Reported site boundary depicted on aerial imagery. (MAP REDACTED)

**EVALUATION OF GOALS**

The cultural resource inventory was undertaken to meet previously stated goals. The inventory of the project area conformed to *North Dakota’s Guidelines for Cultural Resource Inventories* (SHSND 2020), in a manner that would identify and record all cultural resources in the project areas, evaluate and recommend whether they are significant according to *North Dakota Century Code*, and assess the effects of the project on those cultural resources recommended significant. The inventory satisfied those goals.

**SUMMARY AND RECOMMENDATIONS**

Metcalf archaeologists conducted a cultural resource inventory of BEPC’s proposed Pioneer to Judson 345 kV transmission line. Principal Investigator Daniel Salas and Archaeological Technicians Scott Tooker and Matt Kolbe undertook the inventory on May 25, 26, and 27 and June 10, 2023. The archaeologists identified five cultural resources – 32WI2482, 32WI2483, 32Wix837, and 32Wix838 and updated site lead forms for 32Wix103 and 32Wix154. On July 28, 2023, Principal Investigator Daan Means and Archaeological Technician Karin Ohannessian



inventoried a short reroute and found previously recorded site 32WI1201. They updated the site form for this resource.

A summary of the types of sites in the project area and recommendations for each are in Table 4.

<b>Site Number</b>	<b>Site Type</b>	<b>Significance</b>	<b>Recommendation</b>
32WIx103	Cultural material scatter	Unknown	Not in project area
32WIx154	Cultural material scatter	Unknown	Not in project area
32WI1201	Farmstead	Not significant	Not in project area
32WI2482	Historic dump	Not significant	No further work
32WI2483	Historic dump	Not significant	No further work
32WIx837	Isolated find - flakes	Not significant	No further work
32WIx838	Site lead stone circles	Unknown	Not in project area

Metcalf recommends a finding of *No Significant Sites* (North Dakota Century Code Section 49-22-09). No further work is recommended for the parcels reported on herein; survey of the remaining 63.4 acres were not surveyed but will be reported on in an addendum this fall.



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**APPENDIX A: PROJECT MAPS SHOWING RECORDED SITES AND  
CULTURAL RESOURCE PROJECTS**

(All maps redacted for PSC review)



**Map A1:** Basin Electric Cooperative-Pioneer to Judson 345 kV line and previously recorded cultural resources, Red Rock Creek (1974, photorevised 1989) and Trenton NW (1969-PI 1976) USGS 7.5' topographic maps.

**Map A2:** Basin Electric Cooperative-Pioneer to Judson 345 kV Line and previously recorded cultural resources, Trenton NW (1969-PI 1976) and Trenton NE (1962-PI 1976) USGS 7.5' topographic map

**Map A3:** Basin Electric Cooperative-Pioneer to Judson 345 kV Line- and previously recorded cultural resources, Trenton NE (1962-PI 1976) USGS 7.5' topographic map

**Map A4:** Basin Electric Cooperative-Pioneer to Judson 345 kV Line and previous inventories, Red Bank Creek (1974 and photorevised 1989) and Trenton NW (1969-PI 1976) USGS 7.5' topographic maps.

**Map A5:** Basin Electric Cooperative-Pioneer to Judson 345 kV Line and previous inventories, Trenton NW (1969-PI 1976) and Trenton NE (1962-PI 1976) USGS 7.5' topographic map

**Map A6:** Basin Electric Cooperative-Pioneer to Judson 345 kV Line and previous inventories, Trenton NE (1962-PI 1976) USGS 7.5' topographic map.



**APPENDIX B: SHSND SITE AND PROJECT FILES SEARCH RESULTS**



**Table B1: Site Files Search Results – Basin – Pioneer to Judson**

T/R-Section	SITS #	Site Type-Description	Recorder, Date	Eligibility	Tested	MS #
154/102-02	32WI01291	Archaeological-stone circle, pit, cairn, stone arc, stone box, effigy, stone circle alignment, rock art, spiral cairn, projectile point	Youpee/Burns, 2012	Unevaluated	No	009856, 012892, 014249, 015837, 016889, 018058, 018741
	32WI01674	Archaeological-stone circle	Mog, 2014	Unevaluated	No	
	32WI02121	Archaeological-cairn, stone circle	Reiners, 2016	Unevaluated	No	
	32WI02122	Archaeological-stone circle	Reiners, 2016	Unevaluated	No	
	32WI02286	Historical-depression	Christensen, 2017	Not Eligible	No	
	32WI02340	Architectural-one room prairie school house	Wilner, 2019	Unevaluated	No	
	CHFWI0057	Stone circle, cairn, stone feature	Reiners, 2016	Unevaluated	No	
154/102-03	No Sites					003251, 008463, 009856, 012411, 012646, 012892, 015837, 015860, 016513, 016889, 018058, 018235, 018741
154/102-04	No Sites					009856, 012979
154/102-05	No Sites					008463, 012979, 017403, 019119
154/102-06	32WI01310	Archaeological-stone circle, cairn, effigy, stone arc, stone alignment, pit	Youpee/Burns, 2012; Mortensen, 2012	Eligible	No	012979, 017403, 019119
154/102-07	32WI00907	Architectural-bridge	McCormick/Hufstetler, 2000	Not Eligible	No	010128, 017403, 019119
	32WI01310	Archaeological-stone circle, cairn, effigy, stone arc, stone alignment, pit	Youpee/Burns, 2012; Mortensen, 2012	Eligible	No	
	32Wix0758	Archaeological-isolated find: projectile point	Hight/Wiker, 2016	Not Eligible	No	
154/102-08	32WI00907	Architectural-bridge	McCormick/Hufstetler, 2000	Not Eligible	No	004557, 008463, 010128
	32WI02193	Architectural-one room prairie school house	Wilner, 2019	Unevaluated	No	
154/102-09	No Sites					009856, 012979
154/102-10	32WI00085	Archaeological-cairn	Keim, 1985	Not Eligible	No	003251, 008463, 009856, 012411, 012646, 012892, 013713, 015837, 015860, 016513, 016889, 018058, 018235, 018741
	32WI01293	Multicomponent site: Archaeological-cairn, effigy with cairns, depression with cairn; Historical-modern pet cemetery, grave, cloth, masonry, plastic, wood	Mortensen, 2012	Not Eligible	No	
	32WI01446	Historical-machinery, foundation, dump, depression, cultural material scatter- glass, masonry, metal, rubber, wood	Kinsey, 2013; Drake/Hoose/Boston, 2014	Not Eligible	No	
154/102-11	32WI01273	Archaeological-stone circle, cairn	Grant/Burns, 2012	Unevaluated	No	009856, 011942, 012892, 015837, 016889, 018741
	32WI01293	Multicomponent site: Archaeological-cairn, effigy with cairns, depression with cairn; Historical-modern pet cemetery,	Mortensen, 2012	Not Eligible	No	



**Table B1: Site Files Search Results – Basin – Pioneer to Judson**

T/R-Section	SITS #	Site Type-Description	Recorder, Date	Eligibility	Tested	MS #
		grave, cloth, masonry, plastic, wood				
154/102-13	32Wix0606	Historical-isolated find: dump, glass, metal, wood	Mortensen, 2012	Not Eligible	No	011942, 012892, 014058, 015837, 018741
154/102-14	No Sites					009856, 012892, 013713, 014058, 015837, 018741
154/102-15	32WI01184	Archaeological-cairn, possible alignment	Leroy/Wray, 2011; Eigenberger, 2011	Unevaluated	No	003251, 008463, 009856, 012411, 012646, 012865, 012979, 014058, 015837, 015860, 016513, 016889, 018058, 018235, 018741
	32WI01187	Archaeological-stone alignment	Eigenberger, 2011	Unevaluated	No	
	32WI01188	Archaeological-cairn, stone alignment	Eigenberger, 2011	Unevaluated	No	
	32WI01189	Archaeological-cairn	Eigenberger, 2011	Unevaluated	No	
	32WI01190	Archaeological-cairn	Eigenberger, 2011	Unevaluated	No	
	32WI01191	Multicomponent site: Archaeological-cairn, stone circle, stone arc, stone alignment; Historical-depression	Eigenberger, 2011; Mortensen, 2012	Unevaluated	No	
	32WI01192	Archaeological-cairn	Eigenberger, 2011; Meens, 2018	Unevaluated	No	
	32WI01193	Archaeological-cairn	Eigenberger, 2011; Kinsey, 2012	Unevaluated	No	
	32WI01472	Archaeological-stone circle, possible hearth ring	Davidson, 2014; Drake/Hoose/Boston, 2014	Unevaluated	Shovel Probed	
	32WI01761	Archaeological-stone circle, cairn	Ponte, 2015	Unevaluated	No	
	32WI01851	Historical-depression, cultural material scatter- glass, metal, masonry	Kovacs, 2015	Eligible	Shovel Probed	
	32Wix0565	Archaeological-isolated find: chipped stone	Schleicher/Leroy, 2011	Not Eligible	No	
154/102-16	32Wix0103	Archaeological-site lead: campsite, cultural material scatter	Benson, 1980	Unevaluated	No	000080, 008463, 009856, 014058, 019175
154/102-17	No Sites					014058, 015609, 018741
154/102-18	No Sites					013232, 014058, 017403
154/102-19	32Wix0104	Archaeological-site lead: campsite, cultural material scatter	Benson, 1980	Unevaluated	No	000080, 004557, 007279, 008463, 013232, 014058, 019604
	32Wix0355	Historical-isolated find: wood burning stove, stove pipe, metal	McKibbin, 1986	Not Eligible	No	
	32Wix0833	Archaeological-site lead: stone circle	Norman, 2021	Unevaluated	Shovel Probed	
154/102-20	No Sites					007279, 008463, 012256, 013232, 014027, 014058, 018741, 019604
154/102-21	32WI01078	Historical-grave	Morrison, 2010	Unevaluated	No	007279, 008463, 009856, 012256,
	32WI01079	Archaeological-stone circle	Morrison, 2010	Unevaluated	No	



**Table B1: Site Files Search Results – Basin – Pioneer to Judson**

T/R-Section	SITS #	Site Type-Description	Recorder, Date	Eligibility	Tested	MS #
						012993, 014058, 019604, 019632
154/102-22	32WI01330	Archaeological-stone circle, stone alignment, stone arc, other stone feature	Mortensen, 2012	Unevaluated	No	003251, 004557, 007279, 008463, 009856, 011546,
	32Wix0605	Historical-isolated find: dump, metal, wood	Mortensen, 2012	Not Eligible	No	012411, 012646, 012865, 012979, 014058, 015837, 015860, 015938, 016512, 016513, 018058, 018235, 019604
154/102-23	32WI01194	Archaeological-stone circle, cairn, stone arc	Eigenberger, 2011	Unevaluated	No	007279, 008463, 009856, 011942,
	32WI01195	Archaeological-stone circle, cairn	Eigenberger, 2011	Unevaluated	No	012865, 012979,
	32WI01198	Architectural-residence	Palmer, 2011	Not Eligible	No	014058, 015837,
	32WI01214	Archaeological-stone arc	Eigenberger, 2011	Unevaluated	No	016889, 018058,
	32WI01327	Archaeological-cairn, stone circle	Mortensen, 2012	Unevaluated	No	019604
154/102-24	No Sites					004506, 007279, 008463, 011942, 012865, 012892, 012979, 014058, 015837, 016517, 019604
154/102-25	32WI01197	Architectural-Williston Extension Research Center	Palmer, 2011	Not Eligible	No	004506, 007279, 008463, 012892,
	32WI01325	Archaeological-cairn, stone circle	Mortensen, 2012	Unevaluated	No	015837, 018900,
	32WI01326	Archaeological-cairn, stone arc	Mortensen, 2012	Unevaluated	No	019604
154/102-26	32WI01155	Historical-depression, cultural material scatter- faunal remains, ceramics, glass, masonry, metal, wood	Leroy/Schleher, 2010	Not Eligible	Shovel Probed	007279, 008463, 009856, 011942, 012411, 012646, 014475, 015837,
	32Wix0597	Historical-isolated find: line of rocks in streambed	Mortensen, 2012	Not Eligible	No	015938, 016512, 016889, 018058, 018235, 018917, 019604
154/102-27	32WI00955	Archaeological-stone circle	Heiner, 2006	Unevaluated	No	003251, 004232,
	32WI00956	Archaeological-stone circle	Heiner, 2006; Mortensen, 2012	Unevaluated	No	007279, 008463, 009856, 011942,
	32WI01328	Archaeological-cairn	Mortensen, 2012	Unevaluated	No	012411, 012646,
	32WI01329	Archaeological-cairn, stone circle, stone arc, stone alignment	Mortensen, 2012	Unevaluated	No	014475, 015837, 015860, 015938,
	32WI01398	Archaeological-stone circle, stone arc	Friend/Reiners, 2013	Unevaluated	No	016512, 016513, 018235, 019604
	32WI01401	Archaeological-stone circle	Friend/Reiners, 2013	Unevaluated	No	
	32WI01402	Archaeological-stone circle, stone arc	Reiners, 2013	Unevaluated	No	
	32WI01403	Archaeological-stone circle	Reiners, 2013	Unevaluated	No	
	32WI01420	Archaeological-cairn, stone circle, stone arc	Kramer, 2013	Unevaluated	No	



**Table B1: Site Files Search Results – Basin – Pioneer to Judson**

T/R-Section	SITS #	Site Type-Description	Recorder, Date	Eligibility	Tested	MS #
	32Wix0002	Archaeological-site lead: cairn, stone circle, possible effigy	Barbie, 2008; Mortensen, 2012	Unevaluated	No	
154/102-28	32WI01259	Archaeological-stone circle	Morrison, 2012	Unevaluated	No	007279, 008463, 009856, 011942, 013232, 014475, 017664, 019604
	32WI01260	Archaeological-stone circle, cairn	Morrison, 2012	Unevaluated	No	
	32WI01393	Archaeological-stone circle, cairn	Reiners/Friend, 2013	Unevaluated	No	
	32WI01394	Archaeological-stone circle, cairn, hearth, stone arc	Friend/Reiners, 2013	Unevaluated	No	
	32WI01395	Archaeological-stone circle, stone arc, cairn	Friend/Reiners, 2013	Unevaluated	No	
	32WI01396	Archaeological-stone circle	Friend/Reiners, 2013	Unevaluated	No	
	32WI01397	Archaeological-stone circle	Friend/Reiners, 2013	Unevaluated	No	
	32WI01399	Historical-stone wall, foundation, depression, cultural material scatter- metal	Friend/Reiners, 2013	Not Eligible	No	
	32WI01400	Archaeological-stone circle	Reiners, 2013	Unevaluated	No	
	32WI01421	Archaeological-stone circle, cairn	Friend, 2013	Unevaluated	No	
	32WI01422	Archaeological-stone circle	Kramer/Reiners, 2013	Unevaluated	No	
	32WI01423	Archaeological-stone circle, cairn	Friend, 2013	Unevaluated	No	
	32WI01424	Archaeological-stone circle	Kramer, 2013	Unevaluated	No	
154/103-01	32WI01199	Architectural-dwelling	Palmer, 2011	Not Eligible	No	012979
154/103-02	32WI01255	Archaeological-stone circle	Morrison, 2012	Unevaluated	No	013232, 014475
	32WI01256	Archaeological-stone circle	Morrison, 2012	Unevaluated	No	
154/103-03	32WI01200	Architectural-grain bin	Palmer, 2011	Not Eligible	No	013232
154/103-04	32WI01201	Architectural-farmstead	Palmer, 2011	Not Eligible	No	014058
154/103-05	32WI01226	Archaeological-stone circle, cairn, chipped stone	Leroy/Lantz/Yost, 2011	Unevaluated	No	004557, 012829, 014058, 019327
154/103-08	32WI01220	Archaeological-stone circle	Leroy/Lantz/Yost, 2011	Unevaluated	No	004557, 012256, 012829, 014058, 018741
	32Wix0769	Historical-isolated find: glass	Glaab, 2017	Not Eligible	No	
154/103-09	No Sites					012256, 014058, 018741, 019119
154/103-10	No Sites					012256, 019119
154/103-11	No Sites					013232, 014475
154/103-12	32WI02338	Historical-dump, metal, wood	Kidwell, 2018	Not Eligible	No	013232, 017678, 018327
154/103-13	32Wix0600	Archaeological-isolated find: chipped stone	Goggin, 2012	Not Eligible	No	012256, 013232, 014058, 014475, 017403, 017678, 019119
154/103-14	No Sites					014058, 014475, 017403, 019119
154/103-15	No Sites					012256, 014058, 017403, 019119
154/103-16	32Wix0539	Historical-isolated find: dump, ceramics, glass, masonry, metal, plastic, rubber, wood	Morrison, 2010	Not Eligible	No	012256, 014058, 017403, 018741, 019119
154/103-17	No Sites					012256, 012829, 014058, 018741



**Table B1: Site Files Search Results – Basin – Pioneer to Judson**

T/R-Section	SITS #	Site Type-Description	Recorder, Date	Eligibility	Tested	MS #
154/103-20	32WIx0108	Archaeological-site lead: campsite, cultural material scatter	Benson, 1980	Unevaluated	No	007279, 012256, 012829, 014058, 018741, 019175, 019604
154/103-21	32WI01084	Archaeological-cairn	Morrison, 2010	Unevaluated	No	007279, 012256, 014058, 017403, 017951, 018741, 019119, 019175, 019604
	32WIx0109	Archaeological-site lead: campsite, cultural material scatter	Benson, 1980	Unevaluated	No	
154/103-22	32WI01081	Archaeological-cairn	Morrison, 2010	Unevaluated	No	007279, 012256, 014058, 019119
	32WI01305	Historical-machinery, dump, metal, rubber, wood	Rhudy, 2012	Not Eligible	No	
	32WI01306	Historical-metal, wood, masonry	Rhudy, 2012	Not Eligible	No	
	32WI01307	Archaeological-stone circle	Rhudy, 2012	Unevaluated	No	
	32WI01308	Archaeological-cairn, rock shelter	Goggin, 2012	Unevaluated	No	
	32WI01309	Archaeological-stone circle	Goggin, 2012	Unevaluated	No	
	32WI01365	Archaeological-stone circle, pit	Goggin, 2012	Unevaluated	No	
	32WI01366	Archaeological-stone circle	Goggin, 2013	Unevaluated	No	
154/103-23	32WIx0110	Archaeological-site lead: campsite, cultural material scatter	Benson, 1980	Unevaluated	No	007279, 012256, 014058, 014475, 019175, 019604
154/103-24	32WI01080	Archaeological-stone circle	Morrison, 2010	Unevaluated	No	007279, 011942, 012256, 014058, 014475, 019175, 019604
	32WI01082	Archaeological-stone circle, cairn, other stone features	Morrison, 2010	Unevaluated	No	
	32WI01083	Archaeological-cairn	Morrison, 2010	Unevaluated	No	
	32WIx0111	Archaeological-site lead: campsite, cultural material scatter	Benson, 1980	Unevaluated	No	
	32WIx0540	Archaeological-isolated find: chipped stone	Morrison, 2010	Not Eligible	No	
155/103-16	32WI01657	Archaeological-stone circle	Thomas, 2014	Unevaluated	No	015773, 015915, 016465, 018741
	32WI01658	Archaeological-stone circle	Thomas, 2014	Unevaluated	No	
	32WI01695	Archaeological-stone circle	Davidson, 2015	Unevaluated	No	
	32WIx0153	Archaeological-site lead: campsite, cultural material scatter	Benson, 1980	Unevaluated	No	
155/103-17	32WIx0770	Historical-isolated find: metal	Glaab, 2017	Not Eligible	No	018741
155/103-18	32WI00181	Archaeological-stone circle	McKibbin, 1986	Unevaluated	No	002247, 004557, 018741
	32WIx0368	Archaeological-site lead: stone alignment	McKibbin, 1986	Unevaluated	No	
155/103-19	32WI01287	Archaeological-stone circle, cairn	Mortensen, 2012	Unevaluated	No	No Surveys
155/103-20	32WIx0154	Archaeological-site lead: campsite, cultural material scatter	Benson, 1980	Unevaluated	No	012997, 014058, 015773, 015915, 018741, 019828
	32WIx0676	Archaeological-isolated find: chipped stone	Thomas, 2014	Not Eligible	No	
155/103-21	32WI01203	Architectural-schoolhouse	Palmer, 2011	Unevaluated	No	011978, 012818, 012829, 012979, 013232, 014058, 015773, 015915, 015991, 018501, 018659, 018741, 019327
	32WI01270	Historical-dump, glass, metal, faunal remains	Morrison, 2012; Reich, 2019	Not Eligible	No	
	32WI01765	Historical-culvert	Davidson, 2015	Not Eligible	No	
	32WI01766	Historical-culvert	Davidson, 2015	Not Eligible	No	
	32WIx0155	Archaeological-site lead: cultural material scatter	Benson, 1980	Unevaluated	No	



<b>Table B1: Site Files Search Results – Basin – Pioneer to Judson</b>						
<b>T/R-Section</b>	<b>SITS #</b>	<b>Site Type-Description</b>	<b>Recorder, Date</b>	<b>Eligibility</b>	<b>Tested</b>	<b>MS #</b>
155/103-22	32Wix0156	Historical-site lead: Squires Post Office	Benson, 1980	Unevaluated	No	013232, 018501, 018659, 018741, 019327
155/103-27	32WI01202	Architectural-farmstead	Palmer, 2011; Lembo/Reich, 2019	Not Eligible	No	012979, 013232, 018501, 018659
155/103-28	No Sites					012818, 012829, 014058, 018501, 018659, 019327
155/103-29	No Sites					012818, 014058, 019327
155/103-30	No Sites					012818
155/103-31	32WI01170	Archaeological-cairn, stone circle, possible effigy	Banks/Bluemle, 2011	Unevaluated	No	012818, 019769
	32WI01171	Archaeological-cairn	Banks/Bluemle, 2011	Unevaluated	No	
	32WI01172	Archaeological-cairn, stone circle	Bluemle, 2011	Unevaluated	No	
	32WI01173	Archaeological-stone circle	Banks/Bluemle, 2011	Unevaluated	No	
	32WI01174	Archaeological-stone circle	Banks/Bluemle, 2011	Unevaluated	No	
155/103-32	No Sites					012829, 014058, 019327, 019769
155/103-33	32WI00252	Architectural-structures; Historical-machinery, cultural material scatter- glass, metal	Persinger, 1987	Not Eligible	No	004557, 012829, 014058
	32Wix0369	Archaeological-isolated find: chipped stone	Medsker, 1986	Not Eligible	No	
	32Wix0370	Archaeological-isolated find: chipped stone	Medsker, 1986	Not Eligible	No	
155/103-34	32WI01186	Historical-cultural material scatter-ceramics, glass, metal	Eigenberger, 2011	Not Eligible	No	012979

<b>Table B2: Manuscript Files Search Results – Basin – Pioneer to Judson</b>	
<b>MS #</b>	<b>Reference</b>
000080	Adamczyk, T. 1975 Archaeological Inventory Missouri River Reach Between Fort Benton, Montana, and Sioux City, Iowa
002247	Sheldon, C. 1981 A Class III Intensive Inventory of the Proposed Snake Pipeline, Roosevelt County, Montana, and Williams County, North Dakota
003251	Kuehn, D. and J. Borchert 1984 Archaeological Investigations Along the Portal Beaver Lodge to Alexander Pipeline Williams and McKenzie Counties, North Dakota
004232	Blikre, L. and D. Kuehn 1987 A Cultural Resource Inventory of Select Areas Along Highway 1804, Williams County, North Dakota
004506	Borchert, J. 1988 MDU-Basin Charlie Creek to Williston 230 kV Electric Transmission Line, Williams and McKenzie Counties, North Dakota (UW #1016)
004557	Metcalf, M., A. McKibbin, J. Medsker, K. Schweigert and M. McFaul 1988 A Class II Cultural Resource Survey of Five Coal Study Areas, Williams, Divide, Hettinger, Slope, Bowman, Grant, and Adams Counties, Western North Dakota



**Table B2: Manuscript Files Search Results – Basin – Pioneer to Judson**

MS #	Reference
007279	Larson, T. 1998 Results of a Class II and Class III Cultural Resource Inventory for NDDOT Project Area NH-7-002 (038)000, Williams County, North Dakota
008463	Hall, D., S. Knudsen, and J. Lockman 2002 Cultural Resource Investigation Williston to Wolf Point Transmission Line Roosevelt County, Montana and Williams County, North Dakota
009856	Harty, J., P. Heiner, and J. Morrison 2006 Enbridge Pipelines (North Dakota) LLC, North Dakota Pipeline Expansion Project: A Class II and III Cultural Resource Inventory and Evaluative Testing of Three Sites, Williams County, North Dakota
010128	Hufstetler, M. and J. Goff 2005 Historic Bridges in North Dakota 2004 Revision
011546	Austin, D. 2010 Miller Environmental: Trenton North Cell Tower: A Class III Cultural Resource Inventory in Williams County, North Dakota
011942	Bluemle, W. 2004 Williams Rural Water Association 2003-2004: A Class II and III Cultural Resources Inventory in Williams County, North Dakota
011978	Lechert, S. and J. Schleicher 2011 A Class I and Class III Cultural Resource Inventory of the State Line Gas Plant, Williams County, North Dakota
012256	Morrison, J. 2010 Williams County Rural Water Development Phase V Improvements: A Class III Cultural Resource Inventory, Williams County, North Dakota
012411	Baer, S., S. Lechert, J. Schleicher, M. Retter, C. Moret-Ferguson, N. Smith, and C. Herson 2011 A Class I and Class III Cultural Resource Inventory of the Bakken North Pipeline, Williams County, North Dakota
012646	Riordan, C. and A. Leroy 2011 Addendum to a Class I and Class III Cultural Resource Inventory of the Bakken North Pipeline, Williams County, North Dakota
012818	Bluemle, W. 2011 WBI Holding's Stateline Pipeline: A Class III Cultural Resource Inventory in Williams County, North Dakota
012829	Lechert, S., C. Moret-Ferguson, A. Newcomb, S. Yost, and J. Cooper 2011 A Class I and Class III Cultural Resource Inventory of the ONEOK Rockies Midstream Stateline NGL Pipeline, Williams County, North Dakota
012865	Eigenberger, D. and S. Sabatke 2011 Class III Archaeological Inventory for the Basin Electric Power Cooperative Transmission Line Project, Williams County, North Dakota Final Report
012892	Burns, W. 2012 Williston By-Pass Temporary Truck Reliever Route: A Class III Cultural Resource Inventory Williams County, North Dakota
012979	Eigenberger, D., S. Sabatke, and M. Mueller 2011 Class III Cultural Resources Inventory for the Williston to Stateline I Transmission Line Project, Williams County, North Dakota
012993	Christensen, R. 2012 19736: Williston Temporary Bypass- A Class III Cultural Resource Inventory of Selected Tracts
012997	Kinsey, M. 2012 Basin Electric Power Cooperative's Pioneer Station: A Class III Cultural Resource Inventory in Williams County, North Dakota
013232	Morrison, J. and T. Goggin 2012 Stateline Plant to Rawson Pipeline Corridor: Class III Cultural Resource Inventory, McKenzie and Williams Counties, North Dakota
013713	Stine, E. 2012 Mountrail Williams Electric Cooperative's Transmission Line, Segments 232, 233, 241, and 244: A Class III Cultural Resource Inventory in Williams County, North Dakota



**Table B2: Manuscript Files Search Results – Basin – Pioneer to Judson**

MS #	Reference
014027	Wermers, G. 2013 WI-1042 Class III Inventory Report
014058	Goggin, T. and J. Morrison 2013 Western Area Water Supply Project Western Corridor: Class III Cultural Resource Inventory, Williams County, North Dakota
014249	Sabatke, S. and E. Eigenberger 2013 Class III Archaeological Inventory for the Mountrail-Williams Electric Cooperative Williston Section 36 Transmission Line Project, Williams County, North Dakota
014475	Brooks, B. 2013 Class III Intensive Cultural Resource Inventory for the Market Center Pipeline in Mountrail, McKenzie, and Williams Counties, North Dakota (Volumes I-VII)
015609	Larson, J. 2014 Historic Properties Inventory and Documentation for the Telecommunications Tower ND01 Wood Creek, Williams County, North Dakota
015773	Thomas, J. and D. Davidson 2015 Vantage West Spur: A Class III Cultural Resource Inventory in Divide and Williams Counties, North Dakota
015837	Burns, W. 2013 Williston By-Pass Truck Reliever Route [PCN 19377]: A Class III Cultural Resource Inventory in Williams County, North Dakota
015860	Drake, D. and T. Hoose 2015 A Class III Cultural Resource Inventory of North Dakota Pipeline Company, LLC Western Expansion Pipeline Project, McKenzie and Williams Counties, North Dakota
015915	Davidson, D., S. Wagers, and C. Tinti 2015 Addendum Vantage West Spur Pipeline: A Class III Cultural Resource Inventory in Divide and Williams Counties, North Dakota
015938	Mueller, A., C. Picka, M. Terry, and D. Sather 2015 Dakota Access, LLC Dakota Access Pipeline Project (ND) 2014 Dakota Access Class II/III Cultural Resources Inventory
015991	Davidson, D. 2015 Addendum Vantage West Spur Pipeline: A Class III Cultural Resource Inventory in Divide and Williams Counties, North Dakota
016465	Davidson, D., S. Wagers, and C. Tinti 2016 Vantage West Spur Addendum III: Report of Construction Monitoring and Unanticipated Discoveries in Williams and Divide Counties, North Dakota
016512	Mueller, A., C. Picka, M. Terry, and D. Sather 2015 Dakota Access, LLC, Dakota Access Pipeline Project (ND) Volume 1, 2015 Dakota Access Class II/III Cultural Resources Inventory
016513	Landt, M., S. Millward, M. Prouty, K. Harrison, P. Trader, and B. McCord 2016 Dakota Access, LLC, Dakota Access Pipeline Project (ND) Volume III 2015 Dakota Access Cultural Resources Inventory
016517	Friend, T. and W. Burns 2014 Lagoon Material Source Area: A Class III Intensive Cultural Resource Inventory in Williams County, North Dakota
016889	Harty, J., C. Cecil, P. O'Brien, D. Engel, and D. Snortland-Banks 2015 Basin Electric Power Cooperative's Antelope Valley Station to Neset 345 kV Transmission Line: A Class II and Class III Cultural Resource Inventory in Dunn, McKenzie, Mercer, Mountrail, and Williams Counties, North Dakota
017403	Hull, M. and C. von Wedell 2017 Cenex Pipeline, LLC Refined Fuels Pipeline: A Class III Cultural Resource Inventory in Williams, Mountrail, and Ward Counties, North Dakota
017664	Springer, K. 2017 18.ND.PFW.017 Rodney Ledahl Spring Development with Tank Cultural Resources Inventory, Williams County, North Dakota



**Table B2: Manuscript Files Search Results – Basin – Pioneer to Judson**

MS #	Reference
017678	Kaiser, A. and D. Bostyan 2017 Merjent ONEOK Pipeline Conversion: A Class III Cultural Resource Inventory in McKenzie and Williams Counties, North Dakota
017951	Hull, M. 2018 Second Addendum to: Cenex Pipeline, LLC Refined Fuels Pipeline: A Class III Cultural Resource Inventory in Williams, Mountrail, and Ward Counties, North Dakota
018058	Meens, D., et al 2018 Addendum to Basin Electric Power Cooperative’s Antelope Valley Station to Neset 345 kV Transmission Line: A Class II and Class III Cultural Resource Inventory in Dunn, McKenzie, Mountrail, and Williams Counties, North Dakota
018235	Wager, S et al 2015 Class III Cultural Resource Inventory of the Upland Pipeline System Project Study Corridor and Addendum, McKenzie, Williams, Mountrail, and Burke Counties, North Dakota (EEU4936-EXP-EN-RP-0024 & EEU4936-EXP-EN-RP-0031)
018327	Abbott, M 2019 Class III Cultural Resource Inventories for the Knife River Corporation 2018 Material Source Areas in Cass, Sheridan, Pierce, McLean, Burleigh, Richland, and Williams Counties, North Dakota
018501	Schleicher, J and C. Wandler 2015 A Class I and Class III Cultural Resource Inventory of the Springbrook Lateral NGL Pipeline Project and Reroutes, Williams County, North Dakota
018659	Baker, A, B; Brooks, and A. Reich 2019 A Class III Cultural Resource inventory of the Tioga Lateral Pipeline in Williams County, North Dakota
018741	Morrison, J 2020 WAWSA 200K Rural Distribution Line: A Class III Cultural Resource Inventory, Williams County, North Dakota
018900	Keach, L 2020 A Section 106 Report of the Class III Cultural Resources Investigation of Twelve Locations for the Proposed Task Order #1 Mesonet Upgrades Associated with the Upper Missouri River Basin Water Management Plains Snow and Soil Moisture Monitoring Network in North Dakota
018917	Celentano, E and J. Morehouse 2020 Cultural Resource Inventory and Documentation for the 1663 Trenton North Communication Tower
019119	Hull, M 2019 Fourth Addendum to: Cenex Pipeline, LLC Refined Fuels Pipeline: A Class III Cultural Resource Inventory in Williams, Mountrail, and Ward Counties, North Dakota
019175	Hecker, T 1937 Thad Hecker Survey Documentation
019327	Eberwine, J and G. Luoma 2021 Class III Intensive Cultural Resources Survey of the Once-Proposed Bakken Ethane Delivery System Project in Williams County, North Dakota
019604	Norman, W 2021 Project 7-002(176)000 PCN 23007 Stateline to Williston: A Class III Cultural Resource Inventory in Williams County, North Dakota
019632	Brooks, B 2022 A Class III Cultural Resource Inventory of the Coyote Clay Target League Project in Williams County, North Dakota
019769	Brooks, B 2022 A Class III Intensive Cultural Resource Inventory for the Wiseman 31-36-35-34 #2H, Wiseman 31-36-35-34 #3H, and Wiseman 31-36-35-34 #4H Well Pad and Access Road in Williams County, North Dakota
019828	Meens, D 2022 Basin Electric Power Cooperative’s Pioneer Expansion Project: A Class III Cultural Resource Inventory in Williams County, North Dakota



<b>File Search Performed By:</b>	<b>File Search Typed By:</b>
<b>Name, Date</b>	<b>Name, Date</b>
D. Bostyan, 4/3/23	D. Bostyan, 4/8/23



## **Appendix D**

# **Unanticipated Discovery Plan for Cultural Resources and Human Remains**

**Unanticipated Discovery Plan for Cultural  
Resources and Human Remains**

**Pioneer to Judson 345-kV Transmission Line  
Basin Electric Power Cooperative  
Williams County, North Dakota**

September 2023

## Introduction

Although Basin Electric Power Cooperative (Basin Electric) has conducted thorough surveys for cultural resources along the Pioneer to Judson 345-kV Transmission Line Project (Project), the potential exists for exposure of previously unidentified or buried cultural material during excavation and construction of the transmission line as associate facilities. The purpose of the Unanticipated Discovery Plan (UDP) is to document the procedures to be implemented by Basin Electric's construction coordinator and/or contractor if cultural resources, including archaeological sites and possible human remains, are inadvertently discovered during construction. This plan complies with the North Dakota's "Protection of Human Burial Sites, Human Remains, and Burial Goods" law (North Dakota Century Code [NDCC] 23-06-27) and accompanying administrative rules (North Dakota Administrative Code [NDAC] 40-02-03).

## Unanticipated Discovery

In the event that previously unknown cultural (or paleontological) resources are discovered within the Area of Potential Effects (APE) during construction activities for the Project, or should those activities directly or indirectly affect known cultural resources in an unanticipated manner, the following actions, at a minimum, will be initiated by Basin Electric or a representative duly authorized to perform these tasks:

1. All activities will halt in the immediate vicinity of the discovery and all actions will be redirected to areas at least 100 feet from the edge of the discovery.
  - a. Basin Electric's construction coordinator and/or contractor will immediately report the discovery to the appropriate parties identified in the Emergency Contact List found later in this document.
  - b. Ground disturbing construction activities will not occur within 100 feet in any direction from the cultural resource until the site has been properly assessed as described in paragraph 2 (below) and the State Historical Society of North Dakota (SHSND) concurs that construction may resume.
  - c. In the event that a cultural resource specialist or other necessary persons are not immediately available, Basin Electric will require that the discovery be covered or otherwise protected until such time that the cultural resource specialist can be present for inspection and evaluation.
2. Upon arriving at the site of the discovery, the cultural resource specialist will assess the resource. The assessment will include:
  - a. The cultural resource specialist, in conjunction with a tribal monitor if appropriate, will ascertain the nature and the extent of the resource, and the potential for intact deposits. Evaluation will involve an examination of the ground surface, backfill piles, and exposed construction surfaces. The cultural resource specialist will discuss the potential for additional impacts to the resource with the construction manager.
  - b. Based on this examination, the cultural resource specialist will recommend the unanticipated discovery location is:
    - (1) not a site (e.g., isolated find or less than 50 years in age);
    - (2) not a historic property, i.e., not eligible for inclusion in the National Register of Historic Places (NRHP);
    - (3) a historic property, i.e., eligible for inclusion in NRHP or a culturally sensitive site for which no further impacts are likely to occur;
    - (4) an NRHP-eligible or a culturally sensitive site (e.g., exposed hearths, house pits) that is likely to be impacted with further construction; or,
    - (5) a site for which additional information is required to ascertain extent and NRHP eligibility.

The cultural resource specialist will provide information and a recommendation regarding the potential resource to SHSND to determine the most appropriate course of action.

### **Emergency Stabilization of Cultural Resources**

Unstable earth conditions during construction or other unforeseen natural or man-made events could endanger cultural resources discovered during construction of the Project. If cultural resources are in imminent danger of destruction, Basin Electric will apply prudent methods to stabilize landforms around the unanticipated discovery. Once stabilized, the resource shall be assessed as described above, subject to safety concerns.

### **Salvage, Curation or Disposition of Cultural Materials**

As stated in item 2.b.5 above, additional information may be required for the cultural resource specialist to assess the nature and extent of an unanticipated discovery and to provide a recommendation to SHSND regarding NRHP eligibility. With appropriate concurrence from SHSND, cultural materials may be salvaged for this purpose. This does not include cultural resources that are covered under North Dakota's "Protection of human remains, and burial goods" law (NDCC 23-06-27) and accompanying administrative rules (NDAC 40-02-03). All other cultural materials recovered from privately owned lands are considered the property of the landowner. After necessary laboratory analysis is completed, Basin Electric will provide the landowner with photographs and descriptions of cultural material from his/her property. The landowner will be encouraged to contribute the materials for curation at the SHSND. If the landowner desires, Basin Electric will return cultural materials recovered from his/her land to him/her.

### **Unanticipated Discovery of Human Remains**

If construction or other Project personnel identify what they believe to be human remains, they will immediately halt construction at that location and Basin Electric and the cultural resource specialist will be notified immediately. The construction coordinator will ensure that further construction does not occur within an area less than 100 feet in any direction from the edge of the discovery until a cultural resource specialist, in conjunction with Basin Electric environmental personnel, arrive to assess the discovery. The inspector will also secure the area of the apparent human remains to ensure no further disturbance or removal of those remains and associated material.

After arrival at the site, the cultural resource specialist will evaluate the discovery to determine if it does in fact consist of human remains. As required by law, Basin Electric will notify the Williams County Sheriff within 24 hours of the discovery. Basin Electric will also notify the SHSND of the finding.

Basin Electric and/or the contractor will secure the location by means of flagging or roping the perimeter of the avoidance area and covering or otherwise protecting the human remains and any associated materials. The remains will not be further disturbed prior to completion of consultations with respective agencies unless such disturbance is necessary to preserve or protect the human remains. Any disturbance necessary to preserve or protect the remains must be done in consultation with law enforcement, SHSND, and the cultural resource specialist. The 100-foot-radius avoidance area may be expanded if the context of the human remains suggests additional human remains may be present within the construction area or if construction activities outside the 100-foot-radius area might destabilize or otherwise degrade the context of the human remains.

Law enforcement will determine whether the finding is associated with a crime scene within 15 days. If deemed not a crime scene, law enforcement will notify the SHSND of their findings. No cultural resource investigations of human remains can occur without a permit from SHSND. The cultural resource specialist will work with SHSND to obtain a permit to conduct investigations of the location. If the remains are determined to be Native American, or if the ethnic identity of the remains is unknown, SHSND will notify the Intertribal Re-interment Committee. A meeting of interested parties will be set up as soon as possible, preferably within 36 hours of the decision that there is no evidence of a crime, to ensure that the disturbed

remains receive the maximum protection. SHSND, in consultation with the tribes (as appropriate) and Basin Electric, will agree upon a suitable action.

Work cannot proceed until the stipulations of Protection of Human Burial Sites, Human Remains and Burial Goods in NDCC Section 23-06-27 and Protection of Prehistoric Sites and Deposits in NDAC Section 40-02-03 have been met.

### Emergency Contact List

Entity	Name	Role	Telephone Number
Basin Electric Power Cooperative	Lucas Tiegen	Field Coordinator	701.223.0441
Basin Electric Power Cooperative	Erin Fox Dukart	Environmental Administrator	701.426.8116
Basin Electric Power Cooperative	Bobby Nasset	Project Manager	701.223.0441
Metcalf Archaeological Consultants, Inc.	Daan Meens	Cultural Resource Specialist	701.258.1215
Williams County Sheriff's Office	Verlan Kvande	County Sheriff	701.577.7700
Williams County Coroner	Kurt Baade	County Coroner	701.572.6329
State Historical Society of North Dakota	Andrew Clark	Chief Archaeologist	701.328.3574

## **Appendix E**

### **Natural Resource Inventory Report**

**Pioneer Generation Station to Judson 345-kV Transmission  
Project**  
***Williams County, North Dakota***

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***Natural Resources Inventory Report***

**Prepared for:**

**Basin Electric Power Cooperative**

1717 East Interstate Avenue  
Bismarck, North Dakota 58503

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**Prepared by:**

**Chad Tucker**

Western EcoSystems Technology, Inc.  
4007 State Street, Suite 109  
Bismarck, North Dakota 58503  
Phone: (307) 772-1083  
**September 12, 2023**



## **STUDY PARTICIPANTS**

Chad Tucker	Project Manager, GIS Technician
Andrea Palochak	Technical Editor

## **REPORT REFERENCE**

Tucker, C. 2023. Pioneer Generation Station to Judson 345kV Transmission Project, Williams County, North Dakota: Natural Resources Inventory Report. Prepared by Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota. September 8, 2023.

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## **ACRONYMS AND ABBREVIATIONS**

<b>Acronym</b>	<b>Definition</b>
BEPC	Basin Electric Power Cooperative
cm	centimeter
DBH	diameter at breast height
ESA	Endangered Species Act
FR	Federal Register
ft	foot
in.	inch
kV	kilovolt
km	kilometer
m	meter
mi	mile
N	north
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
Pf	palustrine farmed wetland
PGS	Pioneer Generating Station
PLSS	Public Land Survey System
R4SB	riverine intermittent stream bed
R	Range
Sec.	Section
Survey Corridor	530.3 acres
T	Township
USACE	US Army Corps of Engineers
USDA	US Department of Agriculture
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
W	west
WEST	Western EcoSystems Technology, Inc.

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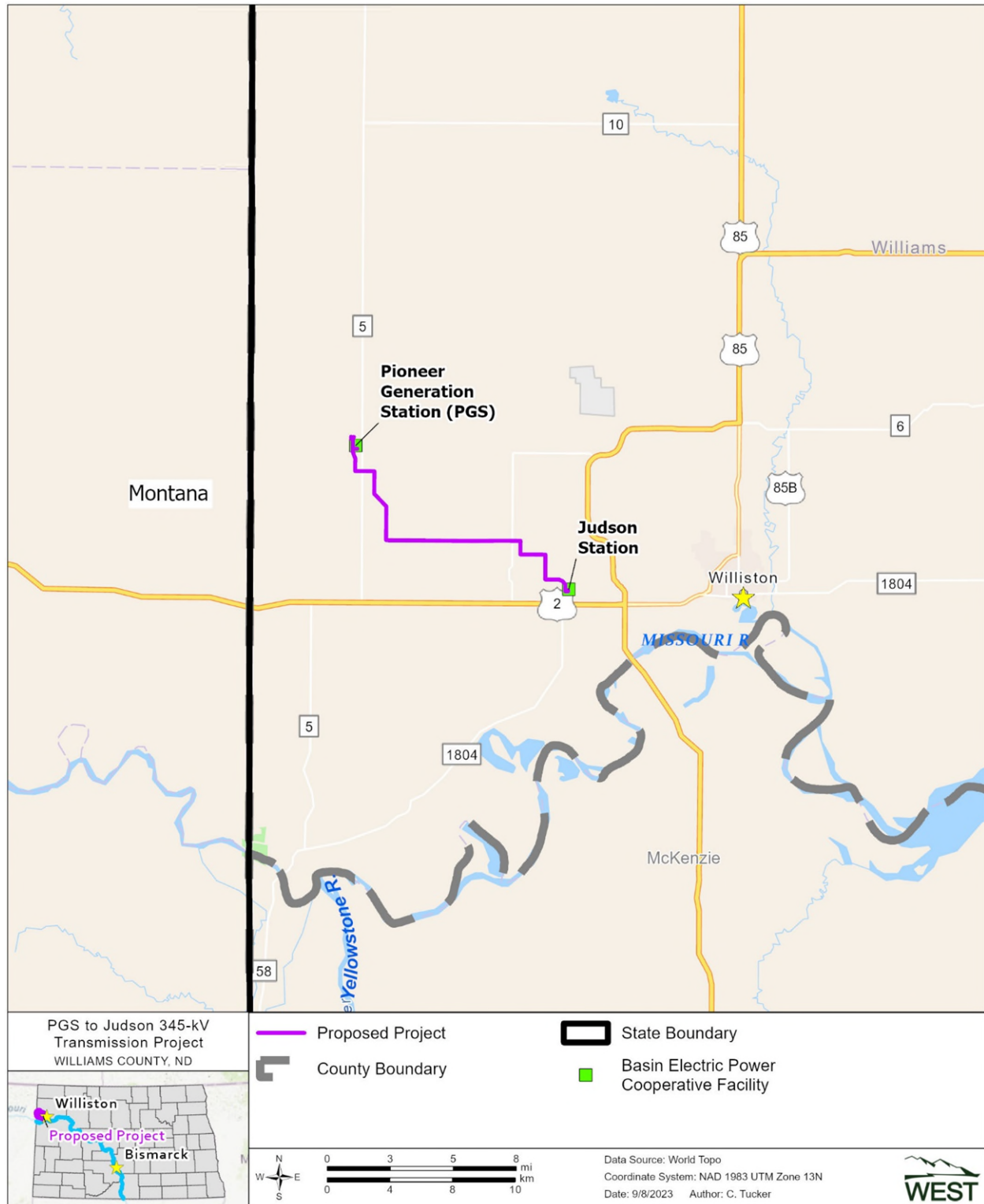
## **1.0 INTRODUCTION**

Basin Electric Power Cooperative (BEPC) proposes to construct and operate the Pioneer Generation Station (PGS) to Judson 345-kilovolt (kV) Transmission Project (Project). Western Ecosystems Technology, Inc. (WEST), was retained by BEPC to provide natural resources inventory services, which include the identification of waterbody/wetland boundaries, an evaluation of habitat for federally listed species, a noxious weed inventory, a woody vegetation inventory, and a line-of-sight raptor nest survey. The proposed Project is located entirely within Williams County, North Dakota. The Project would begin at BEPC’s Judson Station on the west side of the city of Williston and will extend north and west for approximately 14.6 miles (mi; 22.5 kilometers [km]), terminating at the PGS (Figure 1). Table 1 identifies the Public Land Survey System Sections within which the Project is located.

**Table 1. Legal descriptions of the centerline.**

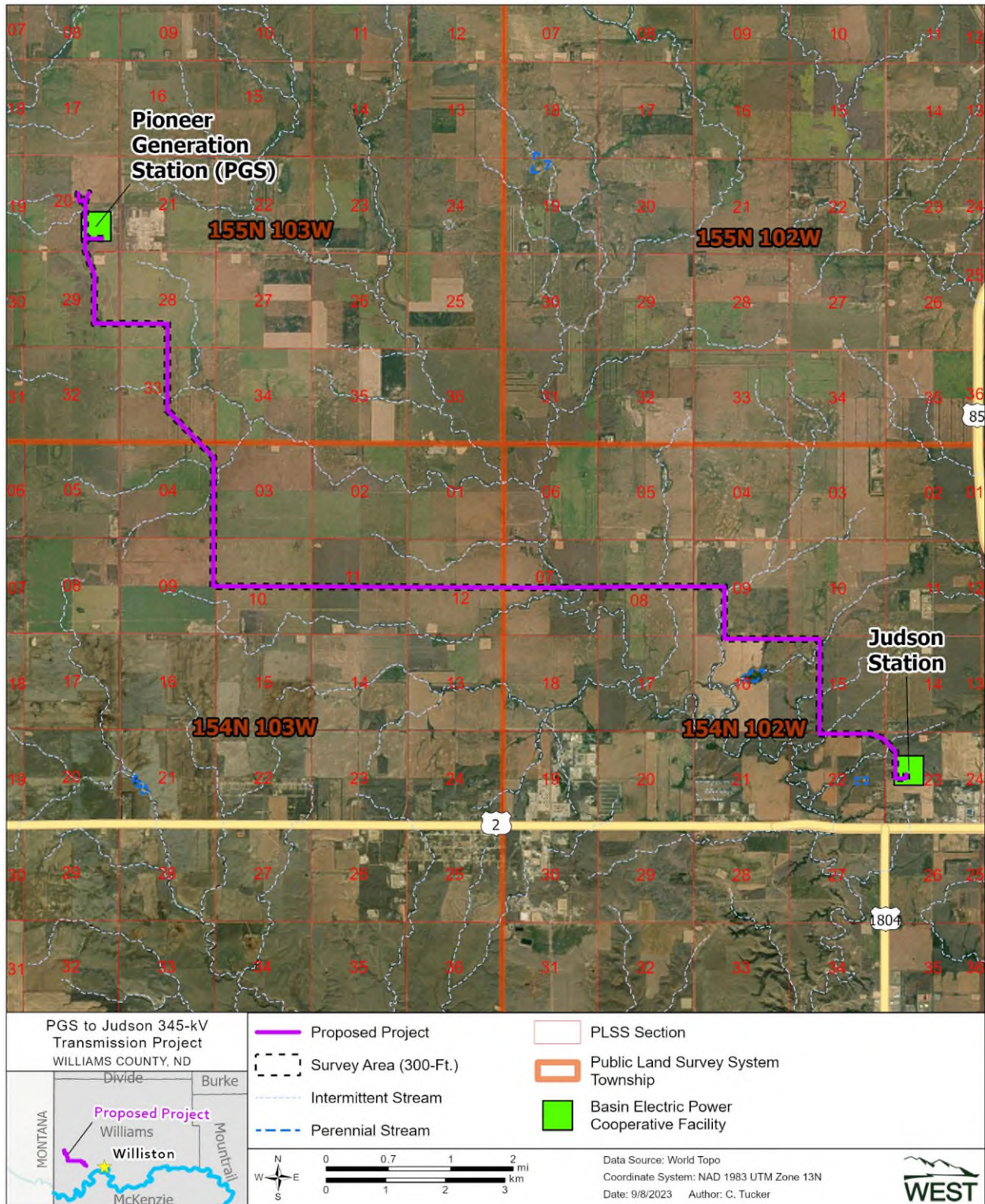
<b>Section</b>	<b>Township</b>	<b>Range</b>
7, 8, 9, 15, 16, 22, 23	154	102
4, 9, 10, 11, 12	154	103
20, 28, 29, 33	155	103

BEPC considered multiple route alignments to minimize impacts to cultural and natural resources. The natural resources discussed in this report are those within the proposed route Survey Corridor, as shown on Figure 1 and Figure 2. The Survey Corridor is 300 feet (ft; 91.4 meters [m]) wide, 150 ft (45.7 m) on either side of the Project centerline. In total, the Survey Corridor contains approximately 530.3 acres (ac; 214.6 hectares [ha]). WEST biologists performed the field surveys on May 2 – May 4, August 1, and September 7, 2023. Geospatial field data was collected using an Android tablet paired with an EOS ARROW Lite Global Positioning System unit capable of recording data to sub-meter accuracy.



**Figure 1. Location of the proposed Pioneer Generation Station to the Judson 345-kilovolt Transmission Project in Williams County, North Dakota.**

**Pioneer Generation Station to Judson 345-kilovolt  
Transmission Project – Natural Resources Inventory Report**



**Figure 2. Detailed view of the proposed Pioneer Generation Station to the Judson 345-kilovolt Transmission Project.**

## 2.0 PROCEDURES

### 2.1 Wetland and Waterbody Field Determination

Wetland identification utilized the presence of hydrophytic vegetation and landscape hydrology and/or topographic position. Waterbody boundaries were recorded utilizing the criteria and definitions provided by the US Army Corps of Engineers (USACE) Ordinary High Water Mark criteria and definitions provided by the US Environmental Protection Agency (USEPA) in *Draft Guidance on Identifying Waters Protected by the Clean Water Act* (USEPA and USACE 2011). Wetlands and waterbodies were field classified in accordance with guidelines set forth in the *Classification of Wetlands and Deepwater Habitats of the United States* by the Federal Geographic Data Committee (2013). The following resources were reviewed prior to the wetland field determination to aid in identifying potential wetlands with the Survey Corridor. Williams County National Agriculture Imagery Program aerial photographs (US Geological Survey [USGS] 2023); US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI; USFWS NWI 2021); USGS National Hydrography Dataset (USGS 2023); and the US Department of Agriculture Natural Resources Conservation Service (USDA NRCS) digital Web Soil Survey (USDA NRCS 2023). The vegetation within the area surveyed was characterized using the hydrophytic criteria as outlined in the *National Wetland Plant List* (USACE 2020). No soil data was collected.

### 2.2 Federally Listed Wildlife Species Evaluation

The USFWS Information for Planning Consultation (IPaC) site was used to review federally listed species within the Survey Corridor and Williams County (USFWS 2023a). The review also included the USFWS designated critical habitat for threatened and endangered species geospatial data (2023b), along with known range, reported occurrences, and habitat needs for each species. Table 2 identifies the federally listed species with the potential for occurrence within the Survey Corridor. Field evaluations were conducted on May 2–4, August 1, and September 7, 2023 to confirm the presence or absence of potentially suitable habitat for federally listed species within the Survey Corridor. Background data was collected for preliminary review and to aid in the field inventory of biological resources.

**Table 2. Federally listed threatened and endangered species.**

Common Name	Scientific Name	Status
Northern long-eared bat	<i>Myotis septentrionalis</i>	Endangered
Whooping crane	<i>Grus americana</i>	Endangered
Dakota skipper*	<i>Hesperia dactotae</i>	Threatened, Critical Habitat Designated
Piping plover	<i>Charadrius melodus</i>	Threatened, Critical Habitat Designated
Red knot (rufa)	<i>Calidris canutus rufa</i>	Threatened
Monarch butterfly	<i>Danaus plexippus</i>	Candidate

\* This species is listed as occurring in Williams County; however, the Project is outside of the current known species range.

Source: US Fish and Wildlife Service 2023a, 2023b

### **2.3 Nesting Raptor Survey**

A 0.5-mi (0.8-km) line-of-sight survey for nesting raptors was conducted for the Project. The survey used 10x power magnification binoculars to scan tree lines and wooded areas from either the Survey Corridor or public roads.

### **2.4 Noxious Weed Inventory**

North Dakota has 13 state-listed noxious weed species. The Williams County Weed Control District lists one additional species as invasive (North Dakota Department of Agriculture 2023). Table 3 provides a list of noxious and/or invasive weed species listed for the Project.

**Table 3. North Dakota State and Williams County listed noxious and invasive weeds.**

<b>North Dakota State Listed Noxious Weeds</b>		<b>Williams County Invasive Weeds</b>	
<b>Common Name</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>Scientific Name</b>
Absinth wormwood	<i>Aremisia absinthium</i>	Narrowleaf hawksbeard	<i>Crepis tectorum</i>
Canada thistle	<i>Cirsium arvense</i>		
Dalmatian toadflax	<i>Linaria genistifolia</i>		
Diffuse knapweed	<i>Centaurea diffusa</i>		
Houndstongue	<i>Cynoglossum officinale</i>		
leafy spurge	<i>Euphorbia esula</i>		
Musk thistle	<i>Carduus nutans</i>		
Palmer amaranth	<i>Amaranthus palmeri</i>		
Purple loosestrife	<i>Lythrum salicaria</i>		
Russian knapweed	<i>Acroptilon repens</i>		
saltcedar	<i>Tamarix chinensis</i>		
Spotted knapweed	<i>Centaurea maculosa</i>		
Yellow toadflax	<i>Linaria vulgaris</i>		

### **2.5 Woody Vegetation (Tree and Shrub) Inventory**

The tree and shrub inventory utilized a methodology previously approved by the North Dakota Public Service Commission. Trees and shrubs were recorded within the Survey Corridor that could potentially be cleared by the Project, including those that are considered non-native species. The location, number, and species of each tree and shrub were documented for this inventory. The trees and shrubs were enumerated by one of two methods: individual count; or by inference utilizing a representative subsample plot to count and then extrapolate the number of individuals or stems based upon the area within the Survey Corridor.

## **3.0 RESULTS**

### **3.1 Wetlands**

A pre-survey review of the USFWS NWI database identified seven palustrine emergent persistent wetlands and five palustrine farmed (Pf) wetlands (USFWS NWI 2023). The field survey identified 18 wetlands, covering 7.49 ac (3.03 ha). Nine of the wetlands are associated with drainage features and nine wetlands are isolated natural depressions. Additionally, three of the Pf classified NWI signatures were found to not exhibit wetland hydrology or contain hydric vegetation. Upland

points were recorded at these sites. Wetland information is summarized in Table 4 and point locations are identified in Appendix A. Photographs of the Survey Corridor are included in Appendix B.

**Table 4. Wetlands documented within the Survey Corridor**

<b>Name</b>	<b>Classification</b>	<b>Type</b>	<b>PLSS</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Acres</b>
Wetland 1	PEMA	Depression	Sec. 20, T155N, R103W	48.231695	-103.957675	0.04
Wetland 2	PEMC	Depression	Sec. 29, T155N, R103W	48.216760	-103.955137	2.70
Wetland 3	PEMA	Drainage	Sec. 4, T154N, R103W	48.193774	-103.928867	0.08
Wetland 4	PEMA	Depression	Sec. 12, T154N, R103W	48.176324	-103.869885	0.04
Wetland 5	PEMA	Depression	Sec. 12, T154N, R103W	48.176500	-103.869633	0.15
Wetland 6	PEMC	Depression	Sec. 7, T154N, R102W	48.176093	-103.850231	1.53
Wetland 7	PEMA	Drainage	Sec. 7, T154N, R102W	48.176473	-103.848318	0.69
Wetland 8	PEMA	Drainage	Sec. 7, T154N, R102W	48.176145	-103.846963	0.44
Wetland 9	PEMA	Drainage	Sec. 7, T154N, R102W	48.176195	-103.845965	0.40
Wetland 10	PEMA	Depression	Sec. 7, T154N, R102W	48.176043	-103.842339	0.01
Wetland 11	PEMA	Depression	Sec. 7, T154N, R102W	48.176181	-103.842044	0.12
Wetland 12	PEMA	Depression	Sec. 8, T154N, R102W	48.176347	-103.828326	0.05
Wetland 13	PEMC	Depression	Sec. 9, T154N, R102W	48.176196	-103.813131	0.08
Wetland 14	PEMC	Drainage	Sec. 9, T154N, R102W	48.174514	-103.812883	0.45
Wetland 15	PEMC	Drainage	Sec. 9, T154N, R102W	48.171399	-103.813644	0.41
Wetland 16	PEMC	Drainage	Sec. 16, T154N, R102W	48.168696	-103.813722	0.03
Wetland 17	PEMA	Drainage	Sec. 16, T154N, R102W	48.168426	-103.803898	0.10
Wetland 18	PEMA	Drainage	Sec. 15, T154N, R102W	48.167475	-103.791549	0.17
<b>Total</b>						<b>7.49</b>

N = north, PEMA = palustrine emergent temporarily flooded wetland, PEMC = palustrine emergent seasonally flooded wetland, PLSS = Public Land Survey System, R = Range, Sec. = Section, T = Township, W = west.

### **3.2 Waterbodies**

The pre-survey review of the USFWS NWI database indicated two palustrine aquatic bed semi-permanently flooded freshwater ponds and 14 riverine features. The field survey identified 22 waterbodies, totaling 2.54 ac (1.03 ha) within the Survey Corridor. Of the 22 waterbodies, 18 are classified as ephemeral drains, three are intermittent streams, and one is a man-made waterbody. Waterbody information is summarized in Table 5, and waterbody locations are identified in Appendix A and Figure 2. Photographs of the Survey Corridor are included in Appendix B.

**Table 5. Waterbodies documented with the Survey Corridor.**

<b>Name</b>	<b>Classification</b>	<b>Comment</b>	<b>PLSS</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Acres</b>
Waterbody 1	Ephemeral drain	Upland drain	Sec. 20, T155N, R103W	48.23325	-103.957928	0.03
Waterbody 2	Ephemeral drain	Upland drain	Sec. 20, T155N, R103W	48.231404	-103.957982	0.02
Waterbody 3	Ephemeral drain	Upland drain	Sec. 28, T155N, R103W	48.216064	-103.943237	0.02
Waterbody 4	Ephemeral drain	Upland drain	Sec. 28, T155N, R103W	48.213137	-103.939382	0.03
Waterbody 5	Ephemeral drain	Upland drain	Sec. 33, T155N, R103W	48.212418	-103.939096	0.01
Waterbody 6	Ephemeral drain	Upland drain	Sec. 33, T155N, R103W	48.208969	-103.939068	0.02
Waterbody 7	Ephemeral drain	Upland drain	Sec. 33, T155N, R103W	48.205345	-103.938781	0.01
Waterbody 8	Ephemeral drain	Upland drain	Sec. 33, T155N, R103W	48.204366	-103.93884	0.02
Waterbody 9	Ephemeral drain	Upland drain	Sec 4, T154N, R103W	48.193924	-103.928365	0.05
Waterbody 10	Ephemeral drain	Upland drain	Sec 4, T154N, R103W	48.192329	-103.928229	0.08
Waterbody 11	Ephemeral drain	Upland drain	Sec. 10, T154N, R103W	48.176062	-103.920731	< 0.01
Waterbody 12	Intermittent stream	Intermittent	Sec. 7, T154N, R102W	48.176362	-103.848116	1.48
Waterbody 13	Ephemeral drain	Upland drain	Sec. 8, T154N, R102W	48.176492	-103.839713	0.03
Waterbody 14	Intermittent stream	Intermittent	Sec. 8, T154N, R102W	48.176535	-103.827265	0.03
Waterbody 15	Ephemeral drain	Upland drain	Sec. 15, T154N, R102W	48.166956	-103.792154	< 0.01
Waterbody 16	Ephemeral drain	Upland drain	Sec. 15, T154N, R102W	48.165485	-103.791668	0.02
Waterbody 17	Intermittent stream	Intermittent	Sec. 15, T154N, R102W	48.160465	-103.791642	0.04
Waterbody 18	Ephemeral drain	Upland drain	Sec. 22, T154N, R102W	48.154298	-103.789922	0.02
Waterbody 19	Ephemeral drain	Upland drain	Sec. 22, T154N, R102W	48.154164	-103.785576	0.02
Waterbody 20	Ephemeral drain	Upland drain	Sec. 23, T154N, R102W	48.152693	-103.776019	0.01
Waterbody 21	Ephemeral drain	Upland drain	Sec. 23, T154N, R102W	48.150449	-103.774437	0.02
Waterbody 22	PEMCx	Excavated	Sec. 23, T154N, R102W	48.148749	-103.774877	0.57
<b>Total</b>						<b>2.54</b>

N = north, PABFh = palustrine aquatic bed semi-permanently flooded and diked freshwater pond, PABFx = palustrine aquatic bed semi-permanently flooded excavated, PEMCx = palustrine emergent seasonally flooded wetland excavated, PLSS = Public Land Survey System, R = Range, R4SB = riverine intermittent stream bed, Sec. = Section, T = Township, W = west.

### **3.3 Threatened and Endangered Species Habitat Assessment**

Threatened and endangered species that have been documented and/or have the potential to occur within the Survey Corridor are listed in Table 2 along with designated critical habitat (USFWS 2023a, 2023b). A review of USFWS species information datasets, along with habitat data gathered from the field surveys, were used to aid in the determinations. Threatened and endangered species information gathered from the review is documented below in the species discussions.

During the field surveys, no federally listed species were observed. Numerous trees (186) (more than three inches [in.] diameter at breast height [DBH]) with the potential to provide summer roosting habitat for the northern long-eared bat were documented. and suitable habitat for the Dakota skipper was documented in three locations.

#### *3.3.1 Northern Long-eared Bat*

The northern long-eared bat (*Myotis septentrionalis*) is a forest-dwelling mammal. The home range of the northern long-eared bat is approximately 150 ac (61 ha), including a summer and winter habitat. In the summer, northern long-eared bats roost under bark or in crevices of trees, preferring to roost in tall trees with greater than three inches (in.; eight centimeters [cm]) DBH, and under the exfoliating bark of dead or dying trees. In the winter, northern long-eared bats hibernate in caves and mines. The northern long-eared bat prefers foraging in edge habitats and forests comprising trees with a diversity of life stages (USFWS 2014a).

Occurrences of the northern long-eared bat are uncertain in North Dakota. White-nose syndrome (WNS) currently remains the predominant threat to the northern long-eared bat. North Dakota is included in the current extent of WNS zone per the Final Rule (88 Federal Register [FR] 4908 [January 26, 2023]; USFWS 2023c). With the Final Rule reclassifying the northern long-eared bat as endangered, incidental take of the species is prohibited. To avoid incidental take, it is recommended to conduct tree clearing activities between November 1 to March 31 when bats have either migrated or are hibernating underground caves.

The field survey documented 186 trees that have the potential to provide summer roosting for the northern long-eared were documented in multiple location within the Survey Corridor. The attributes for these locations are listed in Table 6 and depicted in Appendix A. No potential winter hibernacula were observed with the Survey Corridor and there are no known hibernacula in Williams County (North Dakota Game and Fish Department 2023). In addition, flight diverters will be installed on the transmission line to minimize collision risks. Appendix C contains BEPC's Avian and Bat Protection Plan.

**Table 6. Potential habitat for the northern long-eared bat within the Survey Corridor.**

<b>Feature</b>	<b>Tree Points</b>	<b>PLSS</b>	<b>Count</b>
Planted tree rows	T155 Thru T212	SE-1/4, Sec. 33, T155N, R103W	99
Planted tree rows	T20-T66; T-94-T100; T213-T232	NE-1/4, Sec. 4, T154N, R103W	74
Planted tree rows	T-101 thru T-111	SE-1/4, Sec. 4, T154N, R103W	11
Natural growth trees	T-112	NW-1/4, Sec. 22, T154N, R102W	2
<b>Total</b>			<b>186</b>

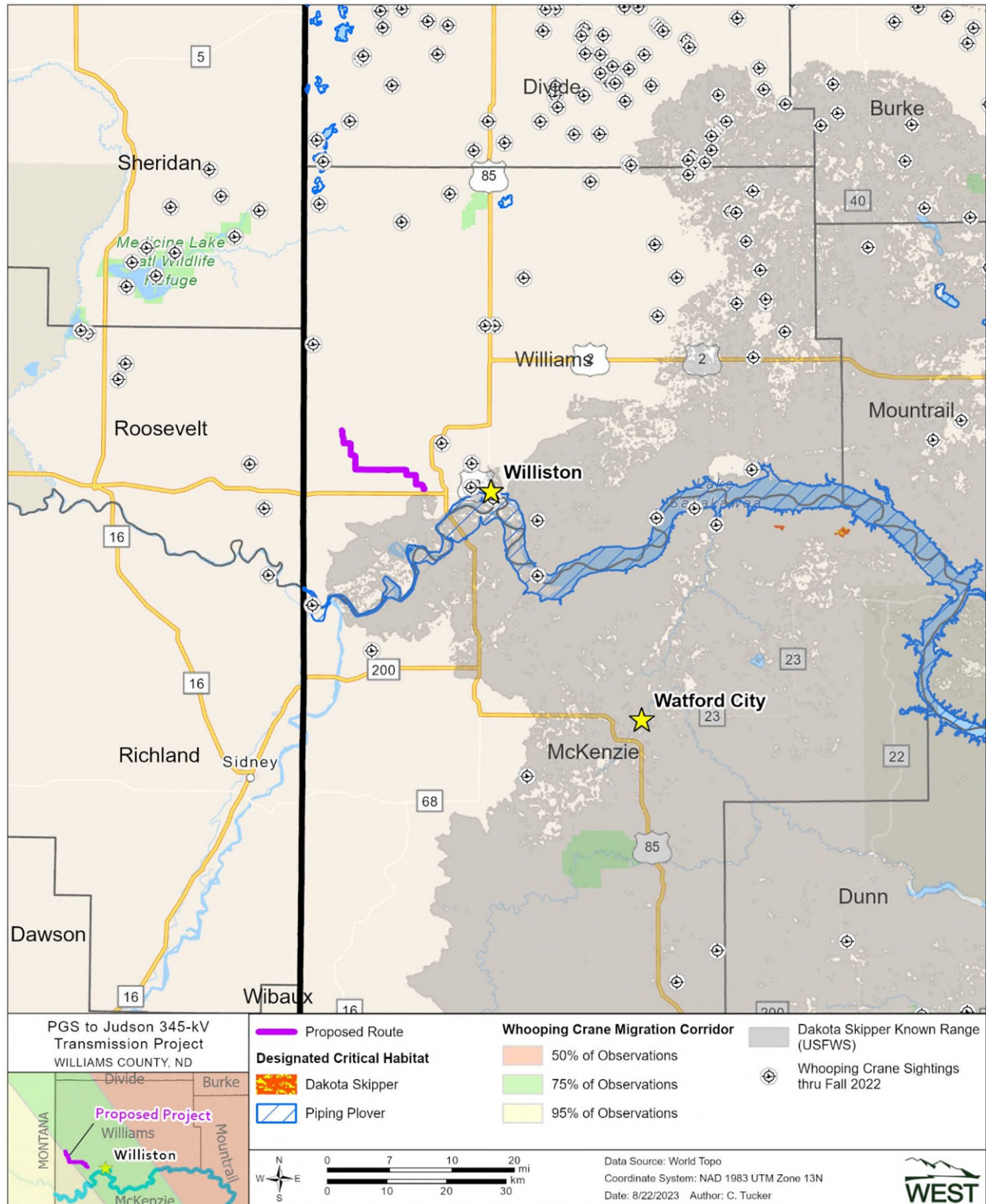
### 3.3.2 Whooping Crane

The primary nesting area for the whooping crane (*Grus americana*) is in Canada’s Wood Buffalo National Park. Aransas National Wildlife Refuge in Texas is the primary wintering area for whooping cranes. In the spring and fall, the cranes migrate, primarily along the Central Flyway. During the migration, whooping cranes make numerous stops, roosting in relatively large, shallow marshes and feeding and loafing in harvested grain fields. The primary threats to whooping cranes are power lines, illegal hunting, and habitat loss.

The whooping crane is federally listed and has the potential to occur in all counties of North Dakota. The Project is located within the migration corridor where 75-95% of whooping cranes travel. Land use within the Project is a mixture of cropland and rangeland, and oil/gas development. The USFWS Database (USFWS 2022) shows Williams County has had 29 verified whooping crane sightings. The closest confirmed sighting to the Project was of two adults and one juvenile whooping crane in 1983, approximately 4.5 mi (7.2 km) northeast of the Project in Sec. 30, T155N, R101W. The sighting locations are depicted on Figure 3.

Noise and vehicle activity during construction activities may cause migratory cranes to divert from the area but would be unlikely to contribute to any indirect or direct effect that would result in an increase of fatalities and, therefore, would be considered insignificant. If a crane is sighted within 1.0 mi (1.6 km) of the project area, construction activities utilizing heavy equipment would be suspended, and the sighting would be promptly reported to the USFWS. In coordination with the USFWS, suspended activities would resume once the bird(s) have left the area. Flight diverters will be installed on the transmission line to minimize bird strikes. Appendix C contains BEPC’s Avian and Bat Protection Plan.

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**Figure 3. Known sightings, species range, and designated critical habitats in relation to the proposed Pioneer Generation Station to Judson 345-kilovolt Transmission Project.**

### 3.3.3 *Dakota Skipper*

The Dakota skipper (*Hesperia dacotae*), a prairie obligate species, requires nectar-producing native flowers and native grasses. Historically, Dakota skippers have been associated with relatively low, wet, prairie-dominated, high-quality, tall grass prairie habitat (Type A habitat). Researchers have found that Dakota skippers also use upland mixed grass prairie that is relatively dry and includes ridges and hillsides (Type B habitat; USFWS 2013a). These habitats often have small inclusions of areas with species more commonly typified with tall grass prairie. Larvae require grass components of mixed-grass prairie that include bluestem grasses (*Andropogon* spp.) and needlegrasses, while adults require nectar sources; therefore, suitable prairie must include nectar-producing forbs. These forbs may include purple coneflower (*Echinacea purpurea*), blue bells (*Campanula rotundifolia*), blanket flower (*Gaillardia aristata*), wood lily (*Lilium philadelphicum*), or other species that are in bloom during the adult life cycle of the Dakota skipper (Dana 1991). The nearest USFWS designated critical habitat for the Dakota skipper is located approximately 36 mi (58 km) east of the Project (Figure 3).

Habitat within the Survey Corridor was assessed and divided into one of three basic habitat groups: suitable habitat, dispersal habitat, and unsuitable habitat. Suitable habitat is defined as native grassland that contains one or more primary constituent elements for the skipper to complete its entire life cycle, including breeding, feeding/foraging, and sheltering behaviors. Dispersal habitat is defined as grassland lacking primary constituent elements needed to complete the entire Dakota skipper life cycle. Grassland was defined as dispersal habitat if it lacked forbs and bunchgrasses. Unsuitable habitat includes everything that does not fit into the above groups and would include cultivated lands, wooded areas, wetlands, and streams (USFWS 2023d; included in Appendix D).

The field survey recorded approximately 4.6 ac (1.9 ha; less than 1%) of suitable habitat within the Survey Corridor. The suitable habitat was documented in three polygons in Sections 15 and 23 of T154N, R102W. Due to a relative lack of requisite forbs and bunchgrasses, 42.9 ac (17.4 ha), or 11%, of the Survey Corridor was characterized as dispersal habitat. Approximately 461.9 ac (186.9 ha; 88%) of unsuitable habitat was documented, primarily from agriculture production and development. Appendix A depicts the locations of the habitat groups within the Survey Corridor.

The species is known to occur in Williams County; however, the Project is located approximately 0.5 mi outside of the USFWS's known range of the Dakota skipper (USFWS 2023a). The USFWS range is the official legal definition for the species' extent. The USFWS recommends limiting disturbance within the documented suitable habitat where possible and to site Project disturbance as close as possible to previously disturbed habitat. The USFWS email correspondence is included in Appendix D.

### 3.3.4 *Piping Plover*

The piping plover (*Charadrius melodus*) is a migratory shorebird that breeds in North Dakota. Suitable nesting habitat for piping plovers includes alkaline wetlands and the shoreline of the Missouri River system; this habitat has been characterized as sparsely vegetated channel

sandbars, sand and gravel beaches on islands, temporary pools on sandbars and islands, and island margins that interface with the river channel. The piping plover feeds on worms, insects, and mollusks. The decline of piping plover populations is due to the loss of habitat from river impoundment(s), as well as the degradation of habitat related to the channelization river systems, nest predation, and human disturbance (USFWS 1985).

Critical habitat for the Northern Great Plains piping plover has been designated on alkali lakes and wetlands, the Yellowstone River, and Missouri River in North Dakota. The physical and biological features that are essential to the conservation of the species, referred to as the primary constituent elements, require special consideration for protection. These include sparsely vegetated alkaline wetlands, sand and gravel beaches on islands, temporary pools on sandbars and islands, and island margins that interface with the river channel. This Project is approximately 3.4 mi (5.5 km) north of the nearest critical habitat, which is the Missouri River system. (Appendix A; USFWS 2023b). The field survey documented that the Survey Corridor is predominantly cropland and contains wetlands and waterbodies that are well vegetated and do not provide bare ground suitable for nesting habitat.

### 3.3.5 *Rufa Red Knot*

The red knot (*Calidris canutus*) is a shorebird breeds in the central Canadian Arctic, with primary breeding grounds in Nunavut Territory, but some potential breeding habitat extending into the Northwest Territories (USFWS 2013b). The rufa red knot (*C. canutus rufa*) winters along the Atlantic coasts of Argentina and Chile (particularly the island of Tierra del Fuego), the north coast of Brazil, and further north into Mexico and the southeast United States (USFWS 2014b). During migration, the rufa red knot primarily follows the Atlantic coastline to and from breeding and wintering grounds. However, geolocator results from red knots wintering in Texas showed that a comparatively small population of birds migrate using the Central Flyway across the Midwestern US and may have a northern Great Plains stopover (USFWS 2013b). Rufa red knots spend two to three months annually on the breeding grounds located in northern Canada.

Red knots are specialized molluscivores, feeding primarily on hard-shelled mollusks in relatively soft, wet sand/sediment (USFWS 2014b). In addition to mollusks, red knots may feed upon shrimp, crabs, marine worms, horseshoe crab (*Limulus* spp.) eggs, and other similar invertebrates. On the breeding grounds, rufa red knots feed mostly on terrestrial invertebrates and grass shoots/seeds (USFWS 2013b).

The shoreline of the Missouri River provides stopover habitat for red knots utilizing a midcontinental migratory route during annual migrations. However, the species is rare and is not reported in North Dakota every year. Reported historical sightings since 1900 (Igl 2015) are primarily composed of single individuals or relatively small flocks; however, on rare occasions, larger flocks have been reported. Many of these sightings have been made in the prairie pothole region during the spring migration in late April through May. An increase in future sightings may result from an increase in public awareness.

The red knot migrates twice annually from its breeding grounds in the Arctic to wintering habitat in southern climates. It does not nest in North Dakota but may use areas along the Missouri River as stopover habitat. The Project is located approximately 3.4 mi north of the Missouri River system and the Survey Corridor does not have suitable shoreline stopover habitat for the rufa red knot.

### 3.3.6 Monarch Butterfly

The monarch butterfly (*Danaus plexippus*) is currently a candidate for listing under the Endangered Species Act (ESA), and a listing decision is currently anticipated in 2024. Candidate species do not receive statutory protections under the ESA, but are reevaluated annually for listing priority, and, therefore, are likely to be listed in the future.

The species occurs throughout the Great Plains and much of North America. Monarchs prefer open habitats with flowering plants and lay their eggs exclusively on milkweeds (*Asclepias* spp.), which the larvae feed on until pupation (U.S. Forest Service [USFS] 2021). Monarch butterflies will breed in North Dakota during the summer and migrate south to Mexico for the winter; eventually, the butterflies will make their way back to North Dakota during spring migration. Suitable habitat, including wetlands, roadsides with common milkweed, and upland grassland habitat with flowering species, was observed during the field survey. Much of the herbaceous habitat is rangeland used for livestock grazing or grasslands in roadside ditches. Due to the presence of suitable habitat, it is possible for this species to occur within the Survey Corridor.

### 3.4 Nesting Raptor Survey

No active raptor nests were observed within 0.5-mi (0.8-km) of the Survey Corridor

### 3.5 Noxious Weed Inventory

A pedestrian survey of the Survey Corridor was conducted for state and county listed noxious weeds. Ten populations of Canada thistle (*Cirsium arvense*) covering 2.05 acres total were documented. Noxious weed attributes are listed in Table 7 and depicted in Appendix A.

**Table 7. Noxious weed locations within the Survey Corridor**

<b>Name</b>	<b>Species</b>	<b>Class</b>	<b>PLSS</b>	<b>Acres</b>
NW-1	Canada thistle	State listed	Sec. 4, T154N, R103W	0.12
NW-2	Canada thistle	State listed	Sec. 4, T154N, R103W	0.57
NW-3	Canada thistle	State listed	Sec. 4, T154N, R103W	0.57
NW-4	Canada thistle	State listed	Sec. 9, T154N, R102W	0.07
NW-5	Canada thistle	State listed	Sec. 9, T154N, R102W	0.02
NW-6	Canada thistle	State listed	Sec. 9, T154N, R102W	0.22
NW-7	Canada thistle	State listed	Sec. 15, T154N, R102W	0.24
NW-8	Canada thistle	State listed	Sec. 15, T154N, R102W	0.24
<b>Total</b>				<b>2.05</b>

### **3.6 Tree and Shrub Inventory**

The inventory documented 6,016 stems of trees and shrubs combined. This includes five shrub species and four tree species. Buffaloberry (*Sherpherdia argentea*) was the most common shrub species at 107 planted stems and 2,717 natural growth stems. Chokecherry (*Prunus virginiana*) was the next most common shrub species at 36 planted stems and 2,805 natural growth stems. Other shrub species documented included hawthorn (*Crataegus chrysocarpa*) at two natural growth stems; Tatarian honeysuckle (*Lonicera tatarica*), non-native, at four natural growth stems; and Siberian peashrub (*Caragana arborescens*), non-native, at 154 planted stems. The tree count included 50 planted Russian olive (*Eleagnus angustifolia*) trees, 39 natural growth green ash trees and two natural growth and 101 planted Siberian elm trees. One planted eastern cottonwood was also documented contains the attributes of the field points taken for the tree and shrub inventory and Table 8 contains the attributes polygons. The results of the inventory are depicted in Appendix A.

**Table 8. Tree and shrub point data.**

<b>Feature</b>	<b>Name</b>	<b>Class</b>	<b>PLSS</b>	<b>Species</b>	<b>Count</b>	<b>Comment</b>
Shrub	S-6	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-7	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-8	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-9	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-10	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-11	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-12	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-13	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-14	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-15	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-16	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-17	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-18	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-19	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-20	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-21	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-22	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-23	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-24	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-25	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-26	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-27	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-28	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-29	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-30	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-31	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-32	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-33	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native

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<b>Feature</b>	<b>Name</b>	<b>Class</b>	<b>PLSS</b>	<b>Species</b>	<b>Count</b>	<b>Comment</b>
Shrub	S-34	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-35	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-36	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-37	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-38	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-39	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-40	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-41	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-42	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-43	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-44	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-45	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-46	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-47	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-48	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-49	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-50	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-51	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-52	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-53	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-54	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-55	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-56	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-57	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-58	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-59	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-60	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-61	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-62	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-63	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native

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<b>Feature</b>	<b>Name</b>	<b>Class</b>	<b>PLSS</b>	<b>Species</b>	<b>Count</b>	<b>Comment</b>
Shrub	S-64	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-65	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-66	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-67	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-68	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-69	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-70	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-71	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-72	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-73	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-74	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-75	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-76	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-77	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-78	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-79	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-80	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-81	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-82	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-83	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-84	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-85	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-86	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-87	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-88	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-89	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-90	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-91	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-92	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-93	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native

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Shrub	S-95	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-96	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-97	Planted	Sec. 7, T154N, R102W	Chokecherry	1	Native
Shrub	S-98	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-99	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-100	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-101	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-102	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-103	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-104	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-105	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-106	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-107	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-108	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-109	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-110	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-111	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-112	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-113	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-114	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-115	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-116	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-117	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-118	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-119	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-120	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-121	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-122	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-123	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-124	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native

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Shrub	S-125	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-126	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-127	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-128	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-129	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-130	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-131	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-132	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-133	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-134	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-135	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-136	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-137	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-138	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-139	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-140	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-141	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-142	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-143	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-144	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-145	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-146	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-147	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-148	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-149	Planted	Sec. 7, T154N, R102W	Buffaloberry	1	Native
Shrub	S-150	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-151	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-152	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-153	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-154	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native

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<b>Feature</b>	<b>Name</b>	<b>Class</b>	<b>PLSS</b>	<b>Species</b>	<b>Count</b>	<b>Comment</b>
Shrub	S-155	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-156	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-157	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-158	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-159	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-160	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-161	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-162	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-163	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-164	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-165	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-166	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-167	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-168	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-169	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-170	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-171	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-172	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-173	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-174	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-175	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-176	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-177	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-178	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-179	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-180	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-181	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-182	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-183	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-184	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native

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<b>Feature</b>	<b>Name</b>	<b>Class</b>	<b>PLSS</b>	<b>Species</b>	<b>Count</b>	<b>Comment</b>
Shrub	S-185	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-186	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-187	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-188	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-189	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-190	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-191	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-192	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-193	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-194	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-195	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-196	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-197	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-198	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-199	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-200	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-201	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-202	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
Shrub	S-203	Planted	Sec. 7, T154N, R102W	Siberian peashrub	1	Non-native
<b>Shrub Point Total</b>					<b>197</b>	
Tree	T-20	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-21	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-22	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-23	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-24	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-25	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-26	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-27	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-28	Planted	Sec. 4, T154N, R103W	Green ash	1	Native

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<b>Feature</b>	<b>Name</b>	<b>Class</b>	<b>PLSS</b>	<b>Species</b>	<b>Count</b>	<b>Comment</b>
Tree	T-29	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-30	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-31	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-32	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-33	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-34	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-35	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-36	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-37	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-38	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-39	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-40	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-41	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-42	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-43	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-44	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-45	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-46	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-47	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-48	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-50	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-51	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-52	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-53	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-54	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-55	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-56	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-57	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-58	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-59	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native

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<b>Feature</b>	<b>Name</b>	<b>Class</b>	<b>PLSS</b>	<b>Species</b>	<b>Count</b>	<b>Comment</b>
Tree	T-60	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-61	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-62	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-63	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-64	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-65	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-66	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-94	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-95	Planted	Sec. 4, T154N, R103W	Russian olive	2	Non-native
Tree	T-96	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-97	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-98	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-99	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-100	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-101	Planted	Sec. 4, T154N, R103W	Eastern cottonwood	1	Native
Tree	T-102	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-103	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-104	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-105	Planted	Sec. 4, T154N, R103W	Siberian elm	1	Non-native
Tree	T-106	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-107	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-108	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-109	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-110	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-111	Planted	Sec. 4, T154N, R103W	Green ash	1	Native
Tree	T-112	Natural growth	Sec. 22, T154N, R102W	Siberian elm	2	Non-native
Tree	T-113	Natural growth	Sec. 22, T154N, R102W	Green ash	3	Native
Tree	T-114	Natural growth	Sec. 22, T154N, R102W	Green ash	3	Native
Tree	T-115	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-116	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native

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<b>Feature</b>	<b>Name</b>	<b>Class</b>	<b>PLSS</b>	<b>Species</b>	<b>Count</b>	<b>Comment</b>
Tree	T-117	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-118	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-119	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-120	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-121	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-122	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-123	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-124	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-125	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-126	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-127	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-128	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-129	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-130	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-131	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-132	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-133	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-134	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-135	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-136	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-137	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-138	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-139	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-140	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-141	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-142	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-143	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-144	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-145	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-146	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native

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<b>Feature</b>	<b>Name</b>	<b>Class</b>	<b>PLSS</b>	<b>Species</b>	<b>Count</b>	<b>Comment</b>
Tree	T-147	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-148	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-149	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-150	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-151	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-152	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-153	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-154	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-155	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-156	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-157	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-158	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-159	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-160	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-161	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-162	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-163	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-164	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-165	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-166	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-167	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-168	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-169	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-170	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-171	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-172	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-173	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-174	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-175	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-176	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native

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<b>Feature</b>	<b>Name</b>	<b>Class</b>	<b>PLSS</b>	<b>Species</b>	<b>Count</b>	<b>Comment</b>
Tree	T-177	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-178	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-179	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-180	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-181	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-182	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-183	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-184	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-185	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-186	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-187	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-188	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-189	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-190	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-191	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-192	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-193	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-194	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-194	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-195	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-196	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-197	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-198	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-199	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-200	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-201	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-202	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-203	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-204	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-205	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native

**Pioneer Generation Station to Judson 345-kilovolt  
Transmission Project – Natural Resources Inventory Report**

<b>Feature</b>	<b>Name</b>	<b>Class</b>	<b>PLSS</b>	<b>Species</b>	<b>Count</b>	<b>Comment</b>
Tree	T-206	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-207	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-208	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-209	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-210	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-211	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-212	Planted	Sec. 33, T155N, R103W	Siberian elm	1	Non-native
Tree	T-213	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-214	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-215	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-216	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-217	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-218	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-219	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-220	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-221	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-222	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-223	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-224	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-225	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-226	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-227	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-228	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-229	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-230	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-231	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
Tree	T-232	Planted	Sec. 4, T154N, R103W	Russian olive	1	Non-native
<b>Tree Point Total</b>					<b>191</b>	

@ = at, " = inches, DBH = diameter at breast height, N = north, R = Range, Sec. = Section, T = Township, W = west

Table 9. Shrub polygon data.

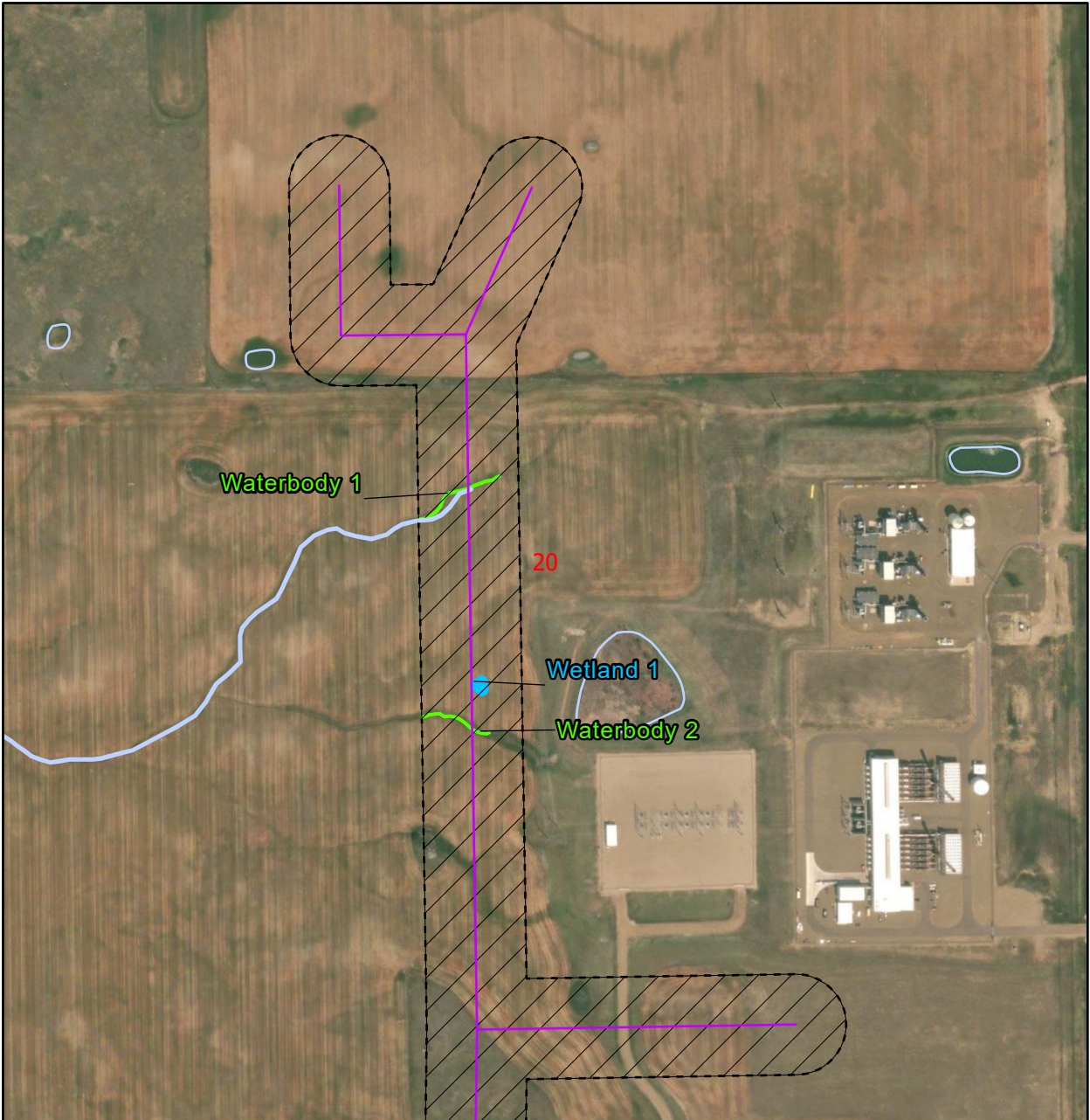
Feature	Name	Class	Location	Acres	Species 1	Count 1	Species 2	Count 2	Species 3	Count 3
Shrub	S-4	Mixed	Sec. 4, T154N, R103W	0.3576 44	Siberian peashrub	100 Planted	Chokecherry	200 (natural)		
Shrub	S-5	Natural growth	Sec. 7, T154N, R102W	0.0649 51	Buffaloberry	526				
Shrub	S-204	Natural growth	Sec. 15, T154N, R102W	0.2091 86	Buffaloberry	1,692	Chokecherry	75		
Shrub	S-205	Natural growth	Sec. 22, T154N, R102W	0.0616 88	Buffaloberry	499				
Shrub	S-206	Natural growth	Sec. 22, T154N, R102W	0.0024 8	Chokecherry	20				
Shrub	S-207	Natural growth	Sec. 22, T154N, R102W	0.0165 25	Chokecherry	100				
Shrub	S-208	Natural growth	Sec. 22, T154N, R102W	0.0177 02	Chokecherry	2145				
Shrub	S-209	Natural growth	Sec. 22, T154N, R102W	0.0185 02	Chokecherry	25				
Shrub	S-210	Natural growth	Sec. 22, T154N, R102W	0.0040 89	Chokecherry	40				
Shrub	S-211	Natural growth	Sec. 22, T154N, R102W	0.0648 54	Chokecherry	200	Titarian honeysuckle	4	Hawthorn	2
<b>Shrub Poly Totals</b>						<b>5,628</b>				

## **4.0 LITERATURE CITED**

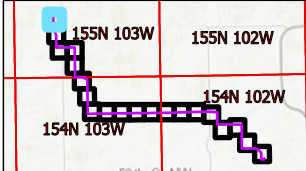
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## **Appendix A. Natural Resource Inventory**



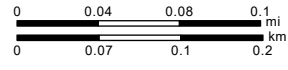
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WILLIAMS COUNTY, ND



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- Survey Corridor (300-Ft.)
- NWI Signature
- Delineated Wetland
- Delineated Waterbody

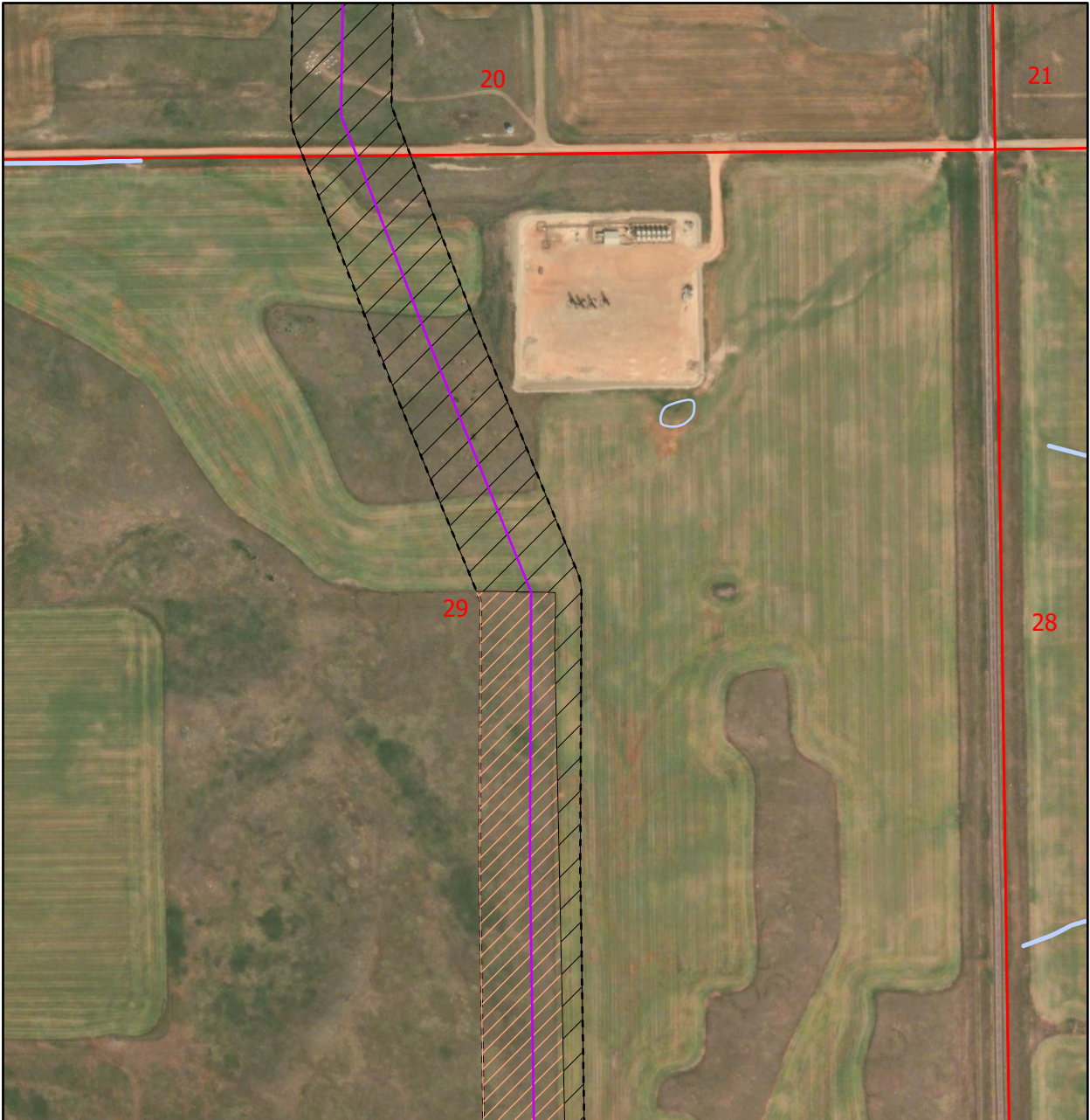
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- Tree Point
- Upland Point

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- Suitable Habitat
  - Dispersal Habitat
  - Unsuitable Habitat

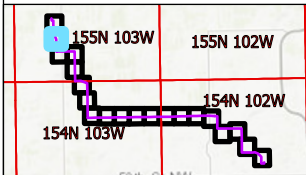


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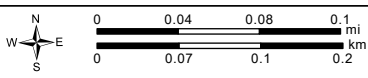
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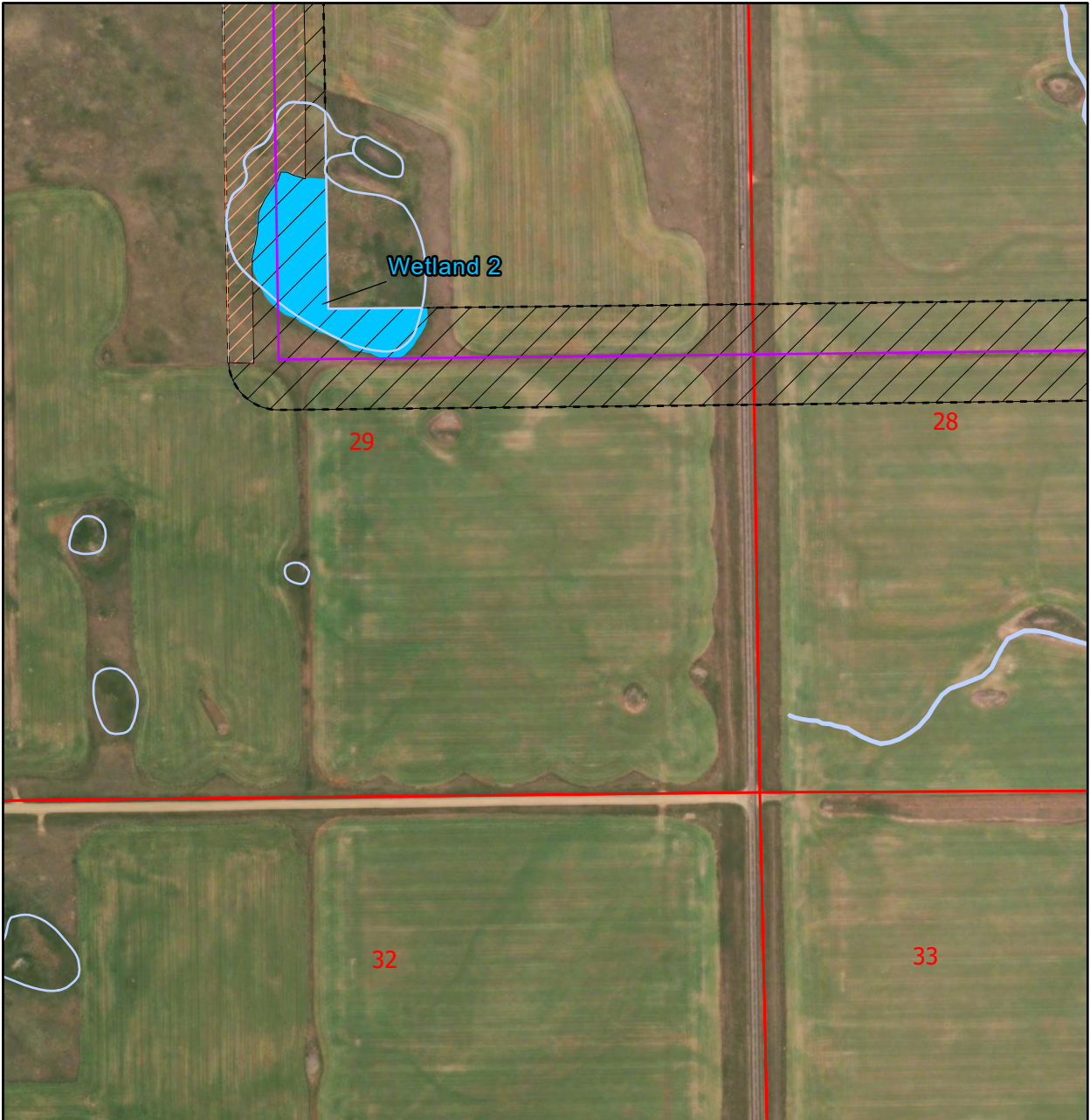
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Wetland 2

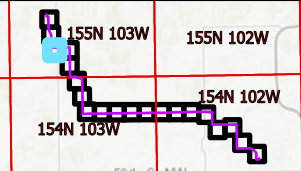
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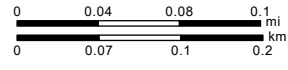
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WILLIAMS COUNTY, ND



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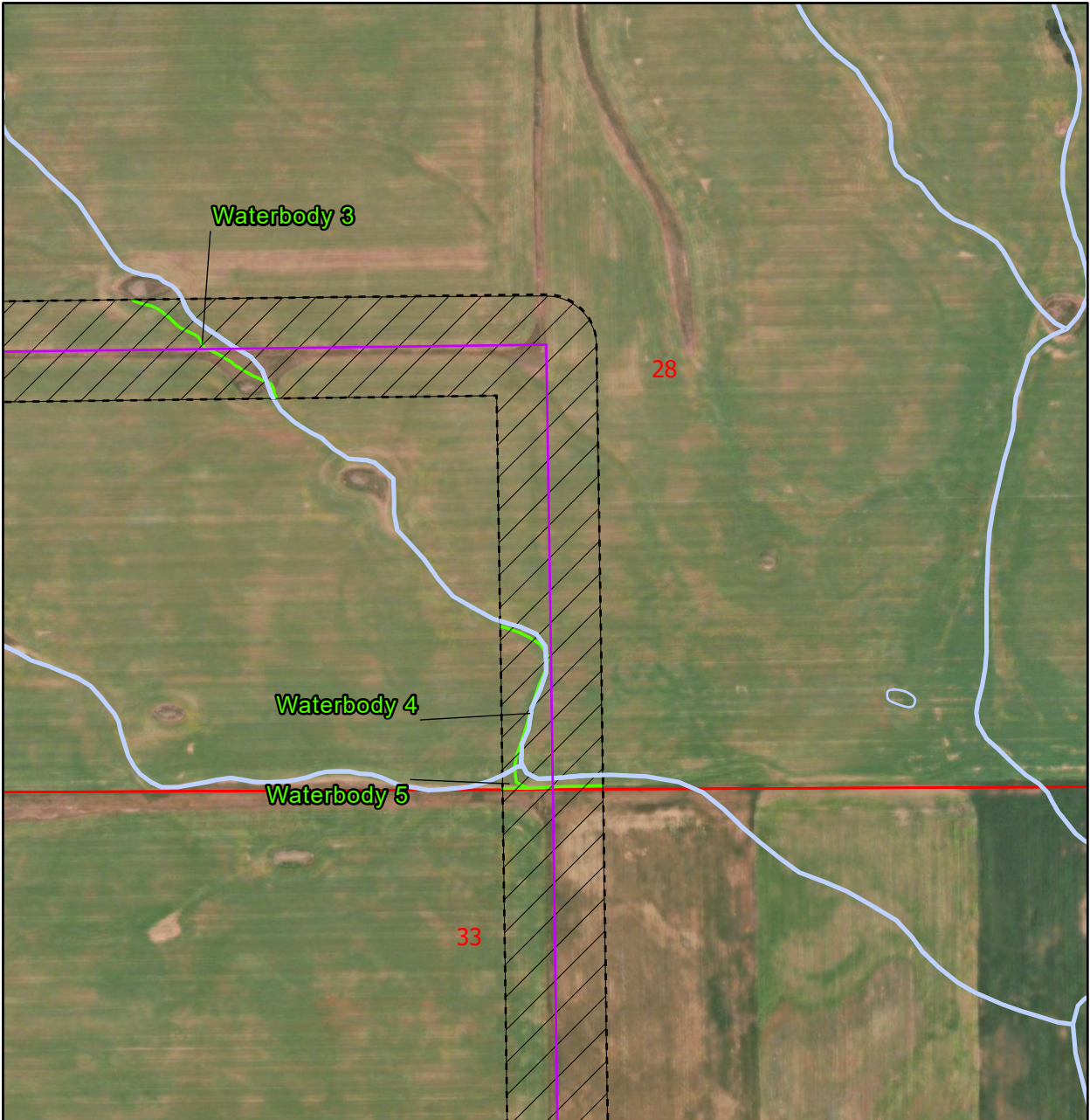
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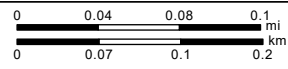
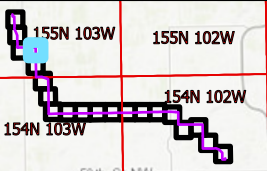


PGS to Judson 345-kV  
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WILLIAMS COUNTY, ND

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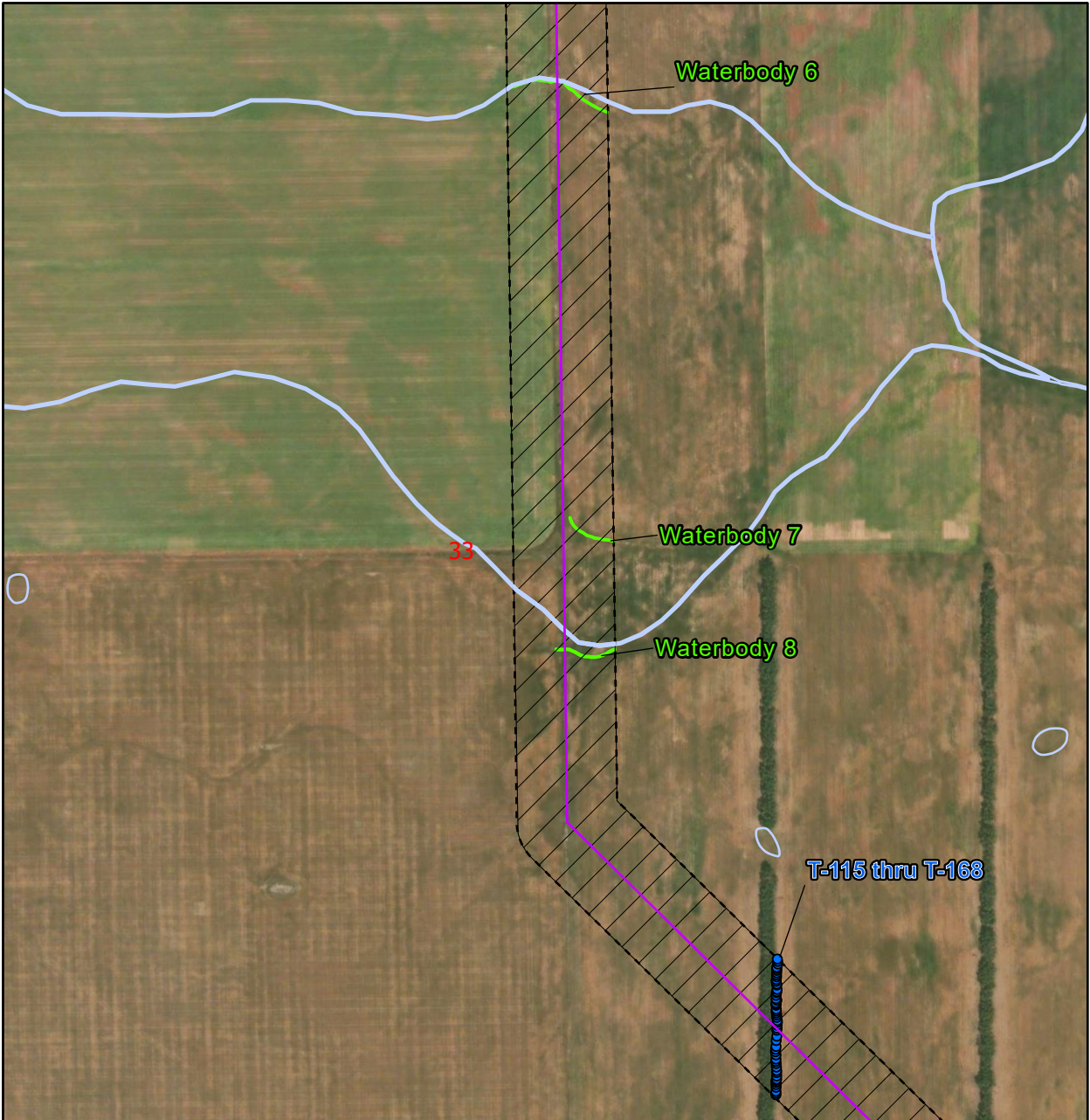
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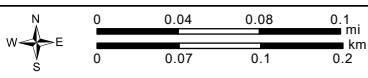
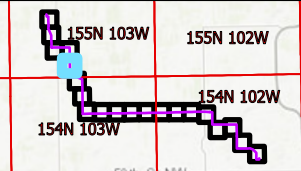
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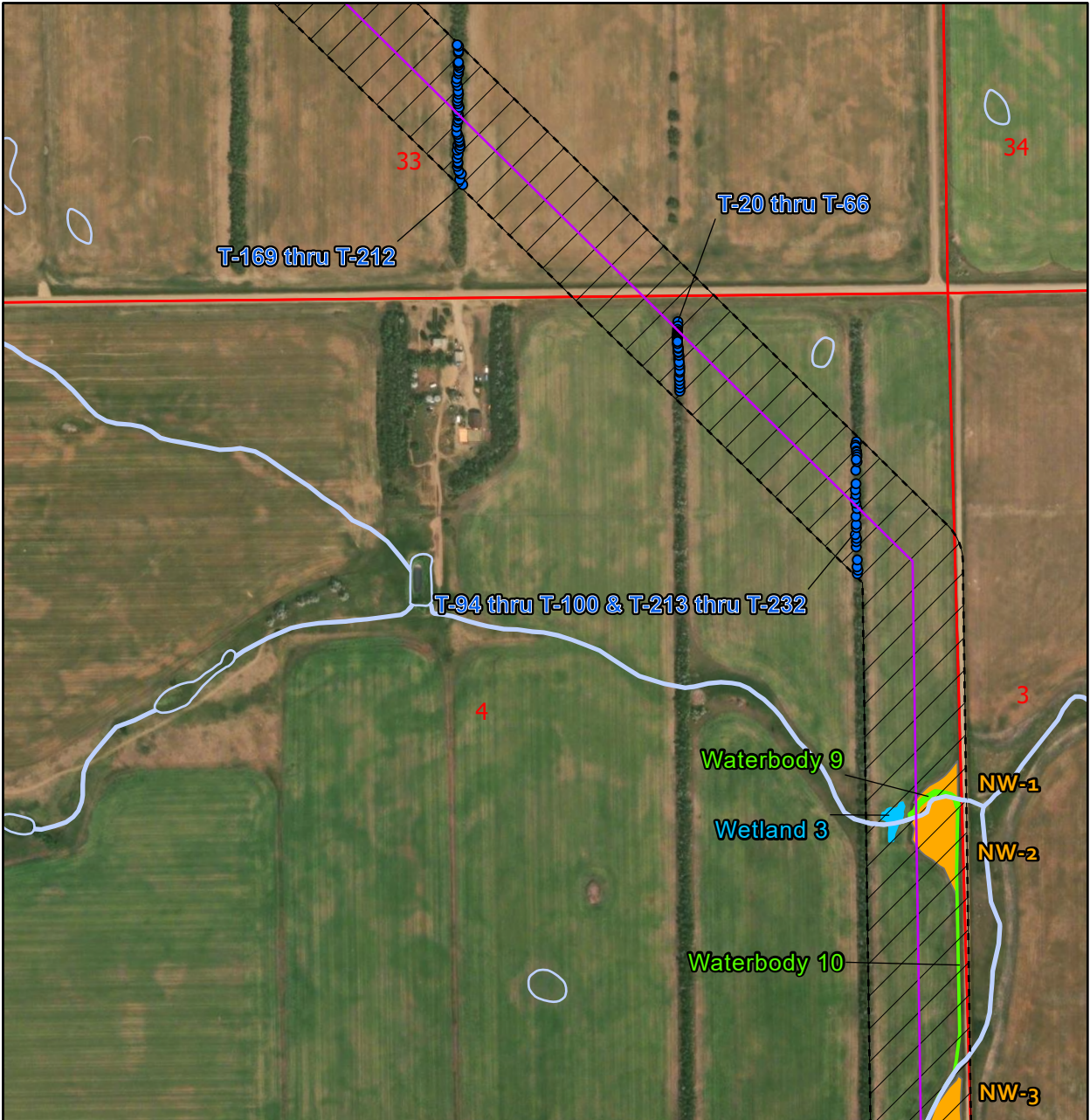
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WILLIAMS COUNTY, ND

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| Survey Corridor (300-Ft.) | Shrub Polygon        |                                |
| NWI Signature             | Shrub Point          |                                |
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| Delineated Waterbody      | Upland Point         | Dispersal Habitat              |
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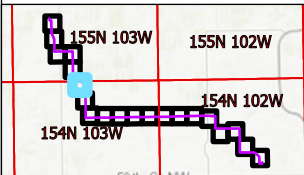


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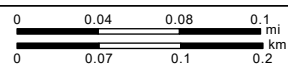
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WILLIAMS COUNTY, ND



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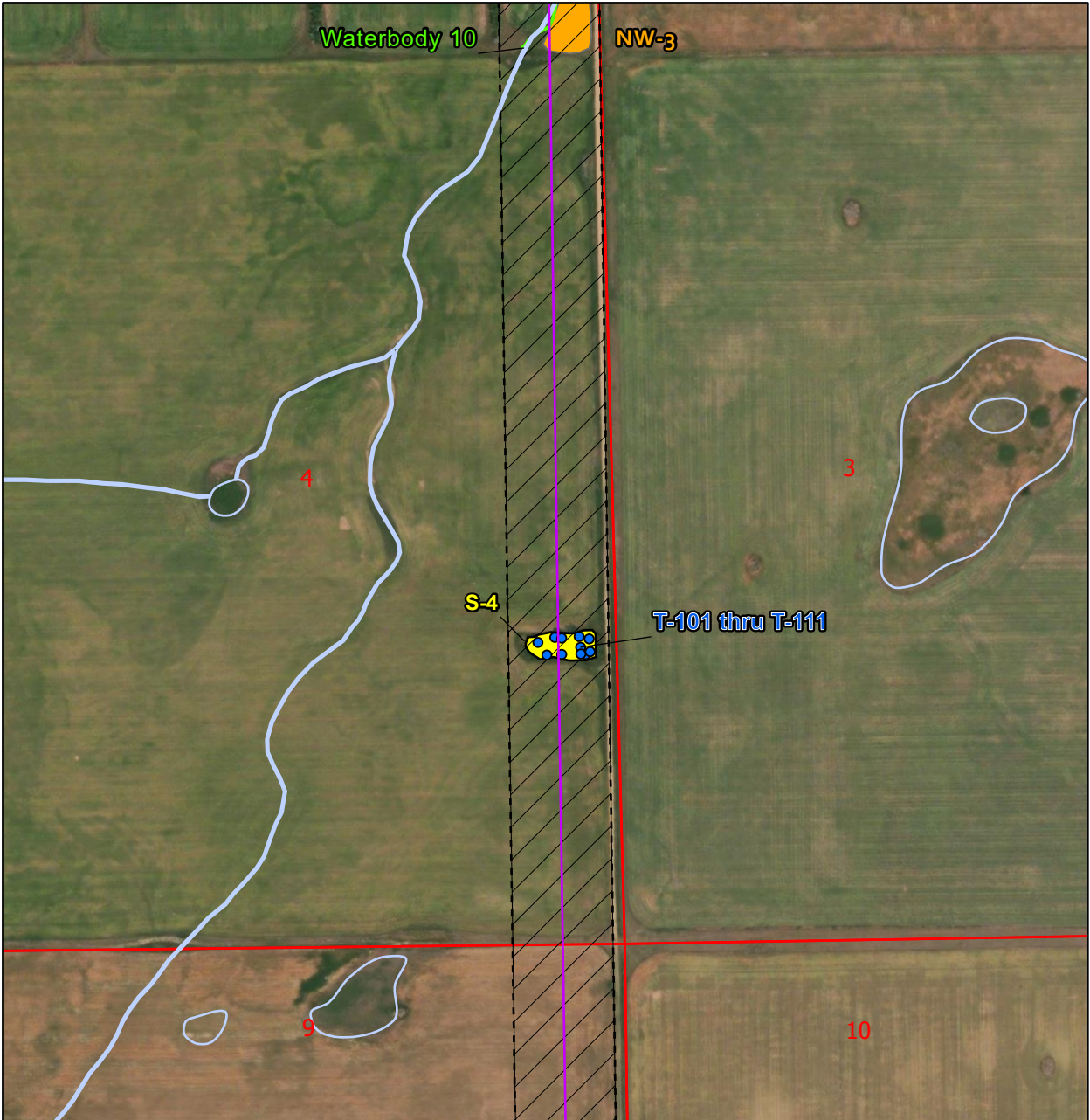
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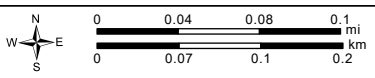
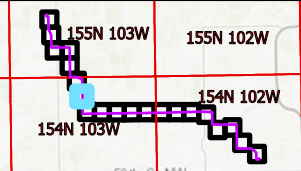


PGS to Judson 345-kV  
Transmission Project  
WILLIAMS COUNTY, ND

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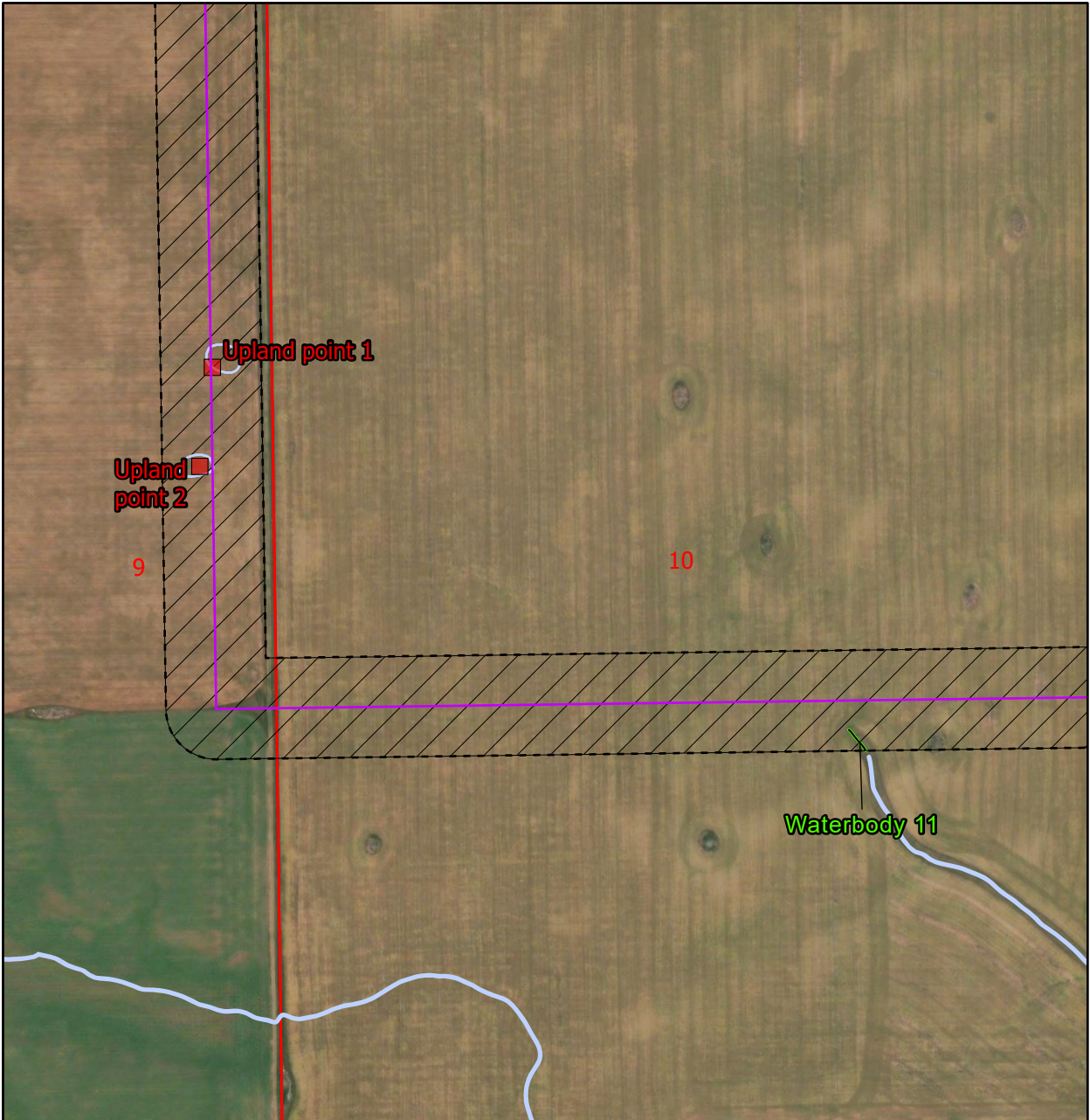
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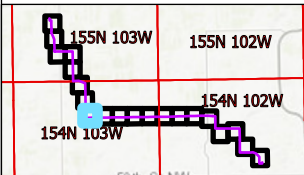


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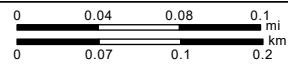
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Transmission Project  
WILLIAMS COUNTY, ND



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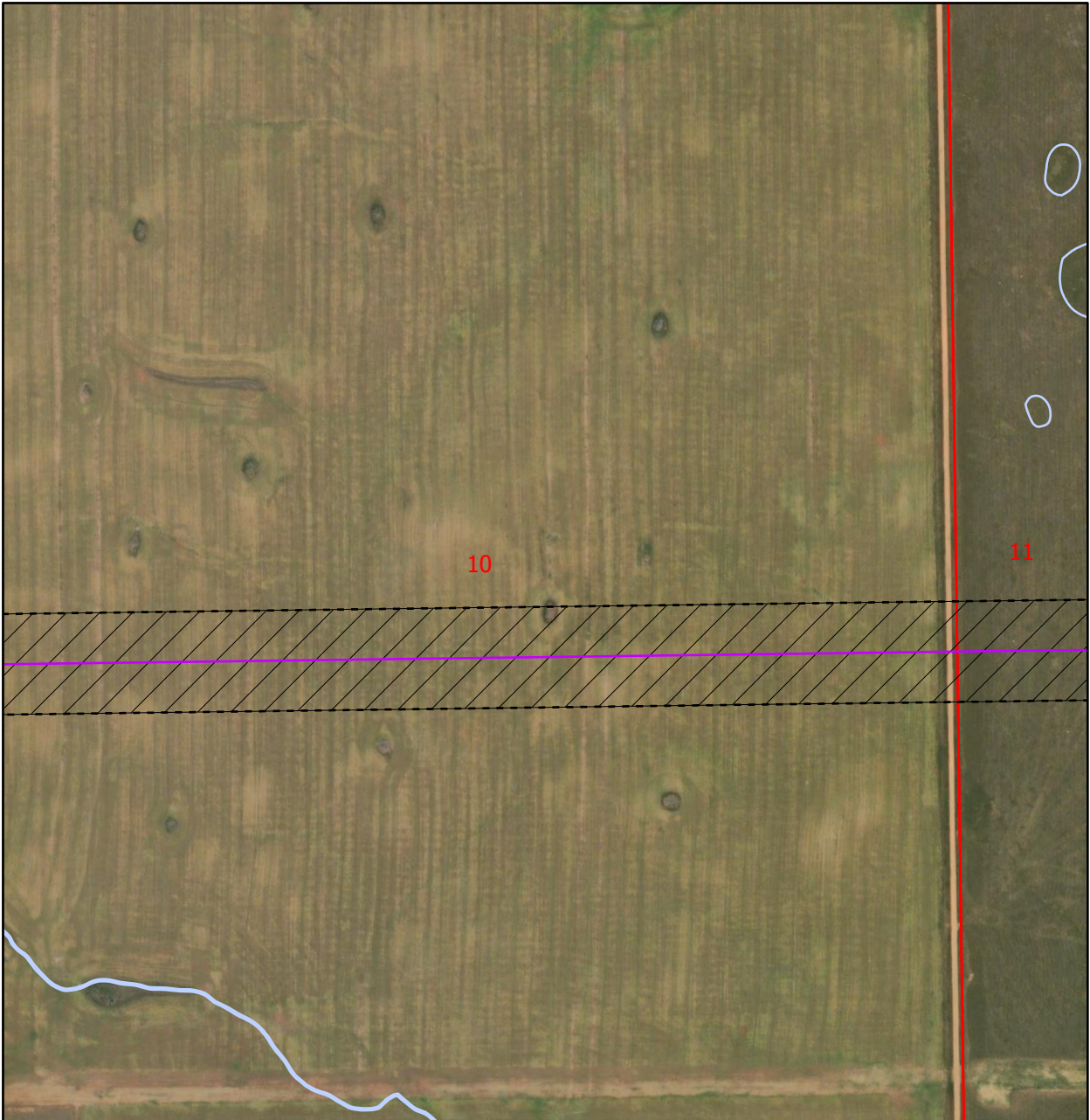
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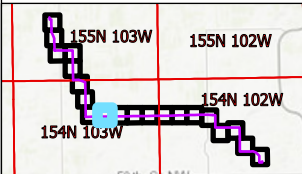


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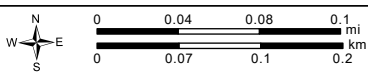
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Transmission Project  
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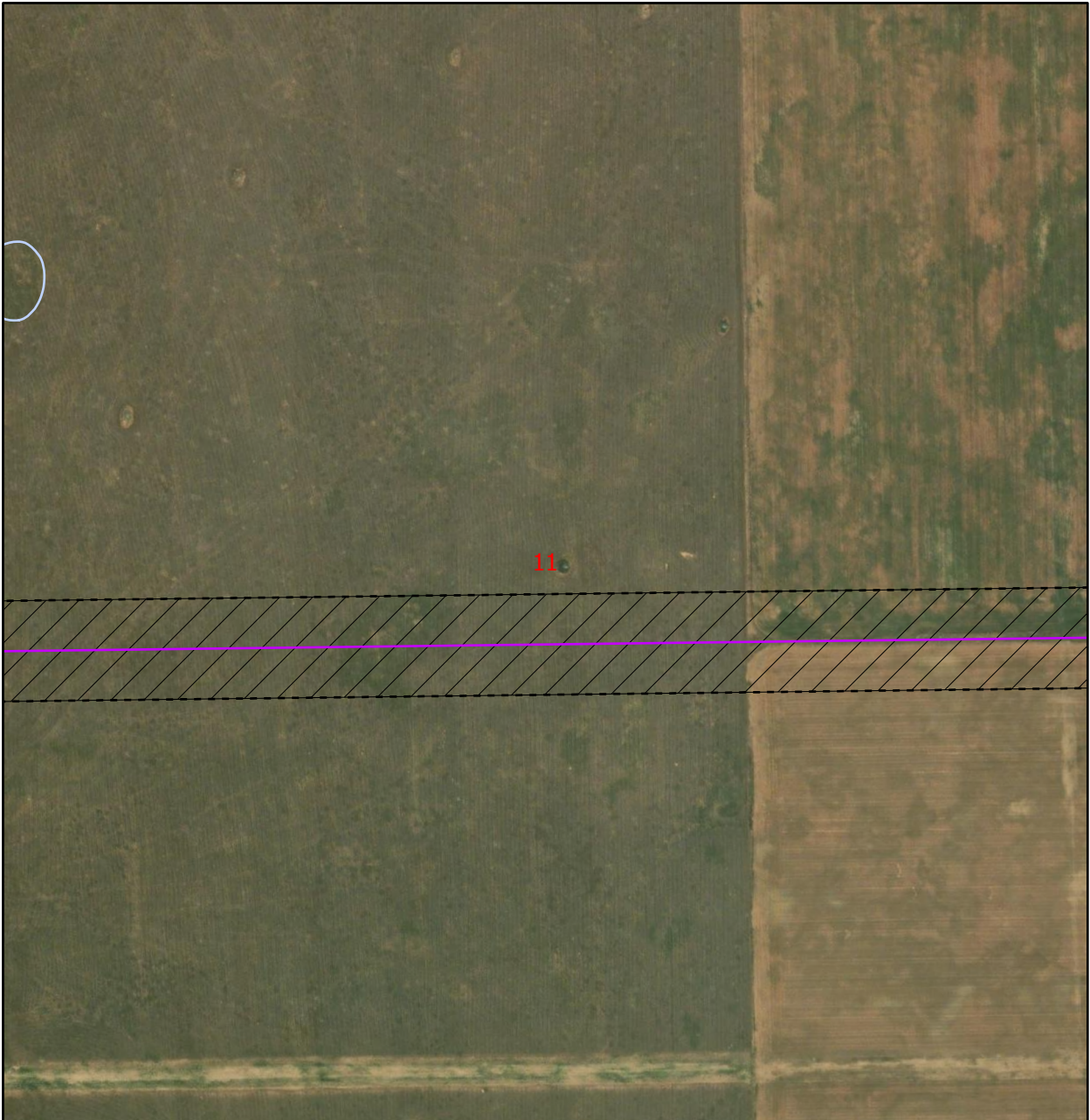
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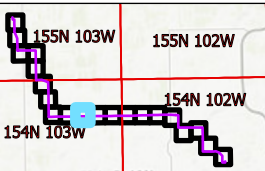


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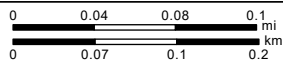
PGS to Judson 345-kV  
Transmission Project  
WILLIAMS COUNTY, ND



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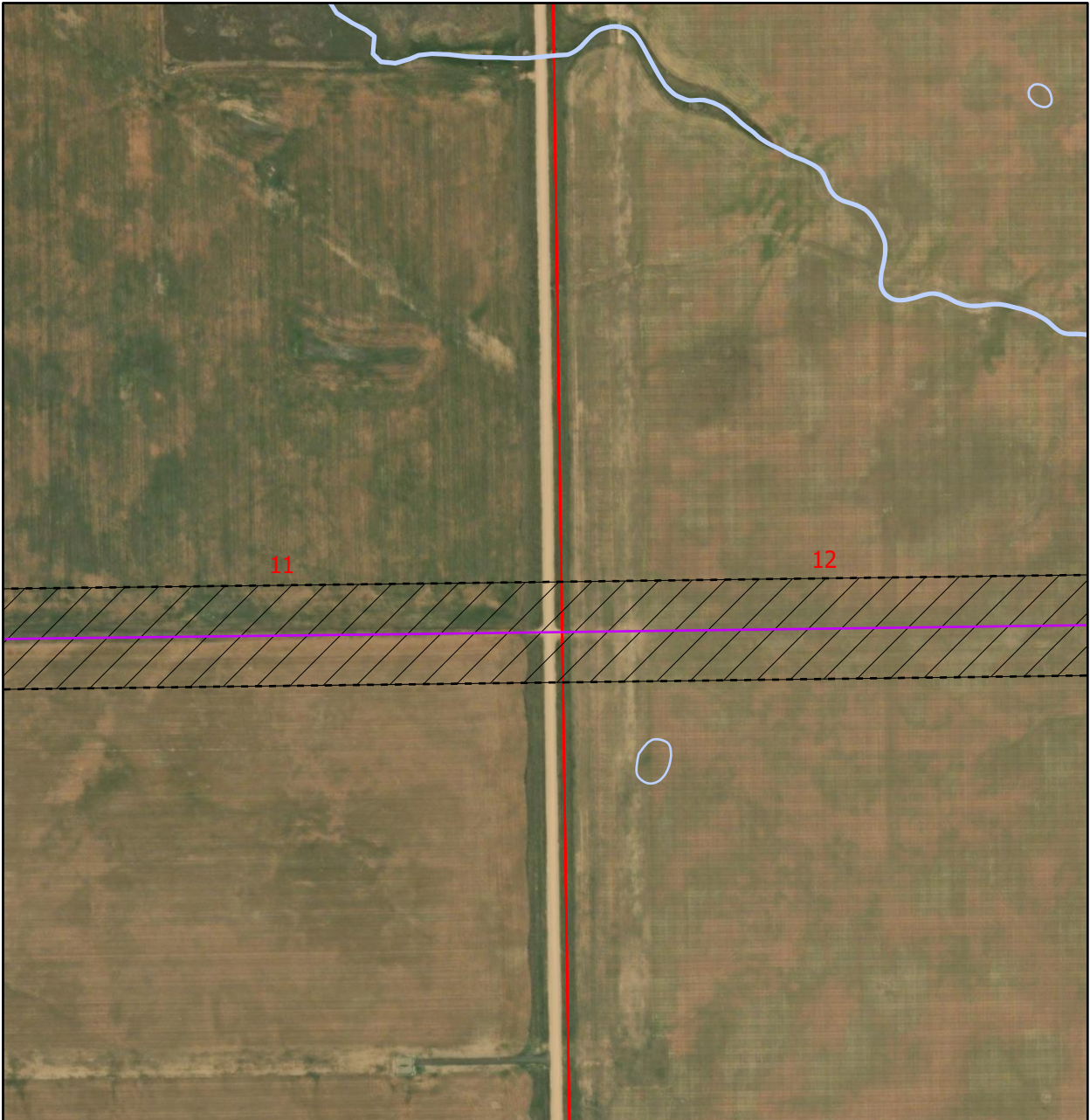
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Date: 9/12/2023 Author: C. Tucker



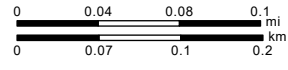
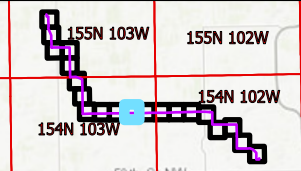


PGS to Judson 345-kV  
Transmission Project  
WILLIAMS COUNTY, ND

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- NWI Signature
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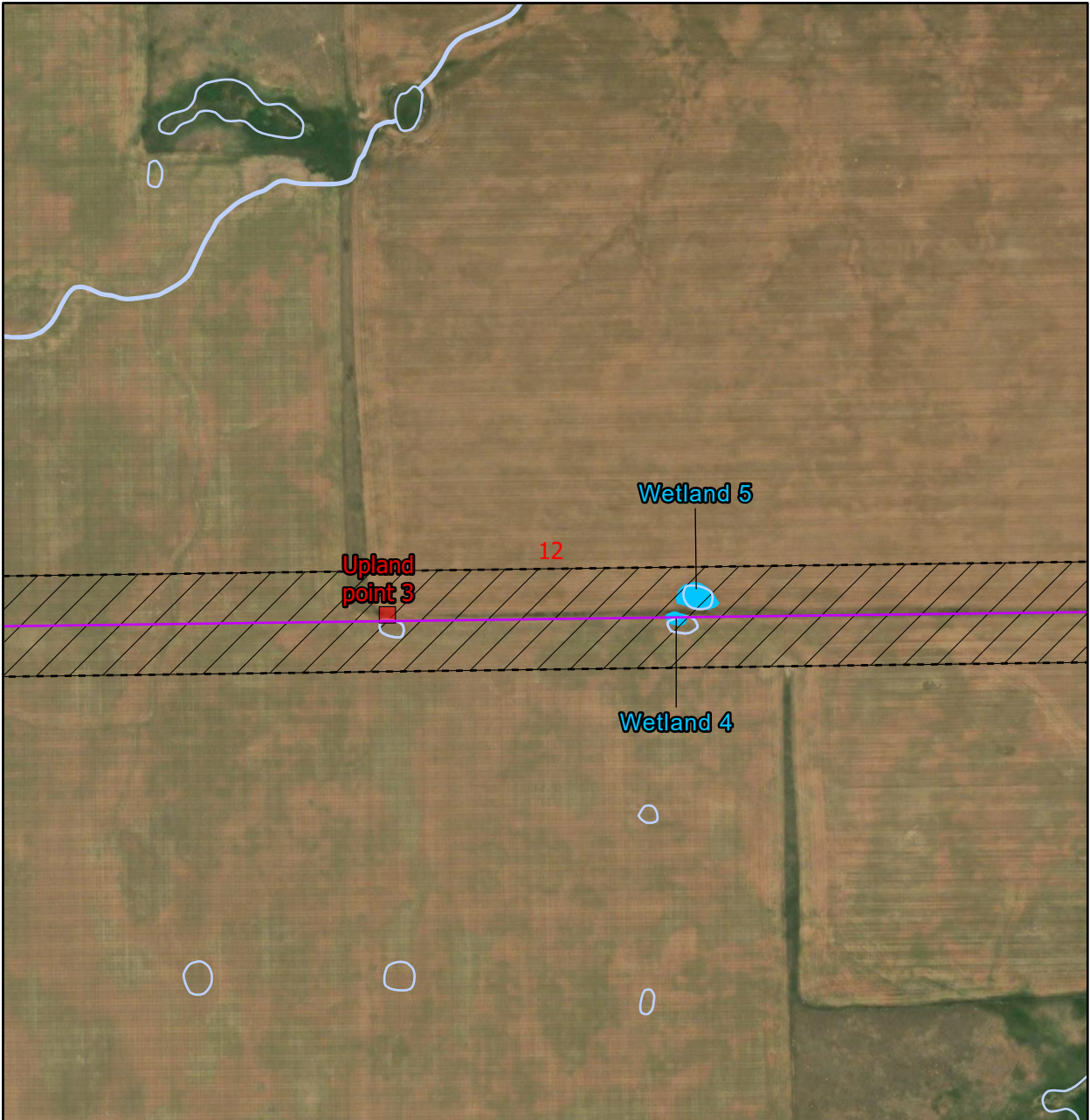
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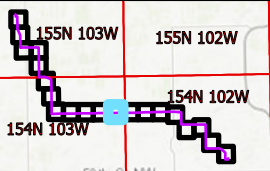


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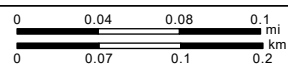
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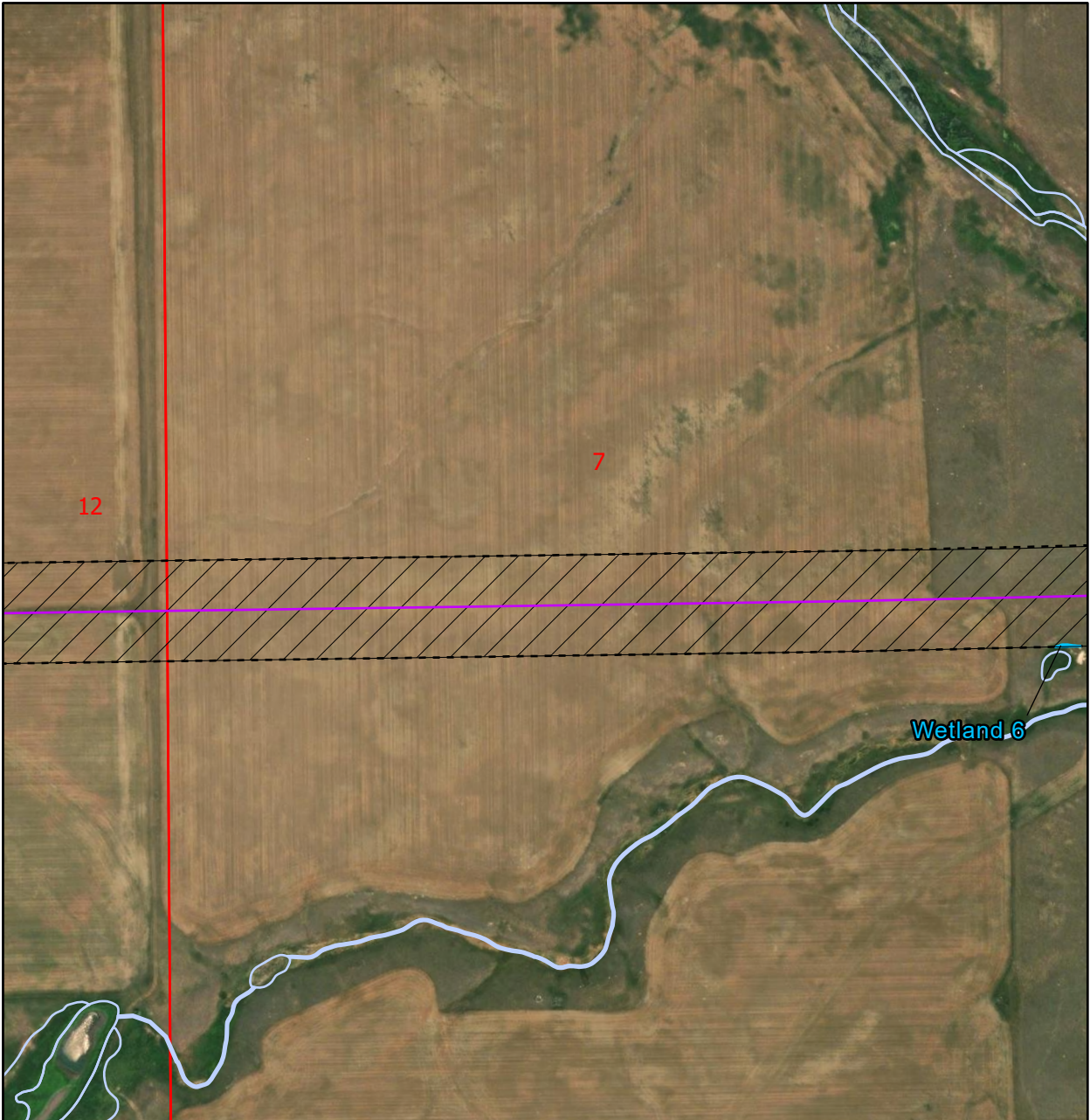
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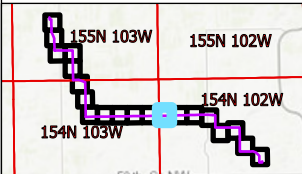


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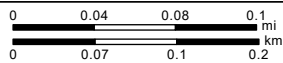


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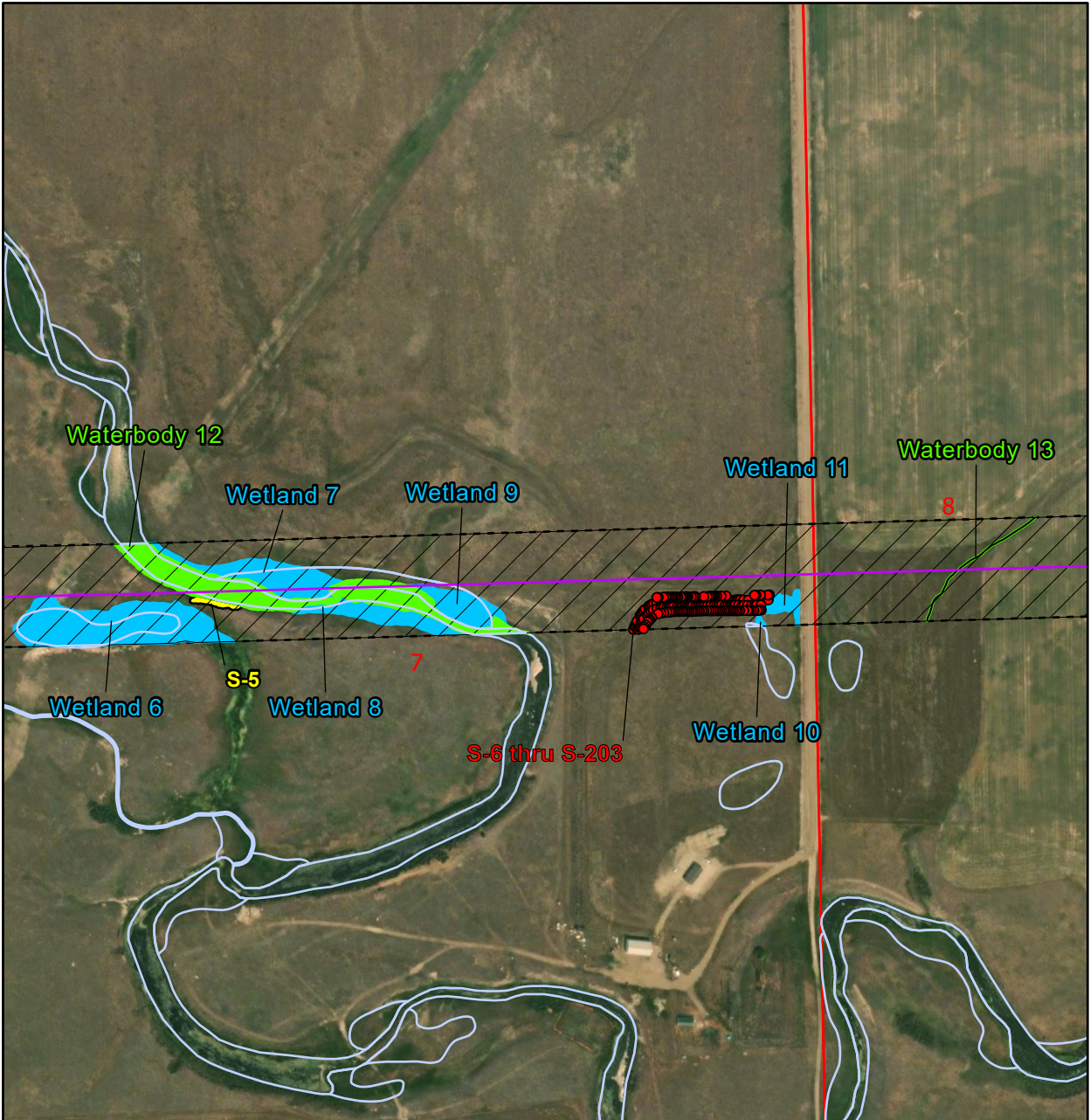
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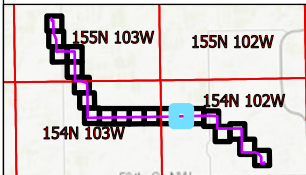


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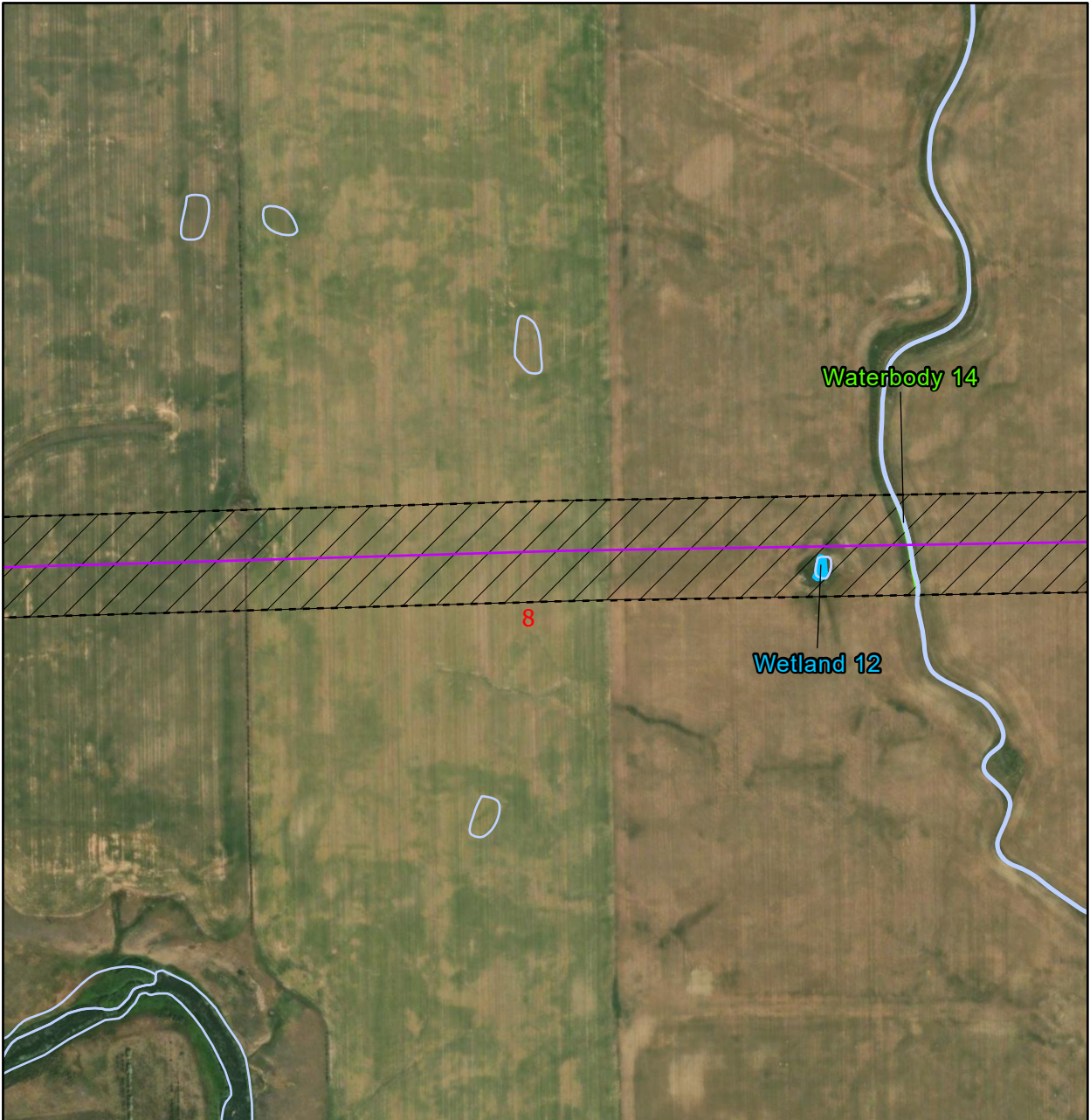
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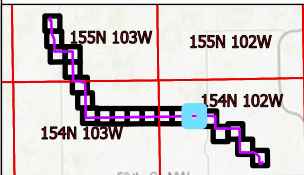


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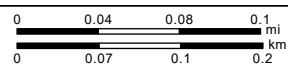
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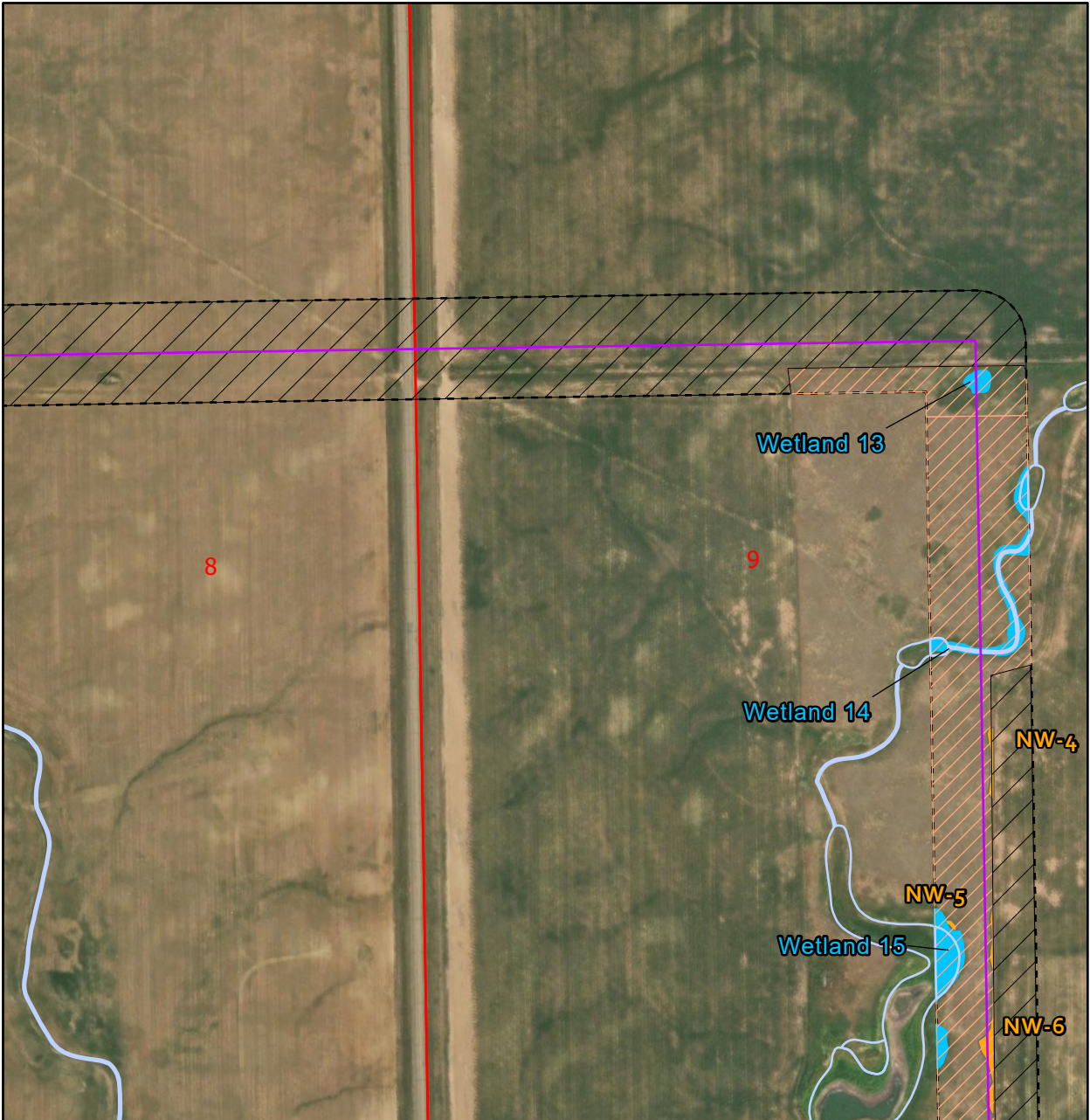
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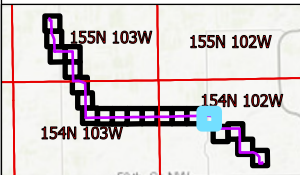


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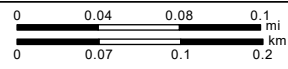
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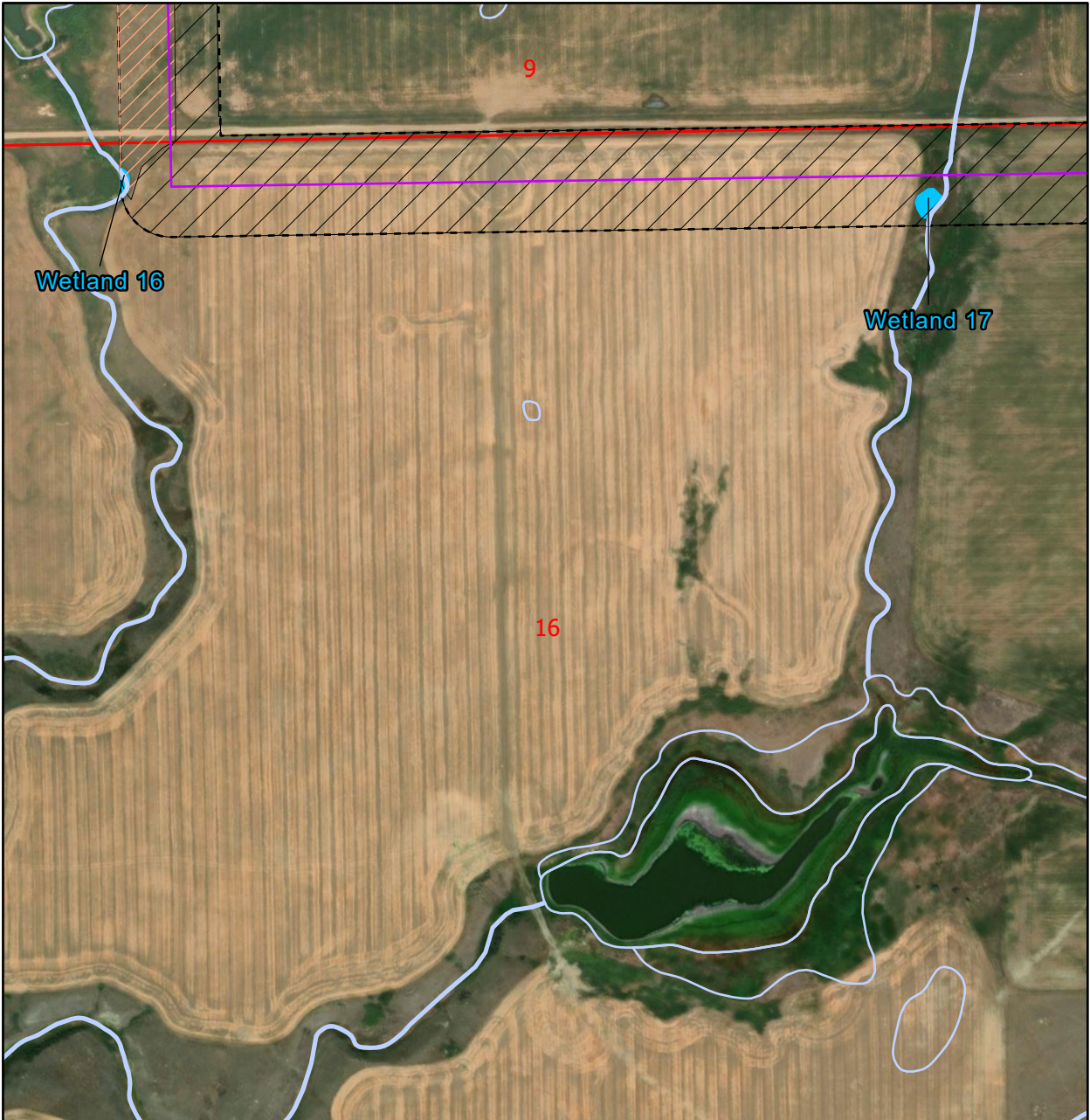
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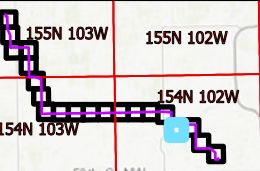


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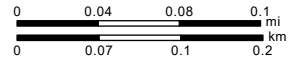
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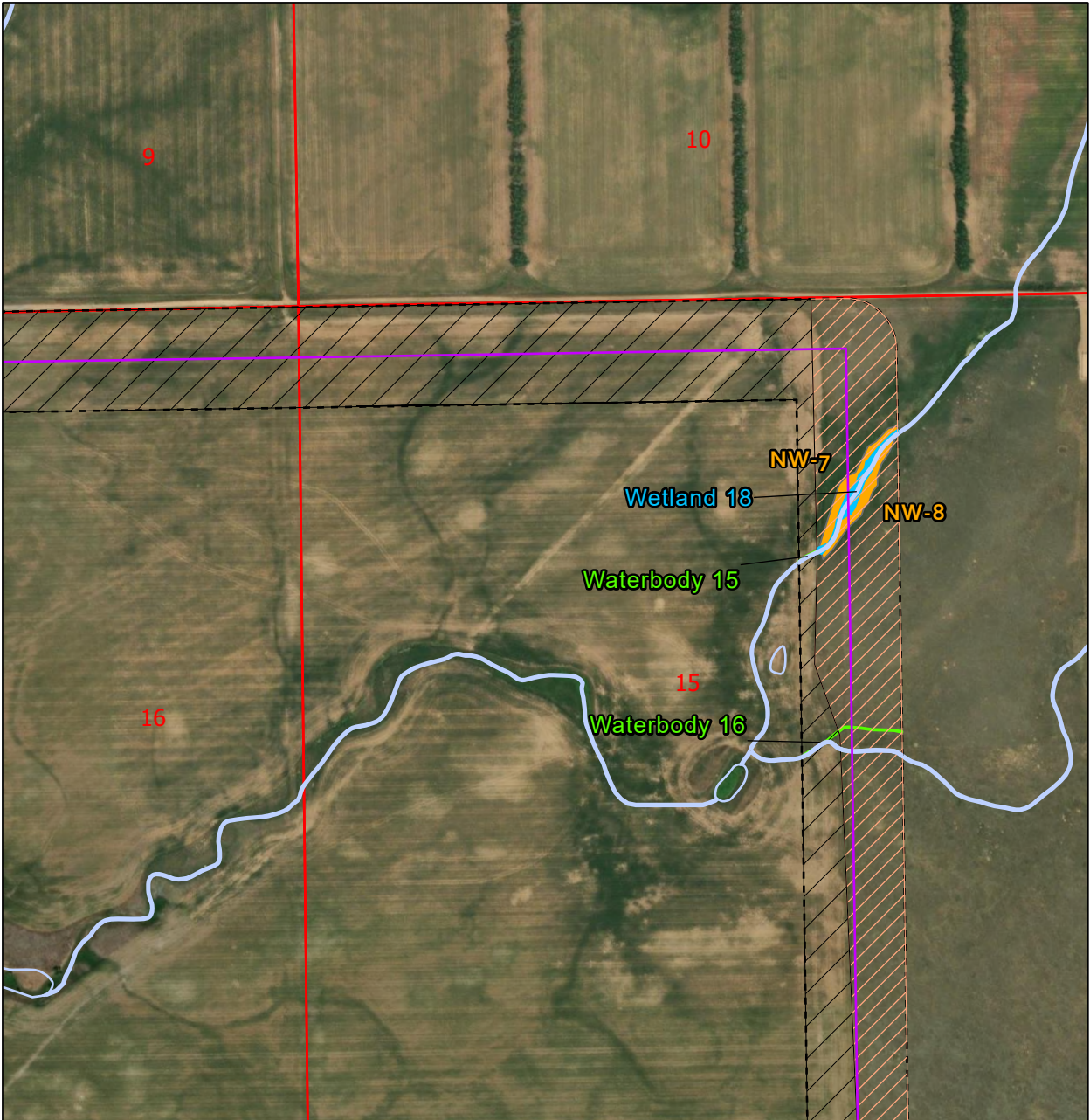
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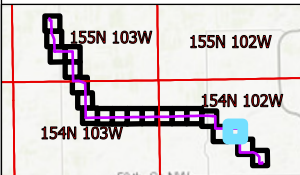


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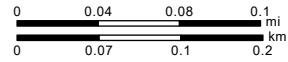
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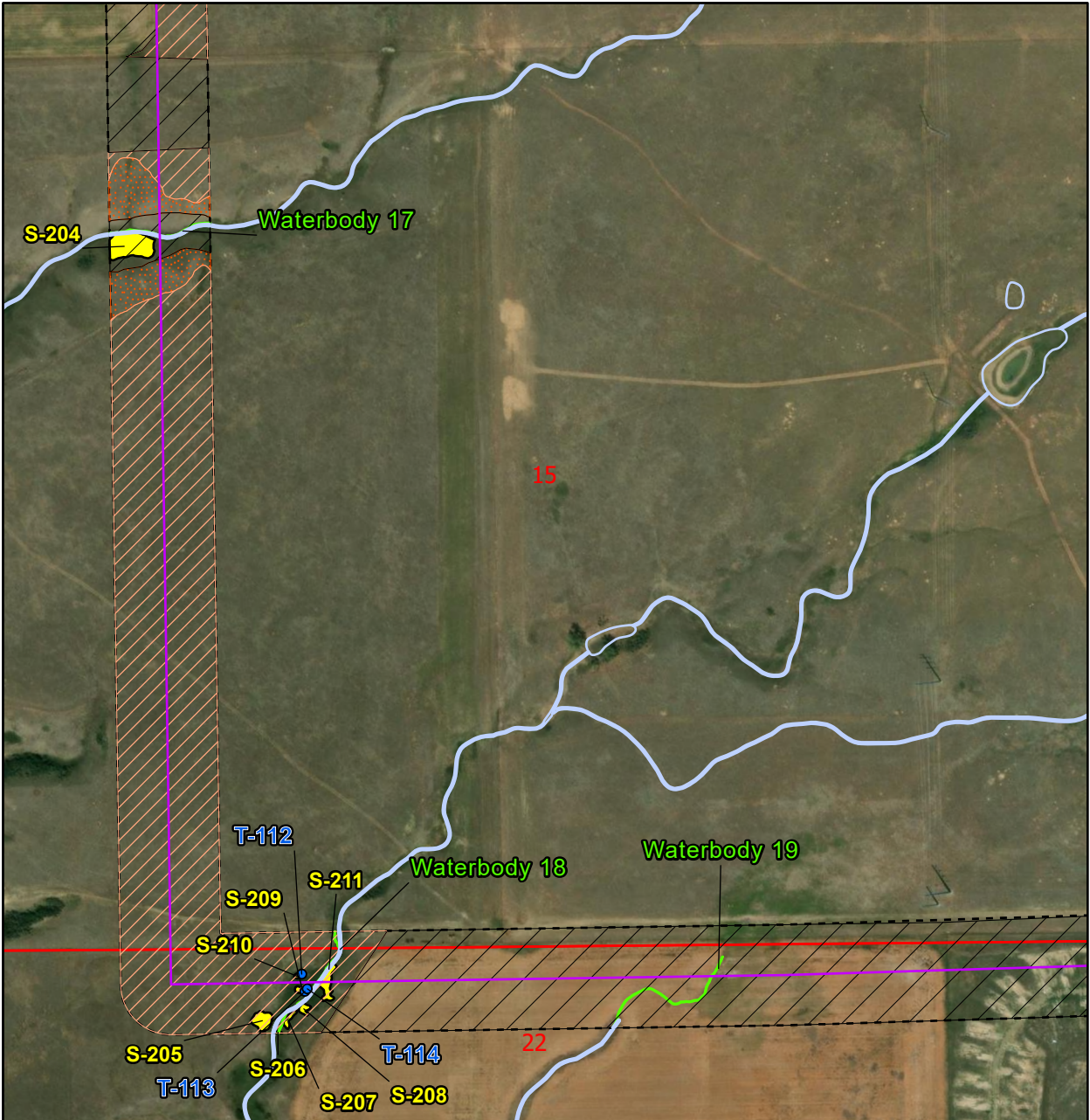
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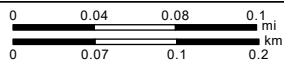
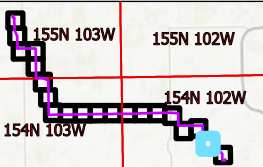


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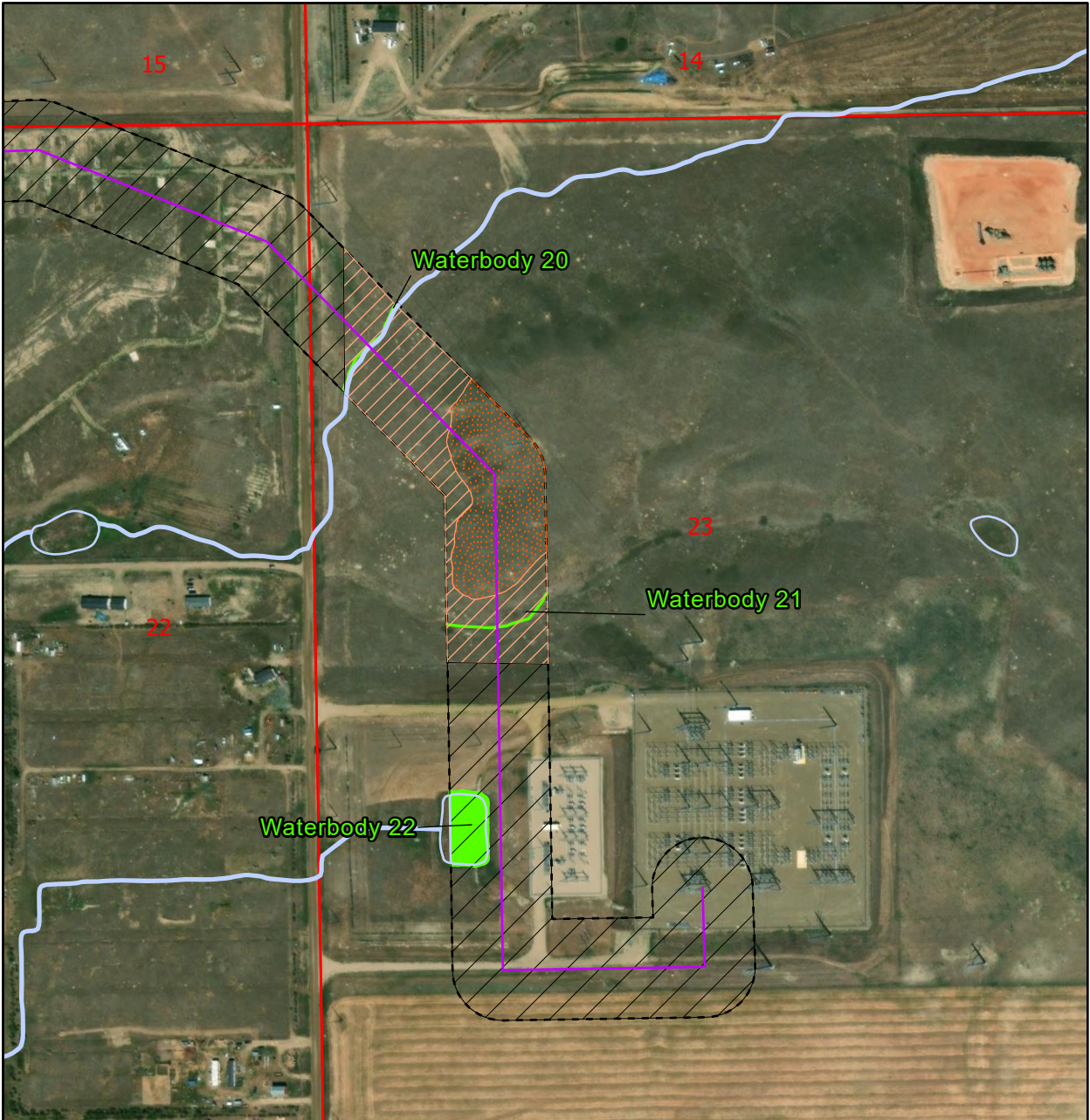
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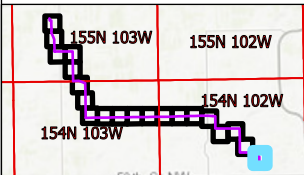


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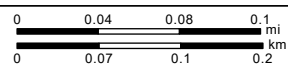
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## **Appendix B. Project Field Photographs**



**Photograph 1. View looking west across Wetland 2, a PEMC classified wetland, located in Section 29, T155N, R103W.**



**Photograph 2. View looking east down Waterbody 5, an ephemeral drainage located in Section 28, T155N, R103W.**



**Photograph 3. View looking west across Wetland 4 and farmed through PEMA classified wetland located in Section 12, T154N, R102W.**



**Photograph 4. View of Tree Points T169 through T-212 in the SE1/4 of Section 33, T154N, R103W. These are potential NLEB summer roost habitat.**



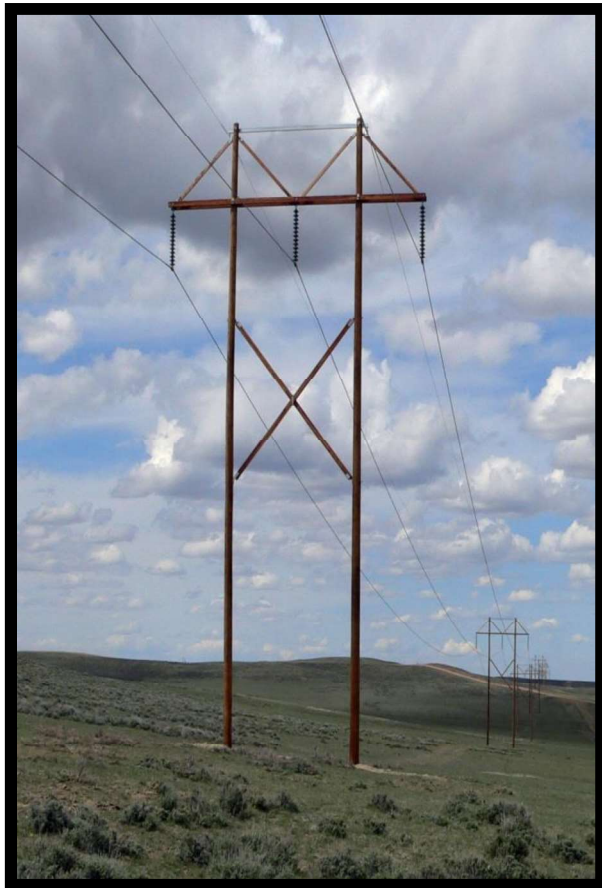
**Photograph 5. View of Wetland 14 looking northeast. This feature is a PEMC classified wetland drainage dominated by prairie cordgrass.**



**Photograph 6. View of suitable Dakota skipper habitat located near the east end of the Project in Section 23, T154N, R102W.**

**Appendix C. Basin Electric Power Cooperative Avian and Bat Protection Plan**

# Basin Electric Power Cooperative Avian and Bat Protection Plan (ABPP)



**BASIN ELECTRIC  
POWER COOPERATIVE**

A Touchstone Energy® Cooperative 

## Adoption and Approval of Basin Electric Power Cooperative's Avian and Bat Protection Plan

This plan is hereby adopted and approved.

By: Todd E. Telesz  
Todd E. Telesz (Aug 22, 2022 12:35 CDT)  
Todd E. Telesz, CEO and General Manager  
Basin Electric Power Cooperative

Date: Aug 22, 2022

<b>Version</b>	<b>Date Issued</b>	<b>Date Effective</b>	<b>Changes or Additions</b>	<b>Owner's Initials</b>
1.0	04/05/2013	05/01/2013	Original	ENFD
2.0	08/26/2022	09/01/2022	Updated Forms	ENFD

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## 1.0 Introduction

Basin Electric Power Cooperative (Basin Electric) is one of the largest electric generation and transmission (G & T) cooperatives in the United States. Basin Electric, along with its subsidiaries, has long promoted the balance between environmental responsibility and providing affordable electricity to its members. This balance is a consideration during all activities of Basin Electric including but not limited to the generation of electricity, developing, siting and building new projects, expansion and updating of current facilities, and building and maintaining transmission lines.

Basin Electric recognizes that necessary operations may impact the environment, including avian and bat species. Basin Electric has developed this Avian and Bat Protection Plan (ABPP) with the overall goal of minimizing avian and bat mortality. This ABPP attempts to identify and potentially remedy situations where negative impacts to avian and bat species may occur. In addition, it provides guiding principles for Basin Electric project developers to build mechanisms to minimize potential impacts to avian and bat species into projects. This ABPP also provides guidelines for training, a monitoring and reporting system, and quality control.

Basin Electric is subject to a number of state and Federal laws that protect avian and bat species. Among the Federal regulations are the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA) and the Endangered Species Act (ESA). These laws, and others, provide protection for some of the wildlife species that may come into contact with Basin Electric facilities and operations.

Basin Electric's ABPP addresses issues associated with overhead transmission lines such as roosting and collision as well as wind turbine disturbance and collision issues. Many of the environmental considerations, for example siting, are applicable to both transmission lines and wind farms. Sections of the ABPP may address concerns collectively or specifically directed to a particular structure or activity, depending upon applicability. While distribution lines also pose a risk to avian species, this document is intended for use by Basin Electric, and therefore, focuses on transmission lines and wind turbines only.

Basin Electric believes that environmental responsibility is a cooperative-wide issue. The goal of this ABPP is to minimize the risks to avian and bat species from Basin Electric wind farms and transmission lines. Basin Electric believes that the development of an ABPP is an evolving process. As more data is collected, the ABPP will be modified to reflect the lessons learned as well as incorporating advances in research and technology. It is Basin Electric's intent that the ABPP will continue to expand, develop and improve as the knowledge regarding these issues within the industry advances and regulatory requirements change.

## 2.0 Cooperative Policy

Basin Electric is committed to a policy of environmental responsibility, coupled with providing reliable electricity in as low a cost manner as possible to cooperative members. This commitment extends to compliance with regulatory requirements protecting wildlife, obtaining and complying with all state and Federal permits, and making reasonable and prudent efforts to minimize the impact and mortality of avian and bat species while building and maintaining electric generation and transmission facilities.

This ABPP supports that commitment. It provides guidelines for the implementation of cooperative policy and provides a reference for project developers. Through this ABPP, Basin Electric commits to the following:

- Execute the policies and guidelines outlined in this ABPP to the extent practicable while ensuring the health and safety of employees;
- Execute the policies and guidelines outlined in this ABPP to the extent practicable under engineering and economic constraints;
- Act in accordance with all applicable state and Federal regulations regarding avian and bat species;
- Provide necessary training for applicable Basin Electric personnel in methods to minimize impact, identify species of concern, and proper mechanisms for monitoring and reporting;
- Whenever it is reasonably possible, through risk assessment and site selection, Basin Electric will minimize effects to avian and bat species in regard to placement of facilities and supporting infrastructure;
- Design structures to minimize negative impacts to the extent reasonably possible;
- Use best management practices during site construction and maintenance;
- After construction and commissioning, Basin Electric will follow developed monitoring and reporting procedures for mortalities and species of interest as necessary;
- During maintenance activities, Basin Electric will follow developed best management practices;
- As necessary, Basin Electric will consult with local, state and federal experts to gain guidance and share information;
- Whenever reasonable and possible, Basin Electric will take measures to reduce mortality to avian and bat species;
- Basin Electric will implement quality control measures to ensure compliance with the ABPP and identify any necessary updates and/or revisions to the ABPP;
- When retrofitting existing structures, Basin Electric will follow the same standards as new construction whenever practicable.

## 3.0 Permit Compliance

Basin Electric has developed the following process to obtain and comply with all necessary permits and laws pertaining to avian and bat issues. This process may continue past commissioning and through the life of a project, facility or infrastructure. The Basin Electric person(s) assigned to a project or facility as the environmental lead is responsible for obtaining and ensuring compliance with all permits. Basin Electric has facilities in multiple states, and therefore, may be subject to a variety of permits, laws and agencies, depending upon location.

### Permit Process

1. During the project initiation stage, an individual or team from Environmental Services of Basin Electric should be assigned to the project.
2. During the project development stage, the Environmental Services personnel assigned to the project must develop a working list of permits that may potentially be required for the project. This list may continue to develop as the project develops.
3. Basin Electric Environmental Services staff has the lead responsibility for permitting. Environmental Services staff will work with Basin Electric engineering, drafting, GIS, right-of-way, other Basin Electric staff, and consultants to prepare permit applications.
4. When permits have been received, Environmental Services staff will submit the permits to the Records division and notify the project manager of the permit.
5. If the permit contains provisions regarding construction, monitoring and/or reporting, Environmental Services staff must inform appropriate individuals.

## **4.0 Training**

As needed, training on avian and bat issues will be provided for Basin Electric staff as well as contracted staff. This training may vary based on type of project, length of project, project stage, time of year and potentially affected species. An individual's role may dictate the training that may be provided for project development, construction and/or operations. Depending upon the project, training may occur during project development, construction and/or operation. It is not anticipated that all projects will require training at all or any level. Additionally, some projects, such as wind farms, may require project or site specific training to be developed.

## 5.0 Site Selection and Site Design

Site selection applies the risk assessment analysis to potential project sites. In addition, site selection involves Basin Electric meeting with applicable agencies and landowners. Basin Electric is committed to contacting applicable state and federal agencies early in the project development process. These contacts help ensure that avian, bat and other environmental issues are illuminated as soon as possible.

### *Wind Turbine Site Layout and Design*

Basin Electric uses a number of data sources to determine locations of good wind resource. Basin Electric typically sites wind projects as close to existing transmission lines as possible to minimize the construction of new transmission lines. All collector lines and communication cables are buried to avoid habitat loss and prevent collisions. Typically, this infrastructure would be adjacent to the access roads or along public rights-of-way or easements when possible.

### *Wind Turbine Siting Parameters*

Generally, in addition to high quality wind resource and available transmission, Basin Electric looks to site wind turbines in areas of high pre-existing disturbances when possible. In areas that are going to be monitored closer for wind potential, simultaneously, these areas may also be examined closer for potential avian and bat concerns. A Potential Impact Index (PII) may be done on any site being considered for possible development.

Often, the wind farm layout goes through a series of iterations. Each turbine is micrositied in relation to wind potential, wildlife, permitting, and other environmental and cultural constraints. Specifically, the following guidelines may be used when siting each wind turbine:

- Distance from section line or road;
- Distance from occupied residence;
- Out of hydric soils of a wetland;
- Near edges of a grassland;
- Avoid land with encumbrances, easements or other restrictions;
- Distance from a missile site or military installations;
- Distance from another turbine in the predominant wind direction;
- Distance from a transmission line; and
- Potential impacts on human, cultural, environmental, and natural resources and populations.

### *Transmission Line Siting Parameters*

A preferred transmission line route is chosen from a number of alternatives. The preferred route would be selected after assessing each alternative based on a series of project-specific criteria. The following specific guidelines may be used when siting transmission lines:

- Length of the transmission line;
- Right-of-way requirements and availability;
- Land use considerations such as visual impacts, proximity to residences, and impact on agricultural activities as well as existing and future land use;

- Environmental resource considerations such as impacts on cultural or biological resources such as wildlife, plants, and wetlands;
- Jurisdiction and regulatory considerations;
- Conflicts with airport height restrictions;
- Cost; and
- Requirements of Federal and state law.

The technical performance of each transmission line alternative must be checked with a system analysis to ensure the project meets National Electric Reliability Council standards. Often the termination points of a transmission line are dictated by a need to reinforce a certain area of the transmission system or to provide access for a new generation or load. Usually there is flexibility in the routes of a transmission alternative as long as the line is terminated at the critical sending and receiving locations.

There are a number of factors regarding transmission line placement that may be considered when evaluating the potential impact the transmission line may have to avian species. Among these factors are proximity, vegetation and topography. Engineering and economic concerns must also be considered.

Proximity refers to the distance of the transmission line to any area of prime habitat or potential stopover habitat such as shallow wetlands. The closer the transmission line is to the habitat, the greater the chance for potential collisions.

In instances where the transmission line may be near areas where birds concentrate (e.g., wetlands, stream crossings, historic staging areas, roosts and nesting colonies) Basin Electric will assess if bird diversion devices should be utilized. These devices enhance line visibility, and therefore can reduce the risk of collision.

## 6.0 Construction Design Standards and Development Practices

### *General Construction Standards*

Basin Electric will use best management practices during construction to minimize impacts to avian and bat species and their habitats. Pre-construction surveys may or may not be conducted depending upon the project. Examples of potential pre-construction surveys are breeding bird surveys, raptor breeding surveys, habitat of concern surveys and lek identification surveys. If pre-construction surveys are conducted, appropriate actions will be taken during construction as a result of the survey(s).

Wetlands will be avoided to the extent practicable during the construction phase of any project. If impacts to United States Army Corp of Engineers (USACE) jurisdictional waters are unavoidable, then Basin Electric will seek coverage under a Section 404 USACE Nationwide Wetland Permit. Permanent impacts to jurisdictional waters will be mitigated according to USACE requirements.

### *Wind Farm Construction*

The building of new roads for wind farm construction and maintenance will be minimized. The existing road system will be used to the extent possible. When additional access roads are necessary, they will generally be built on ridges away from wetlands. When possible, new roads will follow the route of underground collector lines to minimize surface disturbance, and minimizing the disturbance of natural prairie and habitat. Additional road width necessary for construction will be reclaimed after construction.

Typically, temporary meteorological towers associated with a wind farm will be removed when construction begins. Any permanent meteorological tower will be freestanding and have no guy wires except for unusual circumstances when no other operations are practicable. Basin Electric continues to monitor new technology advancements in the market to find additional, less intrusive ways to monitor meteorological conditions.

Training for construction personnel will be site specific. Any observation of threatened or endangered avian and bat species will be reported to state and Federal agencies according to site-specific protocol. In the event of a sighting, construction activities, including curtailing would proceed according to site-specific protocol. Additionally, trained biologists may be on site during construction. This will be determined on a project by project basis.

Basin Electric will use best management practices during construction and operation of any wind farm to protect topsoil and adjacent wetland resources and to minimize soil erosion. Practices may include containing excavated material, use of silt fences, protecting exposed soil, stabilizing restored material, and revegetating disturbed areas with native species to preserve habitat.

### *Transmission Line Construction*

Basin Electric uses *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) and *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012), or the most current versions of these documents as guidance. In general, in areas where electrocution may be a concern, a minimum of 150 cm (60 in) will be provided between phase conductors. Basin Electric builds and maintains transmission lines.

These transmission lines are constructed such that electrocution is typically not a concern. In some situations, perch deterrents may be necessary to discourage birds from landing on or utilizing areas where avian safety is a concern. A combination of the above options may be necessary to protect avian species to the extent possible.

## 7.0 Post-construction Monitoring and Reporting and Management

Active monitoring and/or use surveys for wind farms and transmission lines are not considered routine operation. Rather, incidental finds or finds resulting from maintenance activities would typically be documented and/or reported. All monitoring protocols, if necessary, will be developed on a site-specific basis. Depending upon the site or project, monitoring efforts may be very limited or unnecessary. If monitoring is appropriate, fatality monitoring and/or avian use surveys may be done.

Basin Electric considers incidental finds and reporting of avian and bat injuries or mortalities on the project site a basic job duty of all on-site personnel. All on-site personnel will be trained in appropriate procedures for identifying and reporting avian or bat injuries or mortalities.

Upon discovery of an injured or deceased avian or bat species on the project site, the following procedure will be followed by on-site personnel.

### 7.1 *Wind Farm Operational Monitoring and Reporting*

1. Do not remove, touch or move the bird or bat.
2. Photograph the bird or bat and complete the appropriate form.
3. If the bird or bat is a threatened or endangered species or otherwise a species of interest, such as a raptor, immediately notify the Distributed Generation Manager and Environmental Services of Basin Electric. Contact information for Environmental Services is provided on the form in Appendix C.
4. Environmental Services will work with trained biologists for proper handling of the bird or bat and notification of appropriate state and Federal agencies.
5. All completed forms, associated pictures, and any additional documentation will be forwarded to Environmental Services at Basin Electric headquarters in a timely manner.

### 7.2 *Transmission Line Monitoring and Reporting*

1. Do not remove, touch or move the bird or bat.
2. Complete the appropriate inspection in Minmax by contacting a TSM planner. Photograph the bird, bat or nest. The completed inspection is then automatically emailed to Environmental Services.
3. Environmental Services will work with trained biologists for proper handling of the bird or bat and notification of appropriate state and Federal agencies.
4. All completed forms, associated pictures, and any additional documentation will be forwarded to Environmental Services at Basin Electric headquarters in a timely manner.

### 7.3 *Nest Management*

Raptors and other avian species may use transmission line poles as a nesting site. The risk of avian electrocution with these nests is not high, but the nests may cause operation and maintenance issues. The Migratory Bird Treaty Act protects all active nests. A nest is

considered active if it has eggs or young birds. If an active nest has the potential to interfere with transmission line operations, the USFWS and the state game and fish department must be conferred with. The Migratory Bird Treaty Act prohibits the collecting of any active nest belonging to a migratory bird. Facility operators will at no time move or destroy any nest without receiving approval from Environmental Services of Basin Electric. Contact information for Environmental Services is provided on the form in Appendix B. Environmental Services will use environmental consultants, the USFWS, and the state game and fish department to determine the best course of action in each situation. Nests of eagles and threatened and endangered species may not be moved or destroyed at any time without consultation with the USFWS and the state game and fish department.

Avian species tend to nest in site specific locations. Therefore, moving a nest does not mean that the nest will not be re-built in the same location. As a result, nesting platforms may need to be utilized. If nesting platforms are to be used, they should be installed on or near the transmission tower that had been utilized for the avian nesting. A nearby, non-energized pole is preferred. The nesting platform should be installed in a way such that nesting materials and avian excrement will not contaminate the lines. If a platform is used, plastic poles, corrugated pipe, or other materials may be placed on the transmission structure to discourage the building of nests particularly in situations where nest building in general should be discouraged for the protection of people, the nesting birds, and/or the power system.

## **8.0 Consultation and Information Sharing**

Basin Electric understands that a great deal of information regarding wildlife interactions with wind turbines, transmission lines and other structures may potentially be gained through the use of routine data collection and surveys. This information, in addition to information gained from other utilities, may result in better practices and new technology that provides more protection to wildlife, particularly avian and bat species. In efforts to facilitate this information gathering, Basin Electric will consider all requests for non-proprietary data and information.

Additionally, Basin Electric looks to the USFWS and state game and fish departments to provide consultation services and expert advice throughout the life of projects.

## 9.0 Mortality Reduction Measures

The information gained through risk management activities, along with additional data collection, will be analyzed by Basin Electric Environmental Services staff and/or wildlife consultants. This analysis will then be translated for future project development as best practices to prevent avian and bat mortality and injury. This information will also be used by Basin Electric to determine whether or not a mortality reduction plan for the project or site is warranted. The data collected through the implementation of the ABPP will also help determine the need for a mortality reduction plan.

If a mortality reduction plan is needed there are a number of elements that may be included. A risk assessment may provide information predicting the best approach. Biological and electrical design information should also be utilized to prioritize transmission poles, identify benefits and causes of injury or mortality to avian species and bats.

## **10.0 Avian and Bat Enhancement Options**

Basin Electric has for many years provided excellent avian habitat through the use of reclaimed mine land, and other mitigation and reclamation projects and opportunities Basin Electric has also sought out opportunities to partner in habitat conservation with non-governmental organizations. In addition, Basin Electric welcomes collaboration between Basin Electric and volunteer groups and service organizations to enhance avian and bat populations.

## **11.0 Quality Control**

Quality control and review is vital to ensuring that the ABPP accomplishes the goals set forth and remains a useful tool in avian and bat protection. Training will be conducted annually for facility maintenance staff. The ABPP will be reviewed and updated as needed by Basin Electric environmental and project staff, and/or consultants.

## 12.0 Key Resources

The following have been identified as key resources for the ABPP, particularly within Basin Electric's Service area.

### **U.S. Fish and Wildlife Service Migratory Bird Permit Regional Offices**

*Region 3: (Iowa, Illinois, Indiana, Minnesota, Missouri, Michigan, Ohio, Wisconsin)*

U.S. Fish and Wildlife Service Migratory Bird Permit Office

One Federal Drive

Fort Snelling, MN 55111

Telephone (612) 713-5436

Fax: (612) 713-5393

Email: [permitsR3MB@fws.gov](mailto:permitsR3MB@fws.gov)

*Region 6: (Colorado, Kansas, Montana, North Dakota, Nebraska, South Dakota, Utah, Wyoming)*

U.S. Fish and Wildlife Service Migratory Bird Permit Office

P.O. Box 25486 DFC (60154)

Denver, CO 80225-0486

Telephone: (303) 236-8171

Fax: (303) 236-8017

Email: [permitsR6MB@fws.gov](mailto:permitsR6MB@fws.gov)

### **U.S. Fish and Wildlife Service Office of Law Enforcement**

*National Headquarters*

Office of Law Enforcement

U.S. Fish and Wildlife Service

4401 North Fairfax Drive,

MS-LE-3000

Arlington, Virginia, USA 22203

Telephone: (703) 358-1949

Fax: (703) 258-2271

*Great Lakes – Big Rivers Region (3): Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, Wisconsin*

U.S. Fish and Wildlife Service

Office of Law Enforcement

One Federal Drive

Fort Snelling, Minnesota, USA 55111-0045

Telephone (612) 713-5320

Fax: (612) 713-5283

*Mountain-Prairie Region (6): Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, Wyoming*

U.S. Fish and Wildlife Service

Office of Law Enforcement

P.O. Box 25486 - DFC

Denver, Colorado USA 80225

Telephone: (303) 236-7540  
Fax: (303) 236-7901

## **U.S. Fish and Wildlife Service Ecological Services Field Offices**

U.S. Fish and Wildlife Service  
Montana Ecological Services Field Office  
585 Shepard Way  
Helena, MT 59601  
Telephone: (406) 449-5225  
Fax: (406) 449-5339  
Email: [MontanaFieldOffice@fws.gov](mailto:MontanaFieldOffice@fws.gov)  
<http://www.fws.gov/montanafieldoffice>

U.S. Fish and Wildlife Service  
Nebraska Ecological Services Field Office  
203 West Second Street  
Federal Building, Second Floor  
Grand Island, NE 68801-5907  
Telephone: (308) 382-6468  
Fax: (308) 384-8835  
Email: [June\\_Deweese@fws.gov](mailto:June_Deweese@fws.gov)  
<http://www.fws.gov/mountain-prairie/es/Nebraska/index.htm>

U.S. Fish and Wildlife Service  
North Dakota Ecological Services Field Office  
3425 Miriam Avenue  
Bismarck, ND 58501-7926  
Telephone: (701) 250-4481  
Fax: (701) 355-8513  
Email: [northdakotafieldoffice@fws.gov](mailto:northdakotafieldoffice@fws.gov)  
<http://www.fws.gov/northdakotafieldoffice>

U.S. Fish and Wildlife Service  
South Dakota Ecological Services Field Office  
420 S. Garfield Avenue, Suite 400  
Pierre, SD 57501-5408  
Telephone: (605) 224-8693  
Fax (605) 224-9974  
Email: [southdakotafieldoffice@fws.gov](mailto:southdakotafieldoffice@fws.gov)  
<http://www.fws.gov/southdakotafieldoffice>

U.S. Fish and Wildlife Service  
Wyoming Ecological Services Field Office  
5353 Yellowstone Road, Suite 308A  
Cheyenne, WY 82009  
Telephone: (307) 772-2374  
Fax: (307) 772-2358  
<http://www.fws.gov/wyominges>

## **U.S. Fish and Wildlife Service National Eagle Repository**

U.S. Fish and Wildlife Service  
National Eagle Repository  
Rocky Mountain Arsenal, Building 619  
Commerce City, CO 80022  
Telephone: (303) 287-2110  
Fax: (303) 287-1570  
<http://mountain-prairie.fws.gov/law/eagle>

## **Code of Federal Regulations (CFR) websites**

*Main CFR webpage*  
<http://gpoaccess.gov/cfr/>

*List of migratory birds, 50CFR10.13*

[http://a257.g.akamaitech.net/7/257/2422/01dec20031500/edocket.access.gpo.gov/cfr\\_2003/oct\\_qtr/50cfr10.13.htm](http://a257.g.akamaitech.net/7/257/2422/01dec20031500/edocket.access.gpo.gov/cfr_2003/oct_qtr/50cfr10.13.htm)

*General permit procedures, 50CFR13*

[http://access.gpo.gov/nara/cfr/waisidx\\_03/50cfr13\\_03.html](http://access.gpo.gov/nara/cfr/waisidx_03/50cfr13_03.html)

*Endangered and threatened wildlife and plants, 50CFR17*

[http://access.gpo.gov/nara/cfr/waisidx\\_03/50cfrv2\\_03.html](http://access.gpo.gov/nara/cfr/waisidx_03/50cfrv2_03.html)

*Migratory bird permits, 50CFR21*

[http://access.gpo.gov/nara/cfr/waisidx\\_03/50cfr21\\_03.html](http://access.gpo.gov/nara/cfr/waisidx_03/50cfr21_03.html)

*Eagle permits, 50CFR22*

[http://access.gpo.gov/nara/cfr/waisidx\\_03/50cfr22\\_03.html](http://access.gpo.gov/nara/cfr/waisidx_03/50cfr22_03.html)

## **State Agencies**

Iowa Department of Natural Resources  
502 E. 9th Street  
Des Moines, IA 50319-0034  
Telephone: (515) 281-5918  
Fax: (515) 281-8895  
Email: [webmaster@dnr.iowa.gov](mailto:webmaster@dnr.iowa.gov)  
<http://www.iowadnr.gov/>

Minnesota Department of Natural Resources  
500 Lafayette Road  
St. Paul, MN 55155-4040  
Telephone: (651) 296-6157  
Email: [info@dnr.state.mn.us](mailto:info@dnr.state.mn.us)  
<http://www.dnr.state.mn.us>

Montana Department of Fish, Wildlife and Parks  
1420 East Sixth Avenue  
P.O. Box 200701  
Helena, MT 59620-0701  
Telephone: (406) 444-2535

Fax: (406) 444-4952  
E-mail: [fwpgen@mt.gov](mailto:fwpgen@mt.gov)  
<http://fwp.mt.gov/default.html>

Nebraska Game and Parks Commission  
2200 N 33<sup>rd</sup> Street  
Lincoln, NE 68503  
Telephone: (402) 471-0641  
Email: [ngpc.webmaster@nebraska.gov](mailto:ngpc.webmaster@nebraska.gov)  
<http://www.ngpc.state.ne.us>

North Dakota Game and Fish Department  
100 N Bismarck Expressway  
Bismarck, ND 58501-5095  
Telephone: (701) 328-6300  
Fax: (701) 328-6352  
Email: [ndgf@nd.gov](mailto:ndgf@nd.gov)  
<http://gf.nd.gov/>

South Dakota Department of Game, Fish and Parks  
523 East Capitol Avenue  
Pierre, SD 57501  
Telephone: (605) 773-3485  
Email: [Wildinfo@state.sd.us](mailto:Wildinfo@state.sd.us)  
<http://www.sdgifp.info/Index.htm>

Wyoming Game and Fish Department  
5400 Bishop Boulevard  
Cheyenne, WY 82006  
Telephone: (307) 777-4600  
<http://gf.state.wy.us/>

### **Consultants**

*Corporate Headquarters*  
Western EcoSystems Technology, Inc. (WEST)

2003 Central Avenue  
Cheyenne, Wyoming 82001  
Phone: (307) 634-1756  
Fax: (307) 637-6981  
Email: [admin@west-inc.com](mailto:admin@west-inc.com)  
<http://www.west-inc.com/index.php>

*Midwest-West Region*  
Western EcoSystems Technology, Inc. (WEST)  
Bismarck Branch Office  
4007 State Street, Suite 109  
Bismarck, North Dakota 58503  
Phone: (701) 250-1756

## **13.0 Appendices**

- 13.1 *Appendix A – Dead or Injured Bird Form – Transmission Line and Substation***
- 13.2 *Appendix B – Nest Form – Transmission Line and Substation***
- 13.3 *Appendix C – Dead or Injured Bird or Bat Form – Wind Farm***
- 13.4 *Appendix D - Whooping Crane Notification Form - Wind Farm***

# Dead or Injured Bird Form – Transmission Line or Substation

This form will be completed using the Minmax Inspection tool. Screenshot of actual inspection questions below:

No.	Status	Question	Action	Results	Comments	Question History
1		Take a photograph of the bird	Inspected	Any Text 20 Char	Type Comment Here...	
2		If the bird has a band and is it's visible take a picture of it.	Inspected	Any Text 20 Char	Type Comment Here...	
3		Provide a description of location approximate from a structure or piece of equipment to comments	Inspected	Any Text 20 Char	Type Comment Here...	

Notification to USFWS (if necessary) \_\_\_\_\_ Date \_\_\_\_\_

Notification to State Game and Fish (if necessary) \_\_\_\_\_ Date \_\_\_\_\_

Corrective Action (if necessary) \_\_\_\_\_ Date \_\_\_\_\_

## Environmental Services Contacts

1. Erin Fox Dukart – Office: (701) 557-5557; Cell: (701) 426-8116
2. Kevin Solie – Office (701) 557-5495; Cell: (701) 202-5096

# Nest Form – Transmission Line or Substation

This form will be completed using the Minmax Inspection tool. Screenshot of actual inspection questions below:

No.	Status	Question	Action	Results	Comments	Question History
1		Take a photograph of the nest	Inspected	Any Text 20 Char	<input type="checkbox"/> Type Comment Here...	
2		Is the nest active if yes take a picture of the bird if possible?	Inspected	Yes	<input type="checkbox"/> Type Comment Here...	
3		Provide a description of location approximate from a structure or piece of equipment in comments	Inspected	Any Text 20 Char	<input type="checkbox"/> Type Comment Here...	

Notification to USFWS (if necessary) \_\_\_\_\_ Date \_\_\_\_\_

Notification to State Game and Fish (if necessary) \_\_\_\_\_ Date \_\_\_\_\_

Corrective Action (if necessary) \_\_\_\_\_ Date \_\_\_\_\_

## Environmental Services Contacts

1. Erin Fox Dukart – Office: (701) 557-5557; Cell: (701) 426-8116
2. Kevin Solie – Office (701) 557-5495; Cell: (701) 202-5096

# Dead or Injured Bird or Bat Form – Wind Farm (Adapted from APLIC 2006)

Date of Form Completion: \_\_\_\_\_ Name of Wind Farm: \_\_\_\_\_

## AVIAN/BAT INFORMATION

### Avian Species

- Bald Eagle
- Golden Eagle
- Whooping Crane
- Hawk (specify if possible): \_\_\_\_\_
- Owl (specify if possible): \_\_\_\_\_
- Waterfowl (specify if possible): \_\_\_\_\_
- Other (specify if possible): \_\_\_\_\_

If unable to identify, please describe:

\_\_\_\_\_

### Bat Species

Please describe:

\_\_\_\_\_

Bird or Bat Count: \_\_\_\_\_ Did avian/bat die: Yes No

If any bands or tags, please notify Environmental Services and write the tag/band number and agency \_\_\_\_\_

Physical Condition of Bird or Bat: (Body intact, just feathers, type of injury, etc).

\_\_\_\_\_

Sign of Death or Injury (circle one)      Collision      Electrocutation      Shot      Roadkill  
Unknown      Other: \_\_\_\_\_

Date Found: \_\_\_\_\_ Time Found: \_\_\_\_\_

If known, describe how the bird or bat was injured or died (bird contacted transformer bushings, turbine collision, etc.) \_\_\_\_\_

\_\_\_\_\_

Weather conditions at time of death if known (e.g. rainy and cold, sunny and warm, etc)

---

Status of carcass/remains:            No carcass            Left on-site

**LOCATION INFORMATION**

Closest Turbine Identification No. \_\_\_\_\_

County and State: \_\_\_\_\_

Finder's Last Name: \_\_\_\_\_ First Name: \_\_\_\_\_

Location Description (Include nearest structure, distance from structure, etc.)

\_\_\_\_\_  
\_\_\_\_\_

Description of Terrain and Vegetation in Area (e.g. near agriculture area, near wetlands, rugged terrain, native prairie, dense city area, residential housing, etc.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Nest visible nearby? If so, please provide detailed description of the size and location of the nest. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Comments/Additional Information:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

---

Notification to USFWS (if necessary) \_\_\_\_\_ Date \_\_\_\_\_  
Notification to State Game and Fish (if necessary) \_\_\_\_\_ Date \_\_\_\_\_  
Corrective Action (if necessary) \_\_\_\_\_ Date \_\_\_\_\_

---

### **Environmental Services Contacts**

1. Steve Smokey – Office (701) 557-5180; Cell: (701) 204-8197
2. Erin Fox Dukart – Office: (701) 557-5557; Cell: (701) 426-8116
3. Kevin Solie – Office (701) 557-5495; Cell: (701) 202-5096
4. Joe Fiedler - Office (701) 557-5094; Cell: (701) 390-3633

# PrairieWinds Whooping Crane Notification

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Name of Person Calling: \_\_\_\_\_

Phone Number of Caller: \_\_\_\_\_

Description of the Bird: \_\_\_\_\_

Sighting Location: \_\_\_\_\_

If Killed or Wounded, Location: \_\_\_\_\_

The Following People Need to be Notified Immediately:

1. Joe Fiedler - Office: (701) 557-5094; Cell: (701) 390-3633
2. Erin Fox Dukart - Office: (701) 557-5557; Cell: (701) 426-8116
3. Kevin Solie - Office: (701) 557-5495; Cell: (701) 202-5096
4. Steve Smokey - Office: (701) 557-5180; Cell: (701) 204-8197
5. Lindsey Chumley - Office: (701) 557-5038; Cell: (701) 400-8784

Date of Turbine(s) Shutdown: \_\_\_\_\_ Time of Turbine(s) Shutdown: \_\_\_\_\_

Wind Turbine ID Number(s) Shutdown: \_\_\_\_\_

Date of Turbine Restart: \_\_\_\_\_ Time of Turbine Restart: \_\_\_\_\_

Date the Park was Shutdown: \_\_\_\_\_ Time the Park was Shutdown: \_\_\_\_\_

Additional Comments:

Name: \_\_\_\_\_

Whooping Crane Migration Season:

- April 1<sup>st</sup> to May 15<sup>th</sup>  
September 10<sup>th</sup> to October 31<sup>st</sup>

# Cooperative\_Plan\_2022

Final Audit Report

2022-08-22

Created:	2022-08-22
By:	Glynda Janz (gjanz@becp.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAahkyiq8kQQSgdTGr5QoCeh-AoPkxVKRtR

## "Cooperative\_Plan\_2022" History

-  Document created by Glynda Janz (gjanz@becp.com)  
2022-08-22 - 3:59:40 PM GMT- IP address: 216.235.161.1
-  Document emailed to ttelesz@becp.com for signature  
2022-08-22 - 4:00:24 PM GMT
-  Email viewed by ttelesz@becp.com  
2022-08-22 - 5:34:52 PM GMT- IP address: 216.235.161.1
-  Signer ttelesz@becp.com entered name at signing as Todd E. Telesz  
2022-08-22 - 5:35:13 PM GMT- IP address: 216.235.161.1
-  Document e-signed by Todd E. Telesz (ttelesz@becp.com)  
Signature Date: 2022-08-22 - 5:35:14 PM GMT - Time Source: server- IP address: 216.235.161.1
-  Agreement completed.  
2022-08-22 - 5:35:14 PM GMT

**Appendix D. US Fish and Wildlife Service Email Correspondence**



Chad Tucker &lt;ctucker@west-inc.com&gt;

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**DASK in Williams Co.**

4 messages

**Chad Tucker** <ctucker@west-inc.com>

Fri, May 26, 2023 at 1:49 PM

To: "Toso, Luke B" &lt;luke\_toso@fws.gov&gt;, "Jones, Seth A" &lt;seth\_jones@fws.gov&gt;

Hi Luke,

I surveyed an overhead transmission line for Basin Electric a few weeks back in Williams County, just west of Williston. I found a couple pockets of potential skipper habitat and wanted to get your thoughts.

The areas meet the definition of suitable habitat, but the sites are fairly dry with a good amount of bare ground. They are in an area that is very fragmented by farming and oil/gas, plus they are outside of the current DASK range shapefile (barely).

I have attached a KMZ of the locations and a couple photos. I am not too worried about the two northwestern polygons, as they can be spanned, but the larger one is near their terminal end and I don't think Basin will be able to avoid it. So my question is, should I call it suitable??

Thanks for any input you can provide and hope you have a great long weekend!

Chad





--  
**Chad Tucker**  
Biologist - Project Manager





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## DASK in Williams Co.

---

**Toso, Luke B** <luke\_toso@fws.gov>

Thu, Jun 1, 2023 at 7:10 AM

To: Chad Tucker <ctucker@west-inc.com>, "Jones, Seth A" <seth\_jones@fws.gov>

Hi Chad -

Thanks for reaching out, especially with good photos and a KMZ no less! I've got some intel in this part of the world: I did an occupancy survey last year about 8 miles from your project in Section 31, T155N, R103W and came up empty: no Dakota skippers. Characteristics were similar to what you mention: Dry, and significant bare ground.

There's two questions to be answered here: First, is the habitat suitable? Yes, since it looks to be consistent with the description in the Federal Register. The second question gets closer to the crux of our problem: Is this habitat occupied?

From our official FWS perspective, if your project does not fall within our IPAC range map, we do not require consultation; we are essentially conceding a no effect call for anything outside of our official range maps. Essentially, these official range maps are the legal definition of the species extent and while they may change as new data is gathered, the map used to do your assessments would be the legal reference at that time. Could there be skippers outside of our official range map? Absolutely, and more occupancy surveys in this part of the world are needed, but we have to draw our legal boundary with the current information we have.

We want to limit impacts to suitable habitat, and especially occupied habitat, to be avoided as much as feasibly possible even though we are limited by this legal nexus. We would recommend spanning where possible. Where not possible, cite project disturbance as close as possible to existing disturbances. In this case, the ideal scenario would be if the tower can be nearby that existing transmission line to the east, and construction disturbance could be cited on the edge of this habitat.

Hope this helps. If this brought up more questions, please let me know!

Luke

Luke Toso  
Acting North Dakota Field Office Supervisor

U.S. Fish and Wildlife Service  
[3425 Miriam Avenue](#)  
Bismarck, North Dakota 58501

720-793-6797  
[luke\\_toso@fws.gov](mailto:luke_toso@fws.gov)

---

**From:** Chad Tucker <ctucker@west-inc.com>

**Sent:** Friday, May 26, 2023 1:49 PM

**To:** Toso, Luke B <luke\_toso@fws.gov>; Jones, Seth A <seth\_jones@fws.gov>

**Subject:** [EXTERNAL] DASK in Williams Co.

## **Appendix F**

### **Agency Notification Letters and Responses**

**Appendix F**  
**Agency Notification Letters and Responses**



July 7, 2023

«Agency»  
«Mailing\_Address»  
«City», «State» «Zip»

**Subject: Notification of the Proposed Pioneer Generation Station to Judson 345-kV Transmission Line Project in Williams County, North Dakota**

Dear XXXX/To whom it may concern,

Basin Electric Power Cooperative (Basin Electric) is proposing to develop the Pioneer Generation Station (PGS) to Judson 345-kilovolt (kV) Transmission Line Project (Project) in Williams County, North Dakota. The purpose of this letter is to provide notification of the Project per North Dakota Administrative Code Section 69-06-01-05. Basin Electric plans to submit a consolidated application for a Certificate of Corridor Compatibility and Transmission Facility Route Permit for the Project to the North Dakota Public Service Commission. Construction of the Project is anticipated to begin in early 2024.

The Project starts at the Basin Electric owned PGS Substation located northwest of the City of Williston and terminates at the Basin Electric owned Judson Substation located west of the City of Williston. The Project consists of approximately 15 miles of 345-kV electric transmission line with about 0.5-miles of the transmission line being built as a double-circuit configuration on Basin Electric’s property near the Pioneer Substation. The Project will be constructed using single-pole self-supporting steel structures. The transmission structures will be galvanized steel with concrete foundations; guy wires will not be utilized. A 150-foot-wide right-of-way will be required for all route segments.

The purpose and need of the Project is to connect PGS Phase IV generation facilities to electrical grid resources. Basin Electric identified the need for PGS Phase IV through its power supply planning process. As a result of this process, it became apparent there was a need for additional capacity in the region to meet the growing demand and provide an adequate supply of electrical power for Basin Electric’s membership.

We are soliciting input from your agency or entity regarding any sensitive resources, current or planned development, or property interests your agency or entity may have in or around the Project’s Study Area that should be considered as the Project moves forward with development. In addition, we ask that you provide information regarding any applicable permits that may be required from your office. Basin Electric requests the consideration of the Study Area within the legal descriptions provided in the table below and shown on the attached maps.

Pioneer Generation Station to Judson 345-kilovolt Transmission Line Study Area - Public Land Survey System Locations			
County	Township	Range	Section
Williams	154N	102W	3, 4, 5, 6, 7, 8, 9, 10, 14, 15, 16, 17, 18, 21, 22, 23, 26, 27
	154N	103W	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16
	155N	103W	17, 20, 21, 27, 28, 29, 32, 33, 34

Basin Electric respectfully requests your response within 30 days of receipt of this letter. Copies of all correspondence received in response to this letter will be included with the North Dakota Public Service Commission application. Basin Electric has contracted with Merjent, Inc. on this Project. If further information is desired or if you have comments regarding the Project, please contact me at the address provided below, by e-mail at [maddy.krumwiede@merjent.com](mailto:maddy.krumwiede@merjent.com), or by phone at 612-924-3973.

Sincerely,

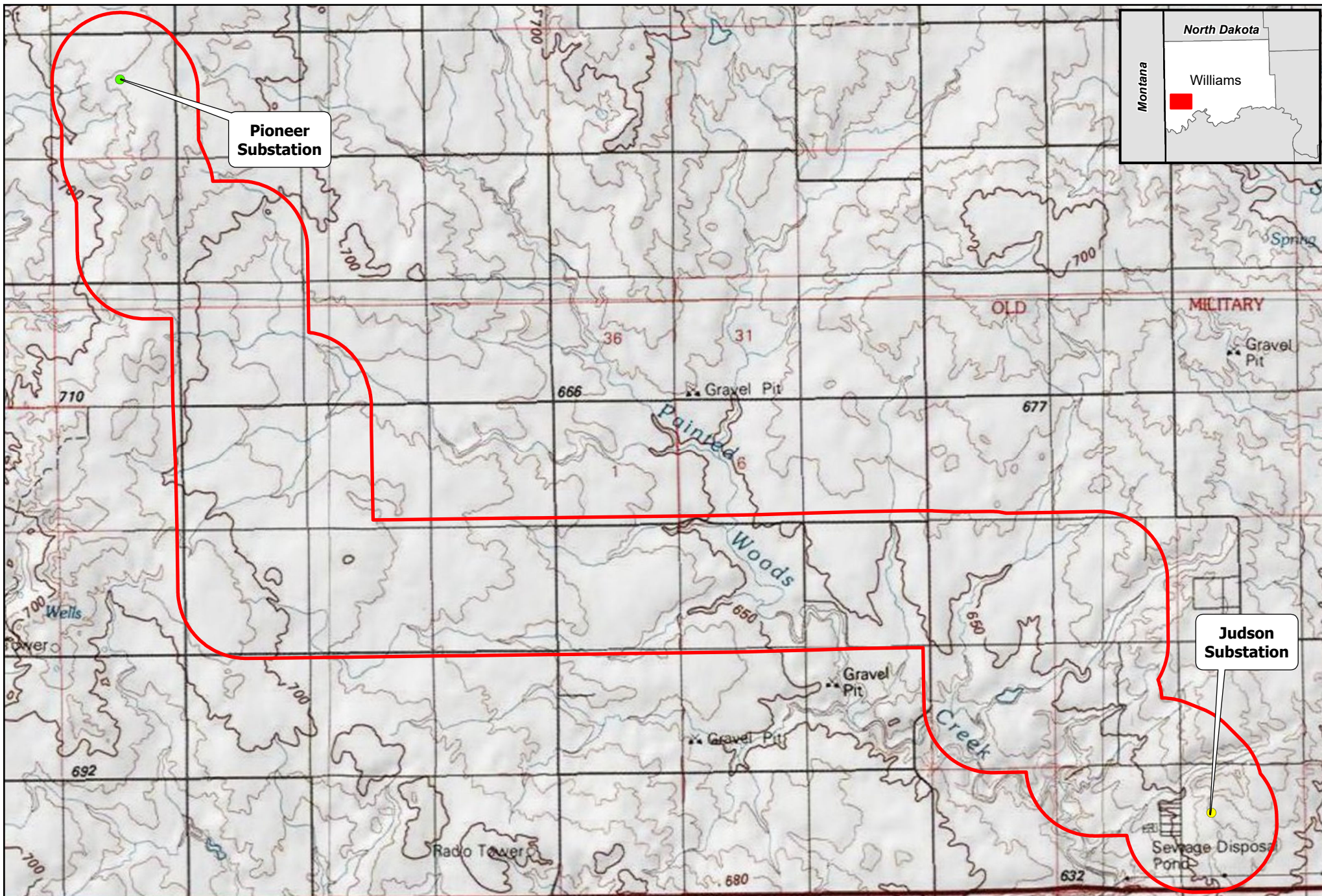


Maddy Krumwiede  
Senior Project Manager

Merjent, Inc.  
1 Main Street SE, Suite 300  
Minneapolis, Minnesota 55414

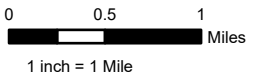
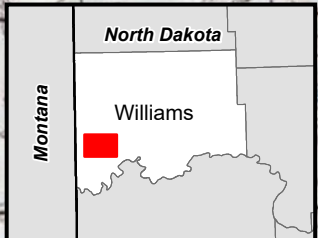
Enclosures: Project Study Area Maps

Cc: Erin Dukart, Basin Electric  
Lindsey Churchill, Merjent



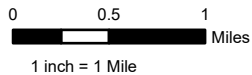
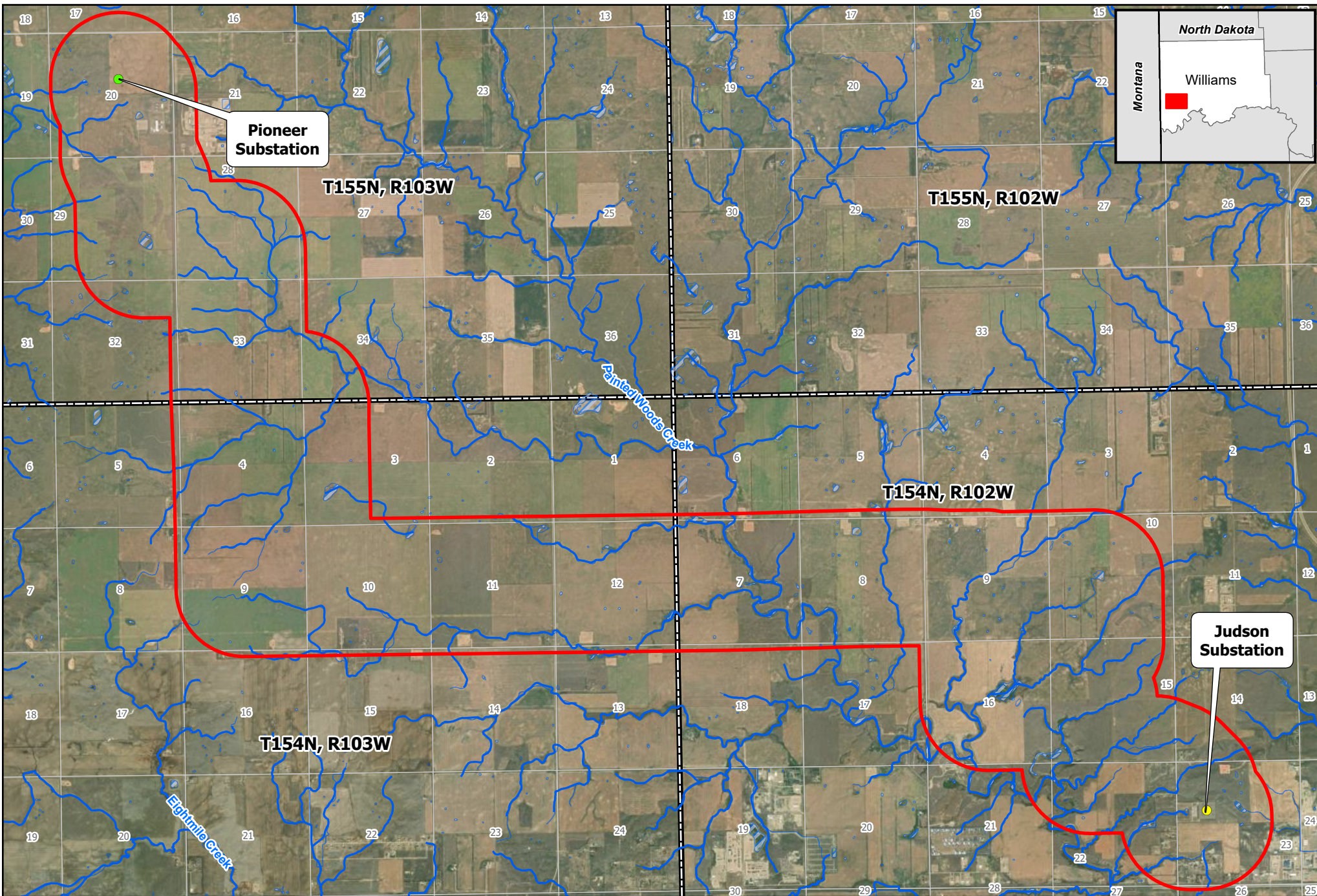
Pioneer Substation

Judson Substation



**Basin Electric Power Cooperative**  
**Pioneer Generation Station to Judson 345-kV Transmission Line Project**  
 Project Map - Topography  
 Williams County, North Dakota

- Pioneer Substation
- Judson Substation
- Study Area



**Basin Electric Power Cooperative**  
**Pioneer Generation Station to Judson 345-kV Transmission Line Project**  
 Project Map - Aerial Imagery  
 Williams County, North Dakota

- Pioneer Substation
- Judson Substation
- Study Area
- Section Boundary
- NHD Waterbody
- NWI Wetland
- Range Boundary

**U.S. Fish and Wildlife Service**

## Liz Metzen

---

**From:** Toso, Luke B <luke\_toso@fws.gov>  
**Sent:** Monday, August 14, 2023 12:24 PM  
**To:** Liz Metzen; Reinisch, Jerry D  
**Cc:** EDukart@bepc.com; Maddy Krumwiede; Lindsey Churchill  
**Subject:** EXTERNAL: Re: [EXTERNAL] Basin Electric PGS to Judson 345-kV Transmission Line Project - Consultation Request - NDPSC Project  
**Attachments:** Buffers\_Timing\_Recommendation\_Final\_20230414.pdf  
**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**CAUTION:** This email originated from outside of Merjent.

Hello Liz,

Thank you for following up on this project! I apologize for the delay getting back to you. Based on our initial review of the project, there are a few items to consider during the initial design phase:

- General Wildlife Recommendations – Our standard buffer and timing document is attached, describing our general recommendations for trust resources that may be present in the vicinity of the Project.
- For compliance with the Endangered Species Act, please consider using the Information for Planning and Consultation (IPaC) database (<http://ecos.fws.gov/ipac>). The database provides guidance to help determine if endangered species may be present within the action area, and if the project and associated actions may affect listed species. The North Dakota Ecological Services webpage (<https://www.fws.gov/office/north-dakota-ecological-services/library>) contains step-by-step guidance for navigating IPaC and determination keys that you may choose to use.
- Wetlands –Based on the maps provided, it appears there may be some easement wetlands present in the project alignment. For reference, GIS data of easement layers is available for download here: <https://ecos.fws.gov/ServCat/Reference/Profile/149821>. Please contact the Crosby-Lostwood Wetland Management District for precise locations of easement boundaries, and to complete necessary permits, if applicable.
  - Kyle Flanery, [kyle\\_flanery@fws.gov](mailto:kyle_flanery@fws.gov)
- Bald and Golden Eagles - To ensure compliance under the Bald and Golden Eagle Protection Act (BGEPA), we recommend contacting the North Dakota Game and Fish Department for historic locations of eagle nests in the vicinity of the project.
  - Sandra Johnson, Conservation Biologist, [sajohnson@nd.gov](mailto:sajohnson@nd.gov)

I hope this information is useful to you. Please let me know if you have any questions or need additional information for your project.

Luke

Luke Toso  
North Dakota Ecological Services Supervisor  
U.S. Fish and Wildlife Service  
3425 Miriam Avenue  
Bismarck, North Dakota 58501  
720-793-6797  
Email: [luke\\_toso@fws.gov](mailto:luke_toso@fws.gov)

---

**From:** Liz Metzen <liz.metzen@merjent.com>

**Sent:** Friday, August 11, 2023 12:55 PM

**To:** Toso, Luke B <luke\_toso@fws.gov>; Reinisch, Jerry D <jerry\_reinisch@fws.gov>

**Cc:** EDukart@becpc.com <EDukart@becpc.com>; Maddy Krumwiede <maddy.krumwiede@merjent.com>; Lindsey Churchill <lindsey.churchill@merjent.com>

**Subject:** [EXTERNAL] Basin Electric PGS to Judson 345-kV Transmission Line Project - Consultation Request - NDPSC Project

**This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.**

Dear Mr. Toso and Mr. Reinisch,

Basin Electric Power Cooperative (Basin Electric) submitted a consultation request to your office, addressed to Mr. Toso, on July 7, 2023, to provide notification of Basin Electric's proposed PGS to Judson 345-kV Transmission Line Project and to solicit comments that will assist in the regulatory process. As we have not received a response, Merjent is following up on behalf of Basin Electric to ensure you received the notification and have the opportunity to respond. Attached is a copy of the original notification letter for your reference.

The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this notification will be included in Basin Electric's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

We appreciate your review and look forward to your response. If you have any questions or need any additional information, please contact me via email or phone or Maddy Krumwiede of Merjent at [maddy.krumwiede@merjent.com](mailto:maddy.krumwiede@merjent.com) or 612-924-3973.

Kind regards,

Liz Metzen

**Liz Metzen**

218.216.6247 direct

218.310.6375 mobile

[liz.metzen@merjent.com](mailto:liz.metzen@merjent.com)



1 Main Street SE, Suite 300

Minneapolis, MN 55414

612.746.3660 main

[www.merjent.com](http://www.merjent.com)

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**U.S. Fish and Wildlife Service  
Crosby-Lostwood Wetland Management District**

**Liz Metzen**

---

**From:** Borgreen, Diane R <diane\_borgreen@fws.gov>  
**Sent:** Monday, September 11, 2023 9:17 AM  
**To:** Maddy Krumwiede; Liz Metzen  
**Cc:** Flanery, Kyle M; Williams, Scott A  
**Subject:** EXTERNAL: [EXTERNAL] Basin Electric Pioneer Generation Station to Judson 345-kV Transmission Project Consultation Request - NDPSC Project  
**Attachments:** Kyle Flanery\_Crosby-Lostwood WMD Sept 1, 2023.pdf  
**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**CAUTION:** This email originated from outside of Merjent.

Good morning Liz and Maddy,  
I was forwarded your request for consultation last week and reviewed the maps and project area description you provided. I can confirm that there are no USFWS easement or fee title interests located within the described area. You should be good to go from our perspective.

Thank you for giving us the opportunity to review, and don't hesitate to get in touch if you have any further questions.

Diane

\*\*\*\*\*

*Diane Borgreen  
Wildlife Refuge Specialist  
Crosby Wetland Management District  
10100 Hwy 42 NW  
Crosby, ND 58730*

*(T) 701-965-6488 x15  
(C) 701-339-0277*

---

**From:** Flanery, Kyle M <kyle\_flanery@fws.gov>  
**Sent:** Tuesday, September 5, 2023 2:10 PM  
**To:** Williams, Scott A <Scott\_A\_Williams@fws.gov>; Borgreen, Diane R <diane\_borgreen@fws.gov>  
**Subject:** Fw: [EXTERNAL] Basin Electric Pioneer Generation Station to Judson 345-kV Transmission Project Consultation Request - NDPSC Project

Scott/Diane,

I received the email below on Friday (my day off).

Please see the attached consultation letter requesting review of Basin Electric's Pioneer Generation Station to Judson 345-kV Transmission Line Project. The Project involves the construction of approximately 15 miles of

345-kV electric transmission line with about 0.5-mile of the transmission line being built as a double-circuit configuration on Basin Electric's property near the Pioneer Substation.

The Project is located in Williams County, North Dakota, and they are requesting a review of the material within 30 days.

Kyle Flanery

Mobile: 701-240-7490

Project Leader, Northwest North Dakota NWR/WMD Complex (Crosby, Des Lacs, J. Clark Salyer, Lostwood, Upper Souris)  
Mountain Prairie Region, National Wildlife Refuge System, U.S. Fish & Wildlife Service, Dept. of the Interior



---

**From:** Liz Metzen <liz.metzen@merjent.com>

**Sent:** Friday, September 1, 2023 1:49 PM

**To:** Flanery, Kyle M <kyle\_flanery@fws.gov>

**Cc:** Toso, Luke B <luke\_toso@fws.gov>; EDukart@bepc.com <EDukart@bepc.com>; Maddy Krumwiede <maddy.krumwiede@merjent.com>; Lindsey Churchill <lindsey.churchill@merjent.com>

**Subject:** [EXTERNAL] Basin Electric Pioneer Generation Station to Judson 345-kV Transmission Project Consultation Request - NDPSC Project

**This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.**

Dear Mr. Flanery,

On behalf of Basin Electric Power Cooperative (Basin Electric), please see the attached consultation letter requesting review of Basin Electric's Pioneer Generation Station to Judson 345-kV Transmission Line Project (Project). The Project involves the construction of approximately 15 miles of 345-kV electric transmission line with about 0.5-mile of the transmission line being built as a double-circuit configuration on Basin Electric's property near the Pioneer Substation. The Project is located in Williams County, North Dakota. Due to the Project schedule, we are respectfully requesting a review of the material within 30 days.

If you have any questions or need any additional information, please contact me directly, or Maddy Krumwiede of Merjent, Inc. at 612-924-3973 or [maddy.krumwiede@merjent.com](mailto:maddy.krumwiede@merjent.com).

Sincerely,

**Liz Metzen**

218.216.6247 direct

218.310.6375 mobile

[liz.metzen@merjent.com](mailto:liz.metzen@merjent.com)



1 Main Street SE, Suite 300  
Minneapolis, MN 55414



September 1, 2023

Kyle Flanery  
U.S. Fish and Wildlife Service  
Crosby-Lostwood Wetland Management District  
681 Salyer Road  
Upham, ND 58789

Submitted via email: [kyle\\_flanery@fws.gov](mailto:kyle_flanery@fws.gov)

**Subject: Notification of the Proposed Pioneer to Judson 345-kV Transmission Project in Williams County, North Dakota**

Dear Mr. Flanery,

Basin Electric Power Cooperative (Basin Electric) is proposing to develop the Pioneer to Judson 345-kilovolt (kV) Transmission Project (Project) in Williams County, North Dakota. The Project starts at the Basin Electric owned Pioneer Switchyard located northwest of the City of Williston and terminates at the Basin Electric owned Judson Substation located west of the City of Williston. The Project consists of approximately 15 miles of 345-kV electric transmission line with about 0.5-miles of the transmission line being built as a double-circuit configuration on Basin Electric’s property near the Pioneer Switchyard. The Project will be constructed using single-pole self-supporting steel structures. The transmission structures will be galvanized steel with concrete foundations; guy wires will not be utilized. A 150-foot-wide right-of-way will be required for all route segments.

The purpose and need of the Project is to connect PGS Phase IV generation facilities to electrical grid resources. Basin Electric identified the need for PGS Phase IV through its power supply planning process. As a result of this process, it became apparent there was a need for additional capacity in the region to meet the growing demand and provide an adequate supply of electrical power for Basin Electric’s membership. Basin Electric plans to submit a consolidated application for a Certificate of Corridor Compatibility and Transmission Facility Route Permit for the Project to the North Dakota Public Service Commission which will include copies of agency correspondence. Construction of the Project is anticipated to begin in early 2024.

In July 2023, Basin Electric provided notification of the Project to the U.S. Fish and Wildlife Service (USFWS), North Dakota Ecological Services Field Office per North Dakota Administrative Code Section 69-06-01-05. The Field Office recommended contacting your office regarding USFWS easements. Basin Electric is requesting your review of the Project Study Area and alignment for USFWS conservation easements (e.g., wetland and grassland easements), as shown in the table below and attached maps. Based on review of the publicly available information, Basin Electric has identified no USFWS easements within the Study Area.

Pioneer to Judson 345-kilovolt Transmission Project Study Area - Public Land Survey System Locations			
County	Township	Range	Section
Williams	154N	102W	3, 4, 5, 6, 7, 8, 9, 10, 14, 15, 16, 17, 18, 21, 22, 23, 26, 27
	154N	103W	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16
	155N	103W	17, 20, 21, 27, 28, 29, 32, 33, 34

Basin Electric respectfully requests your response within 30 days of receipt of this letter. Copies of all correspondence received in response to this letter will be included with the North Dakota Public Service Commission application. Basin Electric has contracted with Merjent, Inc. on this Project. If further information is desired or if you have comments regarding the Project, please contact me at the address provided below, by e-mail at [maddy.krumwiede@merjent.com](mailto:maddy.krumwiede@merjent.com), or by phone at 612-924-3973.

Sincerely,

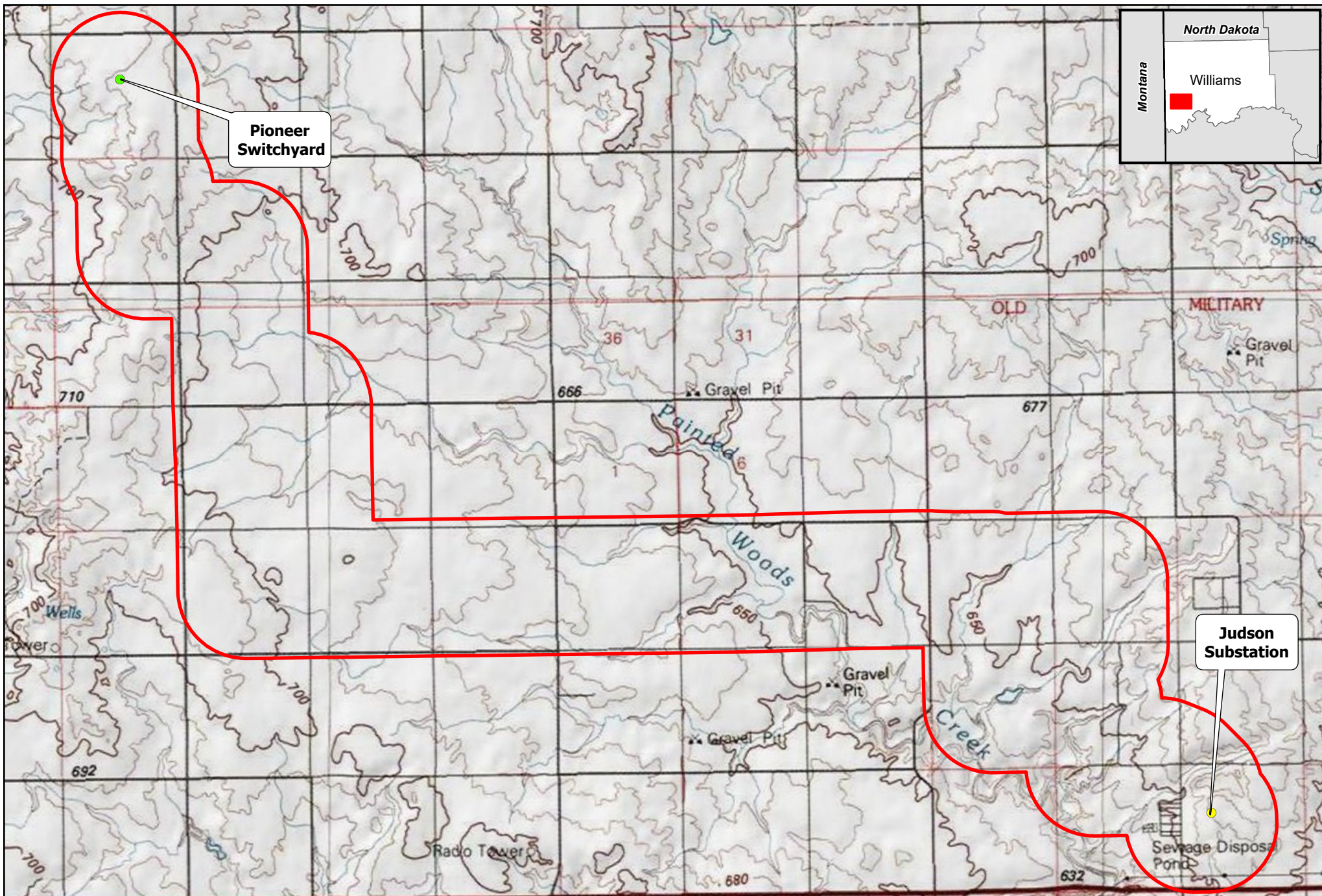


Maddy Krumwiede  
Senior Project Manager

Merjent, Inc.  
1 Main Street SE, Suite 300  
Minneapolis, Minnesota 55414

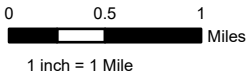
Enclosures: Project Study Area Maps

Cc: Erin Dukart, Basin Electric  
Luke Toso, USFWS  
Lindsey Churchill, Merjent



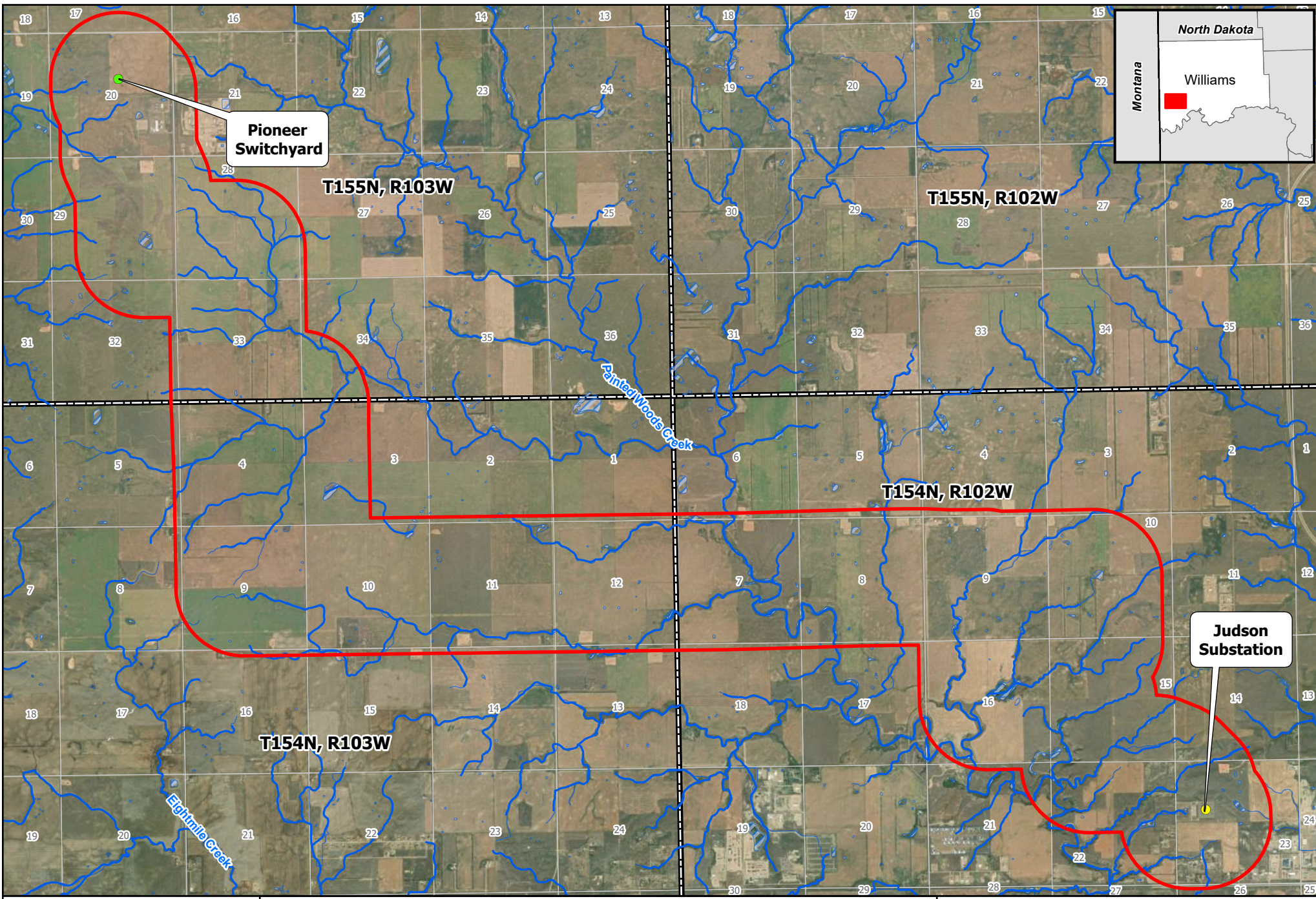
**Pioneer  
Switchyard**

**Judson  
Substation**



**Basin Electric Power Cooperative**  
**Pioneer to Judson 345-kV Transmission Project**  
 Project Map - Topography  
 Williams County, North Dakota

- Pioneer Switchyard
- Judson Substation
- Study Area



0 0.5 1 Miles  
1 inch = 1 Mile



**Basin Electric Power Cooperative**  
**Pioneer to Judson 345-kV Transmission Project**  
 Project Map - Aerial Imagery  
 Williams County, North Dakota

- Pioneer Switchyard
- Judson Substation
- Study Area
- Section Boundary
- NHD Waterbody
- NWI Wetland
- Range Boundary

**U.S. Army Corps of Engineers**



**DEPARTMENT OF THE ARMY**  
CORPS OF ENGINEERS, OMAHA DISTRICT  
NORTH DAKOTA REGULATORY OFFICE  
3319 UNIVERSITY DRIVE  
BISMARCK, NORTH DAKOTA 58504-7565

July 14, 2023

NWO-2023-01051-BIS

Merjent, Inc.  
Attn: Ms. Maddie Krumwiede  
1 Main Street Southeast, Suite 300  
Minneapolis, Minnesota 55414

Dear Ms. Krumwiede:

This is in response to your solicitation letter received on July 11, 2023 requesting Department of the Army (DA), United States Army Corps of Engineers (Corps) comments on the proposed Pioneer Generation Station to Judson 345-kV Transmission Line project. The project is located in Sections 3-10, 14-18, 21-23, 26, and 27 in Township 154 North, Range 102W, Sections 1-5 and 8-16 in Township 154 North, Range 103 West, and Sections 17, 20, 21, 27-29, and 32-34 in Township 155 North, Range 103 West, Williams County, North Dakota.

Corps Regulatory Offices administers Section 404 of the Clean Water Act. Section 404 of the Clean Water Act regulates the discharge of dredge or fill material (temporarily or permanently) in waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material includes, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in waters of the United States.

Enclosed for your information is the fact sheet for Nationwide Permit 57, Electric Utility Line and Telecommunications Activities. Utility lines are already authorized by Nationwide Permit 57 provided the utility line can be placed without any change to pre-construction contours and all other proposed construction activities and facilities are in compliance with the Nationwide's permit conditions and 401 Water Quality Certification. On Tribal Lands, Water Quality Certification is denied for all Nationwide Permits. Applicants must work with EPA to obtain individual water quality certification. Please note the pre-construction notification requirements on page 2 of the fact sheet. If a project involves any one of the seven notification requirements, the project proponent must submit a DA application. Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 23 through 30 of the fact sheet.

In the event your project(s) requires approval from the U.S. Army Corps of Engineers and cannot be authorized by Nationwide Permit(s), a Standard or Individual Permit will

be required. A project that requires a Standard or Individual Permit is intensely reviewed and will require the issuance of a public notice. A Standard or Individual Permit generally requires a minimum of 120 days for processing but based on the project impacts and comments received through the public notice may extend well beyond 120 days.

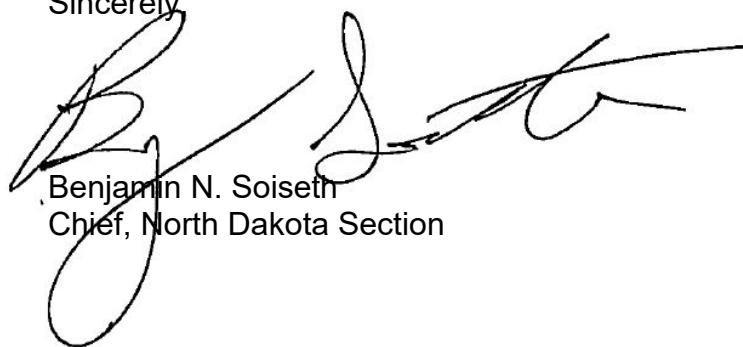
This correspondence letter does not approve the proposed construction work or does not verify the proposed project complies with the Nationwide Permit(s).

If any of these projects require a Section 404 permit, please complete and submit the enclosed Department of the Army permit application (ENG Form 6082) to the U.S. Army Corps of Engineers, North Dakota Regulatory Office, 3319 University Drive, North Dakota 58504 or to the email address below. If you are unsure if a permit is required, you may submit an application; include a project location map, description of work, and construction methodology.

The North Dakota Regulatory office prefers that all submissions are sent electronically to the following email address: [CENWO-OD-RND@usace.army.mil](mailto:CENWO-OD-RND@usace.army.mil) instead of a hard copy by mail. Please split large attachments (>25 MB) into multiple emails if needed.

Please refer to identification number NWO-2023-01051-BIS in any correspondence concerning this project. If you have any questions, please contact Hadden Carlberg at U.S. Army Corps of Engineers, North Dakota Regulatory Office, 3319 University Drive, Bismarck, North Dakota 58504-7565, by email at [Hadden.J.Carlberg@usace.army.mil](mailto:Hadden.J.Carlberg@usace.army.mil), or telephone at (701) 255-0015 x 2012. For more information regarding our program, please visit our website at <http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/NorthDakota.aspx>.

Sincerely,

A handwritten signature in black ink, appearing to read 'Benjamin N. Soiseth', is written over the typed name and title. The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Benjamin N. Soiseth  
Chief, North Dakota Section

Enclosures

**Military Aviation and Installation Assurance Siting Clearinghouse**

## Liz Metzen

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**From:** OSD Pentagon OUSD A-S Mailbox ASD EIE-RP-SC <osd.pentagon.ousd-a-s.mbx.asd-eie-rp-sc@mail.mil>  
**Sent:** Monday, July 10, 2023 1:56 PM  
**To:** Liz Metzen  
**Cc:** EDukart@bepc.com; Maddy Krumwiede; Lindsey Churchill; OSD Pentagon OUSD A-S Mailbox ASD EIE-RP-SC  
**Subject:** EXTERNAL: RE: Basin Electric Pioneer Generation Station to Judson 345-kV Transmission Project Consultation Request - NDPSC Project

Good afternoon Ms Metzen,

Your Informal Review request for the Basin Electric Pioneer Generation Station to Judson 345-kV Transmission Project has been received. We will begin processing the request shortly. Can you please provide/answer the following to aid us in our review?

- Can you provide a shapefile (kmz/kml) for mapping the project?
- What is the Maximum Pole Height of the 345kV line?

Thank you for the opportunity to review your project.

Very Respectfully,

The Clearinghouse  
Military Aviation and Installation Assurance Siting Clearinghouse  
Office of the Assistant Secretary of Defense (Energy, Installations and Environment)  
Email: osd.pentagon.ousd-a-s.mbx.asd-eie-rp-sc@mail.mil

---

**From:** Liz Metzen <liz.metzen@merjent.com>  
**Sent:** Friday, July 7, 2023 5:26 PM  
**To:** OSD Pentagon OUSD A-S Mailbox ASD EIE-RP-SC <osd.pentagon.ousd-a-s.mbx.asd-eie-rp-sc@mail.mil>  
**Cc:** EDukart@bepc.com; Maddy Krumwiede <maddy.krumwiede@merjent.com>; Lindsey Churchill <lindsey.churchill@merjent.com>  
**Subject:** Basin Electric Pioneer Generation Station to Judson 345-kV Transmission Project Consultation Request - NDPSC Project

To Whom It May Concern,

On behalf of Basin Electric Power Cooperative (Basin Electric), please see the attached consultation letter requesting review of Basin Electric's Pioneer Generation Station to Judson 345-kV Transmission Line Project (Project). The Project involves the construction of approximately 15 miles of 345-kV electric transmission line with about 0.5-mile of the transmission line being built as a double-circuit configuration on Basin Electric's property near the Pioneer Substation. The Project is located in Williams County, North Dakota. Due to the Project schedule, we are respectfully requesting a review of the material within 30 days.

If you have any questions or need any additional information, please contact me directly, or Maddy Krumwiede of Merjent, Inc. at 612-924-3973 or [maddy.krumwiede@merjent.com](mailto:maddy.krumwiede@merjent.com).

Sincerely,

**Liz Metzen**

218.216.6247 direct

218.310.6375 mobile

[liz.metzen@merjent.com](mailto:liz.metzen@merjent.com)



1 Main Street SE, Suite 300

Minneapolis, MN 55414

612.746.3660 main

[www.merjent.com](http://www.merjent.com)

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## Liz Metzen

---

**From:** Liz Metzen  
**Sent:** Tuesday, July 11, 2023 4:57 PM  
**To:** OSD Pentagon OUSD A-S Mailbox ASD EIE-RP-SC; osd.dod-siting-clearinghouse@mail.mil  
**Cc:** EDukart@bepc.com; Maddy Krumwiede; Lindsey Churchill  
**Subject:** Requested Information: Basin Electric Pioneer Generation Station to Judson 345-kV Transmission Project Consultation Request - NDPSC Project  
**Attachments:** Pioneer\_Judson\_Study\_Area.kmz

<b>Tracking:</b>	<b>Recipient</b>	<b>Delivery</b>
	OSD Pentagon OUSD A-S Mailbox ASD EIE-RP-SC osd.dod-siting-clearinghouse@mail.mil EDukart@bepc.com	
	Maddy Krumwiede	Delivered: 7/11/2023 4:57 PM
	Lindsey Churchill	Delivered: 7/11/2023 4:57 PM

Good afternoon –

The project route is still in development, and the final route may depend on responses received from all consultations and landowner discussions currently being conducted. For now, Basin Electric is reviewing routes within a study area. The study area we are requesting review and comments on is attached as a KMZ file. If you need this in a different format, please let us know.

The maximum pole height for the project is 170 feet.

Please let us know if you have any additional questions.

Thank you,

### Liz Metzen

218.216.6247 direct  
218.310.6375 mobile  
liz.metzen@merjent.com



1 Main Street SE, Suite 300  
Minneapolis, MN 55414  
612.746.3660 main  
www.merjent.com

---

**From:** OSD Pentagon OUSD A-S Mailbox ASD EIE-RP-SC <osd.pentagon.ousd-a-s.mbx.asd-eie-rp-sc@mail.mil>  
**Sent:** Monday, July 10, 2023 1:56 PM  
**To:** Liz Metzen <liz.metzen@merjent.com>  
**Cc:** EDukart@bepc.com; Maddy Krumwiede <maddy.krumwiede@merjent.com>; Lindsey Churchill <lindsey.churchill@merjent.com>; OSD Pentagon OUSD A-S Mailbox ASD EIE-RP-SC <osd.pentagon.ousd-a-s.mbx.asd-eie-rp-sc@mail.mil>



OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE

3400 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3400

ENERGY, INSTALLATIONS  
AND ENVIRONMENT

August 17, 2023

Liz Metzen  
Merjent, Inc  
1 Main Street SE, Suite 300  
Minneapolis, MN 55414

Dear Ms. Metzen,

As requested, the Military Aviation and Installation Assurance Siting Clearinghouse coordinated within the Department of Defense (DoD) an informal review of the Pioneer Generation Station to Judson 345-kV Transmission Line Project. The results of our review indicated that the transmission line project, located in Williams County, North Dakota, as proposed, will have minimal impact on military operations conducted in the area.

Please note that this informal review by the DoD Military Aviation and Installation Assurance Siting Clearinghouse does not constitute an action under 49 United States Code Section 44718 and that the DoD is not bound by the conclusion arrived at under this informal review. To expedite our review in the Obstruction Evaluation Airport Airspace Analysis (OE/AAA) process, please add the project number 2023-07-T-DEV-05 in the comments section of the filing. If you have any questions, please contact me at [robbin.e.beard.civ@mail.mil](mailto:robbin.e.beard.civ@mail.mil).

Sincerely,

A handwritten signature in blue ink that reads "Robbin Beard".

Robbin Beard  
Deputy Director  
Military Aviation and Installation  
Assurance Siting Clearinghouse

**U.S. Air Force  
Minot Air Force Base 91 MMXS/MMSXFK  
Twentieth Airforce Ninety-First Missile Wing**

## Liz Metzen

---

**From:** MUNOS, CY I CIV USAF AFGSC 91 MMXS/MMXSFK <cy.munos@us.af.mil>  
**Sent:** Monday, July 10, 2023 8:15 AM  
**To:** Liz Metzen  
**Cc:** EDukart@becp.com; Maddy Krumwiede; Lindsey Churchill  
**Subject:** EXTERNAL: RE: Basin Electric Pioneer Generation Station to Judson 345-kV Transmission Project Consultation Request - NDPSC Project

Liz,

The Minot AFB has no assets near the project area. Thank you for the notice.

Cy Munos  
Cable Affairs Officer  
91 MMXS/MMXSFK  
Minot AFB ND  
701-723-6053  
701-720-8274

---

**From:** Liz Metzen <liz.metzen@merjent.com>  
**Sent:** Friday, July 7, 2023 4:31 PM  
**To:** MUNOS, CY I CIV USAF AFGSC 91 MMXS/MMXSFK <cy.munos@us.af.mil>  
**Cc:** EDukart@becp.com; Maddy Krumwiede <maddy.krumwiede@merjent.com>; Lindsey Churchill <lindsey.churchill@merjent.com>  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Basin Electric Pioneer Generation Station to Judson 345-kV Transmission Project Consultation Request - NDPSC Project

Dear Mr. Munos,

On behalf of Basin Electric Power Cooperative (Basin Electric), please see the attached consultation letter requesting review of Basin Electric's Pioneer Generation Station to Judson 345-kV Transmission Line Project (Project). The Project involves the construction of approximately 15 miles of 345-kV electric transmission line with about 0.5-mile of the transmission line being built as a double-circuit configuration on Basin Electric's property near the Pioneer Substation. The Project is located in Williams County, North Dakota. Due to the Project schedule, we are respectfully requesting a review of the material within 30 days.

If you have any questions or need any additional information, please contact me directly, or Maddy Krumwiede of Merjent, Inc. at 612-924-3973 or [maddy.krumwiede@merjent.com](mailto:maddy.krumwiede@merjent.com).

Sincerely,

**Liz Metzen**

218.216.6247 direct

218.310.6375 mobile

[liz.metzen@merjent.com](mailto:liz.metzen@merjent.com)



1 Main Street SE, Suite 300

Minneapolis, MN 55414

612.746.3660 main

[www.merjent.com](http://www.merjent.com)

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**North Dakota Department of Commerce**

## Liz Metzen

---

**From:** Teigen, Joshua L. <jlteigen@nd.gov>  
**Sent:** Monday, August 14, 2023 8:33 AM  
**To:** Liz Metzen  
**Subject:** EXTERNAL: RE: Basin Electric PGS to Judson 345-kV Transmission Line Project - Consultation Request - NDPSC Project

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**CAUTION:** This email originated from outside of Merjent.

Hi Liz, apologies for the delay here. Not sure how this fell through the cracks.

Commerce is not aware of any projects that are within the boundary lines in the attached document that would impact your ability to move forward.

Please let me know if there is anything else that we can do to be of assistance,  
Josh

---

**From:** Heick, Tammy A. <theick@nd.gov>  
**Sent:** Sunday, August 13, 2023 12:37 PM  
**To:** Teigen, Joshua L. <jlteigen@nd.gov>  
**Subject:** FW: Basin Electric PGS to Judson 345-kV Transmission Line Project - Consultation Request - NDPSC Project

FYI ---

---

**From:** -Info-Dept. of Commerce <[commerce@nd.gov](mailto:commerce@nd.gov)>  
**Sent:** Friday, August 11, 2023 4:00 PM  
**To:** Heick, Tammy A. <[theick@nd.gov](mailto:theick@nd.gov)>  
**Subject:** FW: Basin Electric PGS to Judson 345-kV Transmission Line Project - Consultation Request - NDPSC Project

---

**From:** Liz Metzen <[liz.metzen@merjent.com](mailto:liz.metzen@merjent.com)>  
**Sent:** Friday, August 11, 2023 3:17 PM  
**To:** -Info-Dept. of Commerce <[commerce@nd.gov](mailto:commerce@nd.gov)>; Kessel, Shawn <[skessel@nd.gov](mailto:skessel@nd.gov)>  
**Cc:** [EDukart@bepc.com](mailto:EDukart@bepc.com); Maddy Krumwiede <[maddy.krumwiede@merjent.com](mailto:maddy.krumwiede@merjent.com)>; Lindsey Churchill <[lindsey.churchill@merjent.com](mailto:lindsey.churchill@merjent.com)>  
**Subject:** Basin Electric PGS to Judson 345-kV Transmission Line Project - Consultation Request - NDPSC Project

You don't often get email from [liz.metzen@merjent.com](mailto:liz.metzen@merjent.com). [Learn why this is important](#)

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Dear Mr. Teigen and Mr. Kessel,

Basin Electric Power Cooperative (Basin Electric) submitted a consultation request to your office, addressed to Josh Teigen, on July 7, 2023, to provide notification of Basin Electric's proposed PGS to Judson 345-kV Transmission Line Project and to solicit comments that will assist in the regulatory process. As we have not received a response, Merjent is following up on behalf of Basin Electric to ensure you received the notification and have the opportunity to respond. Attached is a copy of the original notification letter for your reference.

The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this notification will be included in Basin Electric's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

We appreciate your review and look forward to your response. If you have any questions or need any additional information, please contact me via email or phone or Maddy Krumwiede of Merjent at [maddy.krumwiede@merjent.com](mailto:maddy.krumwiede@merjent.com) or 612-924-3973.

Kind regards,

**Liz Metzen**

218.216.6247 direct

218.310.6375 mobile

[liz.metzen@merjent.com](mailto:liz.metzen@merjent.com)



1 Main Street SE, Suite 300

Minneapolis, MN 55414

612.746.3660 main

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**North Dakota Department of Game and Fish**



August 14, 2023

Maddy Krumwiede  
Merjent  
1 Main Street SE  
Suite 300  
Minneapolis, MN 55414

Dear Ms. Krumwiede:

Re: Judson 345-kV Transmission Line

The North Dakota Game and Fish Department has received notification of Basin Electric Power Cooperative's proposal to develop the Pioneer Generation Station to Judson 345-kV Transmission Line Project. The project consists of approximately 15-miles of 345-kV electric transmission line. It will be constructed using single-pole self-supporting steel structures with concrete foundations.

A primary concern is the possible disturbance of native prairie and wooded draws associated with construction of the transmission line and associated access roads. Avoidance of native prairie areas reduces impacts to a number of grassland species including many of the Species of Conservation Priority. We ask that work within these areas be avoided to the extent possible, every effort be made to prevent destruction of woody vegetation, and disturbed areas be reclaimed to pre-project conditions.

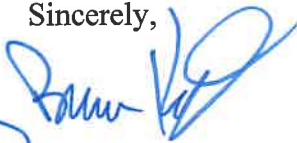
The project route crosses Painted Woods Creek. We recommend overhead lines be marked when placed over perennial streams or sited in close proximity to large wetlands complexes to minimize possible avian impacts. The publication "Reducing Avian Collisions with Power Lines: the State of the Art in 2012" provides a range of management options which can be used to reduce avian losses.

The National Wetland Inventory indicates a variety of wetlands within the proposed project corridor. Steps should be taken to protect any wetlands that cannot be avoided, no alterations should be made to existing drainage patterns and above-ground appurtenances should not be placed in wetland areas. Unavoidable destruction or degradation of wetland acres should be mitigated in-kind.

We do not believe this project will have significant adverse effects on wildlife or wildlife habitat,

including Species of Conservation Priority, provided these recommendations are implemented where appropriate.

Sincerely,



(for) Greg Link

Chief  
Conservation & Communication Division

Governor  
Doug Burgum

Director  
Jeb Williams

Deputy Director  
Scott A. Peterson



August 31, 2023

Maddy Krumwiede  
Senior Project Manager  
Merjent, Inc.  
1 Main Street East, Suite 300  
Minneapolis, MN 55414

Dear Ms. Krumwiede:

RE: Pioneer Generation Station to Judson 345-kV Transmission Line Project

Basin Electric Power Cooperative is proposing to develop an approximately 15-mile-long transmission line between the PGS Substation located northwest of Williston and the Judson Substation located west of Williston in McKenzie County, North Dakota. The North Dakota Game and Fish Department has reviewed this project for wildlife concerns.


A primary concern is the possible disturbance of native prairie associated with construction of the transmission line and associated access roads. Avoidance of native prairie areas reduces impacts to a number of grassland species including many of the species of conservation priority. We ask that work within these areas be avoided to the extent possible, and disturbed areas be reclaimed to pre-project conditions.

The National Wetland Inventory indicates a variety of wetlands within the proposed project corridor. Steps should be taken to protect any wetlands that cannot be avoided, no alterations should be made to existing drainage patterns, and above-ground appurtenances should not be placed in wetland areas. Unavoidable destruction or degradation of wetland acres should be mitigated in kind.

Aerial surveys should be conducted for raptor nests before construction begins. We recommend that a ½-mile construction buffer be implemented around active eagle nest sites (known occupied within the past 5 years). Ms. Sandra Johnson, Conservation Biologist, may be contacted at 701-328-6327 for additional information on golden eagle nest sites in the state.

We do not believe this project will have significant adverse effects on wildlife or wildlife habitat, including species of conservation priority, provided these recommendations are implemented where appropriate.

Sincerely,

  
Greg Link  
Chief

Conservation & Communications Division

Governor  
Doug Burgum

Director  
Jeb Williams

Deputy Director  
Scott A. Peterson

## **North Dakota Transmission Authority**



INDUSTRIAL COMMISSION OF NORTH DAKOTA  
NORTH DAKOTA TRANSMISSION AUTHORITY

Governor  
**Doug Burgum**  
Attorney General  
**Drew H. Wrigley**  
Agriculture Commissioner  
**Doug Goehring**

Merjent, Inc.  
Maddy Krumweide, Senior Project Manager  
1 Main St SE Suite 300  
Minneapolis, MN 55414

**Subject: Proposed Pioneer Generation Station to Judson 345kV Transmission Line Project**

Dear Ms. Krumweide,

This letter is in response to your request for input on the proposed Pioneer Generation Station to Judson 345kV transmission line project.

This project is important to Basin Electric Power Cooperative's ability to serve the northwest corner of the state. The additional capacity is vital for the safety and well-being of the member customers in the region and will provide much needed capacity and grid reliability for the growing industry in the region.

If you have any questions, feel free to reach out to me.

Sincerely,

*Claire*

Claire Vigesaa - Executive Director  
North Dakota Transmission Authority



North Dakota Transmission Authority  
Claire Vigesaa, Executive Director  
600 East Boulevard Avenue – Department 405 - Bismarck, ND 58505-0840  
E-Mail: [Claire.Vigesaa@NDTransmissionAuthority.com](mailto:Claire.Vigesaa@NDTransmissionAuthority.com) PHONE: 406-489-3881

**North Dakota State Historic Preservation Office**



August 14, 2023

Maddy Krumwiede  
Merjent Inc.  
1 Main Street SE  
Suite 300  
Minneapolis, MN 55414

**ND SHPO Ref.: 23-0261 Basin Electric Power Cooperative PGS to Judson 345-kV Transmission Line Project in portions of 41 sections in Williams County, North Dakota**

Dear Maddy,

We reviewed ND SHPO Ref.: 23-0261 Basin Electric Power Cooperative PGS to Judson 345-kV Transmission Line Project in portions of 41 sections in Williams County, North Dakota. We recommend a Class III (pedestrian survey) of cultural resources in the project area.

Thank you for the opportunity to review this project to date. We look forward to review of the Class III survey for archaeological resources. If you have any questions please contact Lorna Meidinger, Lead Historic Preservation Specialist at (701) 328-2089 or [lbmeidinger@nd.gov](mailto:lbmeidinger@nd.gov).

Sincerely,

*for* William D. Peterson, PhD  
Director, State Historical Society of North Dakota

23-0261



September 13, 2023

Maddy Krumwiede  
Merjent Inc.  
1 Main Street SE  
Suite 300  
Minneapolis, MN 55414

**ND SHPO Ref.: 23-0261 Basin Electric Power Cooperative PGS to Judson 345-kV Transmission Line Project in portions of 41 sections in Williams County, North Dakota**

Dear Maddy,

We reviewed the report for 477 acres of the 540 acre project SHSND Ref: 23-0261 Basin Electric Power Cooperative PGS to Judson 345-kV Transmission Line Project in Williams County, North Dakota. There are no significant sites affected by this project in this area provided it takes place in the location and in the manner described in the documentation. We look forward to reviewing the addendum report for the remaining 63 acres.

Thank you for the opportunity to review this project under North Dakota cultural resources consultation. This letter does not serve as federal agency consultation or SHPO consultation for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, (36 CFR Part 800), or the National Environmental Policy Act, as amended, (42 U.S.C. §§ 4321- 4347).

If you have any questions, please contact Lorna Meidinger, Lead Historic Preservation Specialist at [lbmeidinger@nd.gov](mailto:lbmeidinger@nd.gov) or (701) 328-2089.

Sincerely,

for William D. Peterson, PhD  
Director, State Historical Society of North Dakota

23-0261

**North Dakota Department of Trust Lands,  
Minerals Management**

## Liz Metzen

---

**From:** Suelzle, Chris <csuelzle@nd.gov>  
**Sent:** Tuesday, July 11, 2023 11:02 AM  
**To:** Stegmiller, Joseph H.; Spangelo, Kayla M.; Liz Metzen  
**Subject:** EXTERNAL: RE: Basin Electric Pioneer Generation Station to Judson 345-kV Transmission Project Consultation Request - NDPSC Project

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

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Liz,

I just received this. We will try to review as soon as possible. Of course you will be required to obtain an easement for any crossing of Trust Surface Lands. We would also ask you to be mindful of oil and gas development and make sure you talk to the operators in the area to make sure it won't impede any development. Let me know if you have any questions.

Chris Suelzle  
Minerals Director  
ND Department of Trust Lands  
csuelzle@nd.gov

---

**From:** -Info-DTL Minerals <dtlminerals@nd.gov>  
**Sent:** Tuesday, July 11, 2023 9:25 AM  
**To:** Suelzle, Chris <csuelzle@nd.gov>; Stegmiller, Joseph H. <jstegmiller@nd.gov>; Spangelo, Kayla M. <kspangelo@nd.gov>  
**Subject:** FW: Basin Electric Pioneer Generation Station to Judson 345-kV Transmission Project Consultation Request - NDPSC Project

Hi Chris, just making sure you have seen this email, and adding Joseph and Kayla.

Thank you,  
Lynn

---

**From:** Liz Metzen <[liz.metzen@merjent.com](mailto:liz.metzen@merjent.com)>  
**Sent:** Friday, July 7, 2023 5:38 PM  
**To:** -Info-DTL Minerals <[dtlminerals@nd.gov](mailto:dtlminerals@nd.gov)>  
**Cc:** [EDukart@becp.com](mailto:EDukart@becp.com); Maddy Krumwiede <[maddy.krumwiede@merjent.com](mailto:maddy.krumwiede@merjent.com)>; Lindsey Churchill <[lindsey.churchill@merjent.com](mailto:lindsey.churchill@merjent.com)>  
**Subject:** Basin Electric Pioneer Generation Station to Judson 345-kV Transmission Project Consultation Request - NDPSC Project

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Dear Director Suelzle,

On behalf of Basin Electric Power Cooperative (Basin Electric), please see the attached consultation letter requesting review of Basin Electric's Pioneer Generation Station to Judson 345-kV Transmission Line Project (Project). The Project involves the construction of approximately 15 miles of 345-kV electric transmission line with about 0.5-mile of the transmission line being built as a double-circuit configuration on Basin Electric's property near the Pioneer Substation. The Project is located in Williams County, North Dakota. Due to the Project schedule, we are respectfully requesting a review of the material within 30 days.

If you have any questions or need any additional information, please contact me directly, or Maddy Krumwiede of Merjent, Inc. at 612-924-3973 or [maddy.krumwiede@merjent.com](mailto:maddy.krumwiede@merjent.com).

Sincerely,

**Liz Metzen**

218.216.6247 direct  
218.310.6375 mobile  
[liz.metzen@merjent.com](mailto:liz.metzen@merjent.com)



1 Main Street SE, Suite 300  
Minneapolis, MN 55414  
612.746.3660 main  
[www.merjent.com](http://www.merjent.com)

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**North Dakota Department of Trust Lands,  
School / Surface Trust**

## Liz Metzen

---

**From:** -Info-Land Dept. ROW <landrow@nd.gov>  
**Sent:** Wednesday, July 12, 2023 3:05 PM  
**To:** Maddy Krumwiede  
**Cc:** EDukart@bepc.com; Lindsey Churchill; -Info-DTL General Inquiries; Liz Metzen  
**Subject:** EXTERNAL: RE: Basin Electric Pioneer Generation Station to Judson 345-kV Transmission Project Consultation Request - NDPSC Project  
**Attachments:** Joseph Stegmiller July 7, 2023.pdf

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**CAUTION:** This email originated from outside of Merjent.

Hello,

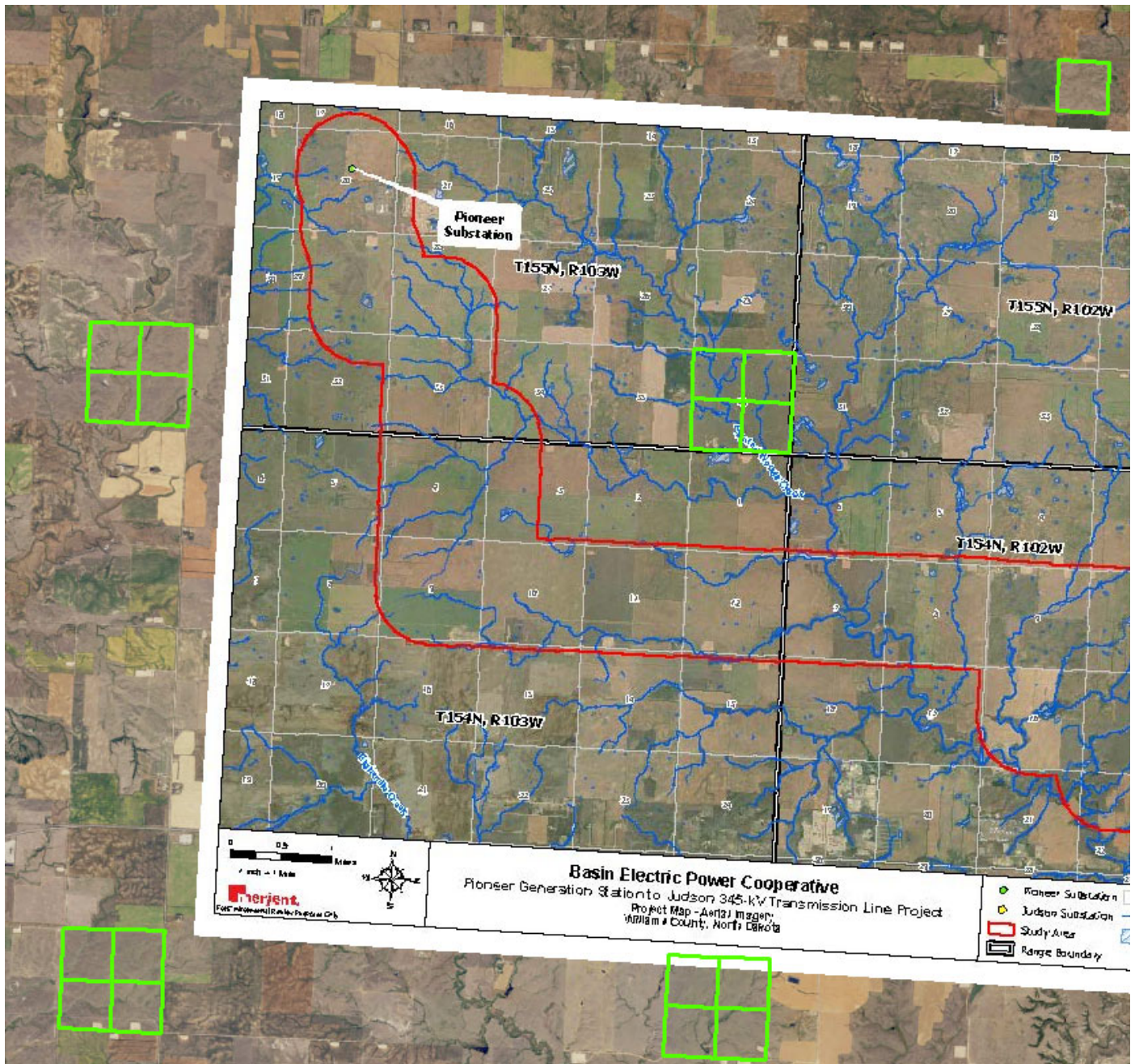
The North Dakota Department of Trust Lands (NDDTL) does not manage any surface acreage within this proposed project boundary.

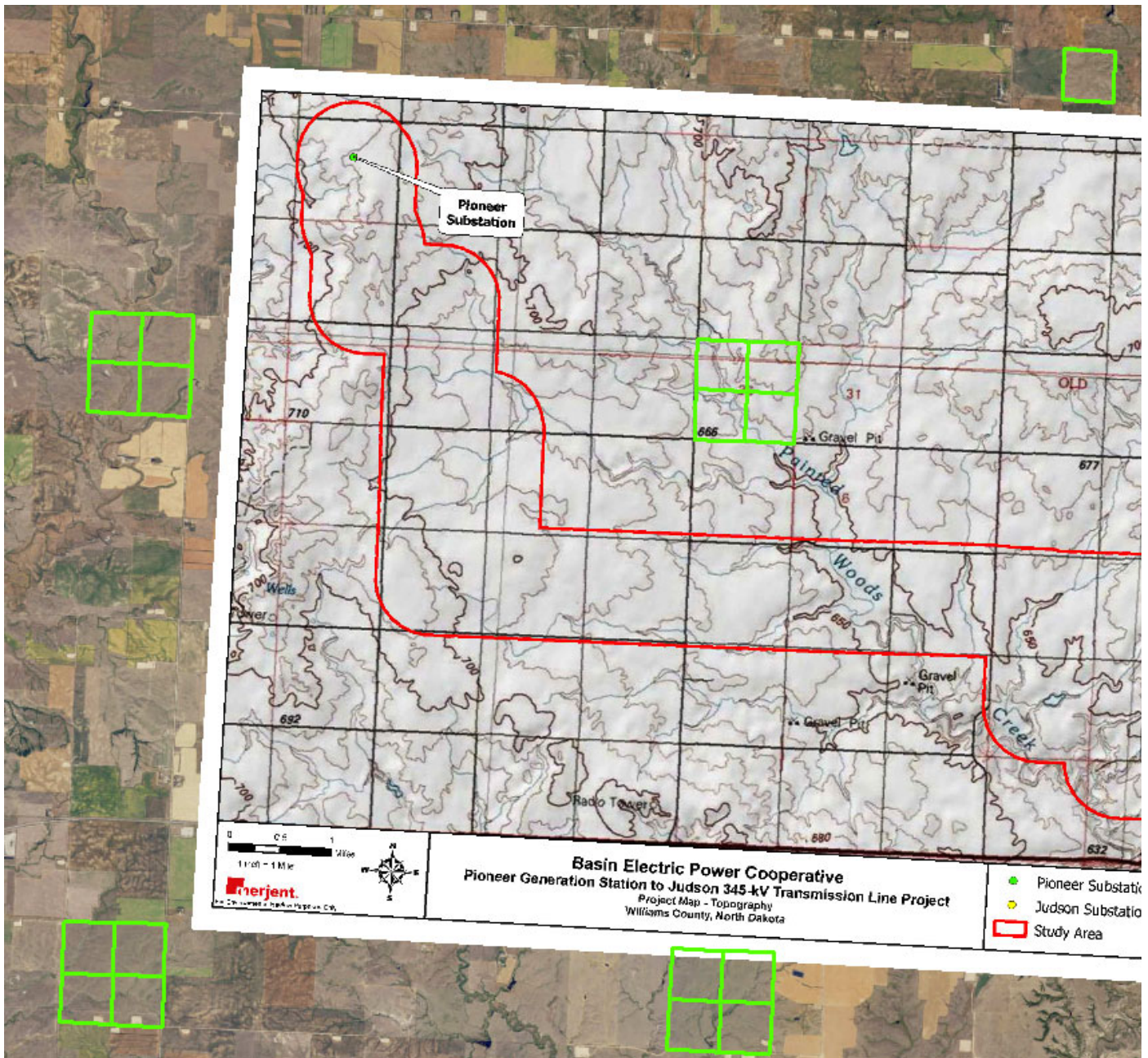
Any proposed projects (ie, pipelines, electric lines, roads, studies, etc.) crossing NDDTL managed property would need to apply for a Rights of Way and would be subject to review and approval by the Board of University and School Lands.

To see an interactive map of land parcels managed by the North Dakota Department of Trust Lands please reference the interactive map linked below. Surface managed by the North Dakota Department of Trust Lands is outlined in green when viewing the map.

- Interactive Reference Map: [NDDTL Surface Map \(arcgis.com\)](https://arcgis.com)

Maps received with NDDTL managed surface overlain (green squares):





If you have any questions, please contact the Department via emailing [landrow@nd.gov](mailto:landrow@nd.gov) or calling 701-328-2800.

Sincerely,

North Dakota Department of Trust Lands

**From:** Liz Metzen <liz.metzen@merjent.com>

**Sent:** Friday, July 7, 2023 4:35 PM

**To:** -Info-DTL Surface <dtlsurface@nd.gov>

**Cc:** EDukart@becp.com; Maddy Krumwiede <maddy.krumwiede@merjent.com>; Lindsey Churchill <lindsey.churchill@merjent.com>

**North Dakota Parks and Recreation Department**

August 6, 2023

Mergent  
Maddy Krumwiede  
1 Main Street SE. Suite 300  
Minneapolis, MN 55414

Re: Basin Electric Power Cooperative -Generation Station to Judson 345-kV Transmission Line P- Williams County

Dear Maddy,

The North Dakota Parks and Recreation Department (NDPRD) has reviewed the above-referenced Basin Electric Power Cooperative -Generation Station to Judson 345-kV Transmission Line Project in Williams County, North Dakota.

NDPRD's scope of authority and expertise covers properties that NDPRD owns, leases, or manages; properties protected under Section 6(f) of the Land and Water Conservation Fund (LWCF); rare plants; and ecological communities established through the Natural Heritage Program.

The project does not appear to affect properties NDPRD owns, leases, or manages.  
The project does not appear to affect any properties protected under Section 6(f) of the LWCF.

A North Dakota Natural Heritage biological conservation database query determines if any current or historical plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, no known plant or animal species of concern or significant ecological communities are documented within or immediately adjacent to the project site.

We appreciate your commitment to rare plant, animal, and ecological community conservation, management, and inter-agency cooperation. For additional information, please contact me at 701-328-5370, 701-220-3377 (cell), or [kgduttenhefner@nd.gov](mailto:kgduttenhefner@nd.gov).

Thank you for the opportunity to comment on the proposed project.

Sincerely,



Kathy Duttenhefner, Chief Natural Resources Division

**North Dakota Department of Water Resources**

July 25, 2023

Maddy Krumwiede  
Senior Project Manager  
Merjent, Inc.  
1 Main Street SE, STE 300  
Minneapolis, MN 55414

Dear Ms. Krumwiede:

This is in response to your request for a review of the environmental impacts associated the proposed Pioneer Generation Station to Judson 345-kV Transmission Line Project located in Williams County, ND.

The proposed project has been reviewed by Department of Water Resources, and the following comments are provided:

- There are no FEMA National Flood Insurance Program (NFIP) floodplains identified or mapped where the proposed project is to take place. No permit relative to the NFIP are likely required based on the current effective Flood Insurance Rate Map and State minimum standards. However, flood risk has been identified through the North Dakota Risk Assessment Mapservice and Base Level Engineering (BLE) ([ndram.dwr.nd.gov](http://ndram.dwr.nd.gov)). In the absence of FEMA NFIP data, BLE is often considered best available data and is recommended to be considered in the design process. The State of North Dakota has no formal NFIP permitting authority as all NFIP permitting decisions are considered by impacted NFIP participating communities, the community with zoning authority for the area in question. Please work directly with the local floodplain administrators of the zoning authorities impacted.
- The Regulatory Division's Engineering and Permitting Section reviewed the project locations and determined that no drainage permits, or construction permits for dikes, diversions, or restorations, are likely required so long as any watercourses are not modified (i.e., deepened, widened, rerouted, etc.). Please contact the Regulatory Division at 701-328-4956 or [dwrregpermits@nd.gov](mailto:dwrregpermits@nd.gov) with any questions.
- Initial review indicates the project does not require a conditional or temporary permit for water appropriation. However, if surface water or groundwater will be diverted for construction of the project, a water permit will be required per North Dakota Century Code § 61-04-02. Please consult with the Department of Water Resources Water Appropriation Division if you have any questions at 701-328-2754 or [appropinfo@nd.gov](mailto:appropinfo@nd.gov).
- The Department of Water Resources maintains a network of observation wells across the state for monitoring the water levels and quality in glacial and bedrock aquifers. These wells are often installed in road and highway rights-of-way to limit inconvenience to the adjacent landowners. Department of Water Resources observation wells have a

yellow protective casing extending between 1 and 3 feet above ground surface, and their locations are marked with a stake. If an observation well is encountered during project activities and must be removed, please contact the Water Appropriation Division. The Department of Water Resources hopes to keep all observation wells, but otherwise will ensure the well is properly abandoned.

Thank you for the opportunity to provide review comments. Should you have further questions, please contact me at 701-328-4970 or [stevebest@nd.gov](mailto:stevebest@nd.gov).

Sincerely,

Steven Best  
Planner III

SB:dm/1570

**North Dakota Department of Environmental Quality**

July 19, 2023

Maddy Krumwiede  
Senior Project Manager  
Merjent, Inc.  
1 Main St. SE, Suite 300  
Minneapolis, MN 55414

Re: Proposed Pioneer Generation Station to Judson 345-kV Transmission Line in  
Williams County

Dear Ms. Krumwiede:

The North Dakota Department of Environmental Quality has reviewed the information concerning the above-referenced project received at the department on July 7, 2023, with respect to possible environmental impacts.

1. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.
2. Projects disturbing one or more acres are required to have a permit to discharge stormwater runoff until the site is stabilized by the re-establishment of vegetation or other permanent cover. Further information on the stormwater permit may be obtained from the department's website or by calling the Division of Water Quality at 701-328-5210. Also, cities may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local stormwater management considerations are addressed.
3. The construction project may include individual projects located within Williams County. It is possible that some projects may be located over defined glacial drift aquifers, defined sensitive groundwater areas, or within wellhead or source water protection areas. Care should be taken to avoid spills of any materials that may have an adverse effect on groundwater quality. All spills must be immediately reported to this Department and appropriate remedial actions performed.

4. All solid waste materials must be managed and transported in accordance with the state's solid and hazardous waste rules. Appropriate efforts to reduce, reuse and/or recycle waste materials are strongly encouraged. As appropriate, segregation of inert waste from non-inert waste can generally reduce the cost of waste management. Further information on waste management and recycling is available from the department's Division of Waste Management at 701-328-5166.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,



L. David Glatt, P.E., Director  
North Dakota Department of Environmental Quality

LDG:ll  
Attach.

## Construction and Environmental Disturbance Requirements

The following are the minimum requirements of the North Dakota Department of Environmental Quality for projects that involve construction and environmental disturbance in or near waters of the State of North Dakota. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect waters of the state. All projects must be constructed to minimize the loss of soil, vegetative cover, and pollutants (chemical or biological) from a site.

### **Soils**

Prevent the erosion and sediment loss using erosion and sediment controls. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, and land resources must be prohibited against compaction, vegetation loss and unnecessary damage.

### **Surface Waters**

All construction must be managed to minimize impacts to aquatic systems. Follow safe storage and handling procedures to prevent the contamination of water from fuel spills, lubricants, and chemicals. Stream bank and stream bed disturbances must be contained to minimize silt movement, nutrient upsurges, plant dislocations, and any physical chemicals, or biological disruption. The use of pesticides or herbicides in or near surface waters is allowed under the department's pesticide application permit with notification to the department.

### **Fill Material**

Any fill material placed below the ordinary high-water mark must be free of topsoil, decomposable materials, and persistent synthetic organic compounds; including, but not limited to, asphalt, tires, treated lumber, and construction debris. The department may require testing of fill material. All temporary fills must be removed. Debris and solid waste must be properly disposed or recycled. Impacted areas must be restored to near original condition.

**North Dakota Geological Survey**

## Liz Metzen

---

**From:** Anderson, Fred J. <fjanderson@nd.gov>  
**Sent:** Monday, August 14, 2023 8:39 AM  
**To:** Liz Metzen; Helms, Lynn D.  
**Cc:** EDukart@bepc.com; Maddy Krumwiede; Lindsey Churchill  
**Subject:** EXTERNAL: RE: Basin Electric PGS to Judson 345-kV Transmission Line Project - Consultation Request - NDPSC Project - NDGS Comments

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**CAUTION:** This email originated from outside of Merjent.

Ms. Metzen-

I have reviewed the project area shown in the July 7, 2023 comment solicitation letter that you emailed to us on Friday, August 11, 2023, and would just note that there are several landslide areas mapped in the southeastern portion of the project area in and around Painted Woods Creek. These would be areas to avoid for any planned structures.

Our landslide maps and shapefiles are available for free download at: <https://www.dmr.nd.gov/ndgs/landslides/> if needed for additional evaluations.

Please feel free to contact us if you have any additional questions or comments.

Regards,

**Fred J. Anderson**

*Geologist, North Dakota Geological Survey*

701.328.8000 (Survey Main Office) • 701.328.8037 (Office Direct) • [fjanderson@nd.gov](mailto:fjanderson@nd.gov) • [www.dmr.nd.gov/ndgs](http://www.dmr.nd.gov/ndgs)



701.328.8020 (Front Office) • [oilandgasinfo@nd.gov](mailto:oilandgasinfo@nd.gov) • [www.dmr.nd.gov](http://www.dmr.nd.gov) • 600 E Boulevard Ave, Dept. 405 • Bismarck, ND 58505

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**From:** Liz Metzen <liz.metzen@merjent.com>  
**Sent:** Friday, August 11, 2023 16:06  
**To:** Helms, Lynn D. <lhelms@nd.gov>; Anderson, Fred J. <fjanderson@nd.gov>  
**Cc:** EDukart@bepc.com; Maddy Krumwiede <maddy.krumwiede@merjent.com>; Lindsey Churchill <lindsey.churchill@merjent.com>  
**Subject:** Basin Electric PGS to Judson 345-kV Transmission Line Project - Consultation Request - NDPSC Project

Some people who received this message don't often get email from [liz.metzen@merjent.com](mailto:liz.metzen@merjent.com). [Learn why this is important](#)

**Williams County Commissioner**

## Liz Metzen

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**From:** Maddy Krumwiede  
**Sent:** Wednesday, August 23, 2023 10:13 AM  
**To:** Michelle Haugen  
**Cc:** Erin Dukart  
**Subject:** Re: EXTERNAL: Transmission Line Project

Thank you, Michelle! We appreciate you taking the time to review the PGS to Judson 345-kV project.

**Maddy Krumwiede, PMP**

[612.924.3973](tel:612.924.3973) direct  
[612.554.7169](tel:612.554.7169) mobile  
[maddy.krumwiede@merjent.com](mailto:maddy.krumwiede@merjent.com)

[1 Main Street SE, Suite 300](#)  
[Minneapolis, MN 55414](#)  
[612.746.3660](tel:612.746.3660)  
[www.merjent.com](http://www.merjent.com)

On Aug 23, 2023, at 9:56 AM, Michelle Haugen <MichelleH@co.williams.nd.us> wrote:

**CAUTION:** This email originated from outside of Merjent.

Good morning, Maddy,

I apologize in the delay of getting this to you. After looking into the proposed project, I feel this would fall more into the public utilities, minor category which is a permitted use within all zoning districts.

If you have further questions, or need anything further please let me know.



**Michelle J Haugen**  
Staff Planner

701-577-4565  
206 E Broadway • PO Box 2047 • Williston, ND 58802-2047  
[michelleh@co.williams.nd.us](mailto:michelleh@co.williams.nd.us) • [www.williamsnd.com](http://www.williamsnd.com)

## **Round Prairie Township**



## Telephone Log

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Date:

10/12/2023

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To:

Terri Oyloe, Supervisor

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Agency:

Round Prairie Township

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Phone Number:

701-770-0540

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From:

Liz Metzen

---

Company:

Merjent

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Phone Number:

218-310-6375

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Subject:

Basin Electric – Potential Twp permits for the PGS to Judson 345-kV Transmission Project

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An agency notification letter was emailed to Ms. Oyloe on October 6, 2023. On October 12, 2023, Ms. Metzen called Ms. Oyloe to confirm whether the notification email was received. Ms. Oyloe spoke with another township board member and called Ms. Metzen back. Ms. Oyloe confirmed that no Round Prairie Township permitting is required for the Project. Ms. Oyloe plans to send the notification email to all Round Prairie Township board members for information purposes.



October 6, 2023

Terri Oyloe  
Township Supervisor  
Round Prairie Township  
Williams County, North Dakota

Submitted via email: [toyloe@hotmail.com](mailto:toyloe@hotmail.com)

**Subject: Pioneer to Judson 345-kV Transmission Project in Williams County, North Dakota**

Dear Ms. Oyloe,

Basin Electric Power Cooperative (Basin Electric) is proposing to develop the Pioneer to Judson 345-kilovolt (kV) Transmission Project (Project) in Williams County, North Dakota. The Project starts at the Basin Electric owned Pioneer Switchyard located northwest of the City of Williston and terminates at the Basin Electric owned Judson Substation located west of the City of Williston. The Project consists of approximately 15 miles of 345-kV electric transmission line with about 0.5-mile of the transmission line being built as a double-circuit configuration on Basin Electric’s property near the Pioneer Switchyard. The Project will be constructed using single-pole self-supporting steel structures. The transmission structures will be galvanized steel with concrete foundations; guy wires will not be utilized. A 150-foot-wide right-of-way will be required for all route segments.

The purpose and need of the Project is to connect PGS Phase IV generation facilities to electrical grid resources. Basin Electric identified the need for PGS Phase IV through its power supply planning process. As a result of this process, it became apparent there was a need for additional capacity in the region to meet the growing demand and provide an adequate supply of electrical power for Basin Electric’s membership. Basin Electric plans to submit a consolidated application for a Certificate of Corridor Compatibility and Transmission Facility Route Permit for the Project to the North Dakota Public Service Commission which will include copies of agency correspondence. Construction of the Project is anticipated to begin in early 2024.

The purpose of this letter is to provide Round Prairie Township with Project information requested during a telephone communication with you on September 18, 2023. We are soliciting input from Round Prairie Township regarding any applicable permits or approvals that may be required from the Township. Basin Electric requests the consideration of the Study Area within the legal descriptions provided in the table below and shown on the attached maps. The Williams County Commissioner’s office has reviewed the Project and considers the work to be in the “public utilities, minor category” and will not require further permitting.

Pioneer Generation Station to Judson 345-kilovolt Transmission Line				
Study Area - Public Land Survey System Locations				
County	Township Name	Township	Range	Section
Williams	Judson	154N	102W	3, 4, 5, 6, 7, 8, 9, 10, 14, 15, 16, 17, 18, 21, 22, 23, 26, 27
	Round Prairie	154N	103W	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16
	Hebron	155N	103W	17, 20, 21, 27, 28, 29, 32, 33, 34

Basin Electric respectfully requests your response within 30 days of receipt of this letter. Copies of all correspondence received in response to this letter will be included with the Project's North Dakota Public Service Commission filings. Basin Electric has contracted with Merjent, Inc. on this Project. If further information is desired or if you have comments regarding the Project, please contact me at the address provided below, by e-mail at [maddy.krumwiede@merjent.com](mailto:maddy.krumwiede@merjent.com), or by phone at 612-924-3973.

Sincerely,



Maddy Krumwiede  
Senior Project Manager

Merjent, Inc.  
1 Main Street SE, Suite 300  
Minneapolis, Minnesota 55414

Enclosures: Project Study Area Maps

Cc: Erin Dukart, Basin Electric  
Lindsey Churchill, Merjent

## **Appendix G**

### **Project Information Pamphlet for Landowners**

**Appendix H**  
**Landowner Waiver**

Return Recorded Document to:  
Casey Jacobson  
Basin Electric Power Cooperative  
1717 East Interstate Avenue  
Bismarck, ND 58503-0564  
[cjacobson@bepc.com](mailto:cjacobson@bepc.com)  
Phone (701) 557-5413

**ACKNOWLEDGMENT AND WAIVER**

This agreement made this 12 day of October, 2023.

WHEREAS, Basin Electric Power Cooperative is developing an overhead 345kV transmission line project ("**Project**") to be located in Williams County, North Dakota;

That a Transmission Line Easement, dated August 14, 2023, has been granted by Floyd Miller unto Basin Electric, covering a tract of land in the North Half of the Southeast Quarter, of Section 33, Township 155 North, Range 103 W, Williams County, North Dakota and more particularly described as follows:

WHEREAS, the North Dakota Energy Conversion and Transmission Facility Siting Act provides that areas within five hundred (500) feet of an inhabited rural residence must be designated avoidance areas and further provides that this requirement may be waived by the owner of the inhabited rural residence in writing;

WHEREAS, Rick Stillwell wishes to grant a Waiver to Basin Electric Power Cooperative to allow them to place the transmission line within 500 feet, but no closer than 400 feet of the occupied rural residence.

The following is acknowledged:

1. Rick Stillwell is the owner(s) of real property located in MS23-0004 IN W2NE Section 4, Township 154N, Range 103 West, Williams County, North Dakota.
2. Rick Stillwell acknowledges that N.D.C.C. § 49-22-05.1 provides that, "Except for transmission lines in existence before July 1, 1983, areas within five hundred feet of an inhabited rural residence must be designated avoidance areas."
3. Rick Stillwell further acknowledges that this avoidance area requirement may be waived by the owner of the inhabited rural residence in writing.
4. Rick Stillwell agrees to Basin Electric Power Cooperative locating an overhead 345kV transmission line within five hundred feet of an inhabited rural residence in the area of land described above.

Name: Rick Stillwell

Title: Owner *R. Stillwell*

Date: 10-12-23

STATE OF North Dakota  
COUNTY OF Williams )<sup>SS</sup>

On this 12 day of October, 2023, before me personally appeared Rick Stillwell, known to me to be the person(s) who is/are described in and who executed the within instrument, and acknowledged to me that he/she/they executed the same.

*Waide G. Whitworth*  
\_\_\_\_\_  
Notary Public

(SEAL)

