



PU-26-022
Minnkota Power Cooperative
Agassiz Transmission Line &
Substation
Topsoil Inspection Report

File No. 227709053

June 8, 2026

Prepared for:

North Dakota Public Service Commission
600 E. Boulevard Avenue
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Prepared by:

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Table of Contents

1.0	EXECUTIVE SUMMARY.....	1.1
2.0	BACKGROUND INFORMATION	2.1
2.1	INTRODUCTION.....	2.1
2.2	PURPOSE & SCOPE	2.1
2.3	REGIONAL SOILS	2.2
2.4	TOPSOIL STRIPPING AND SEGREGATION BEST PRACTICIES	2.2
2.5	INSPECTION METHODOLOGY.....	2.3
3.0	INSPECTION RESULTS.....	2.3
4.0	SIGNATURE	4.1

LIST OF FIGURES

Figure 1 Topsoil Observation Locations

LIST OF APPENDICES

Appendix A Observation Point Photolog



1.0 EXECUTIVE SUMMARY

The North Dakota Public Service Commission (PSC) retained Stantec Consulting Services Inc (Stantec) to complete topsoil inspection(s) during construction of the Minnkota Power Cooperative's (i.e. Minnkota) Agassiz Transmission Line, PU-26-022 (i.e., the Project) in Harwood, North Dakota. The purpose of the inspections is to ensure the Project is constructed in compliance with the siting laws and rules and the applicable PSC Orders for the Project, which includes a requirement that topsoil must be segregated from subsoil during the installation of the project facilities.

Stantec was present to observe the commencement of topsoil salvage and stockpiling on May 18th, 2026. Minnkota had previously been approved for a temporary construction variance to start work around the substation prior to May 18th. Burns & MacDonnell (i.e., BMcD). BMcD is currently overseeing project contractors responsible for foundation drilling and grading of the Project site. BMcD has a project superintendent present on-site during the inspection and will plan to oversee the other subcontractors. Aldridge was on-site and involved with the ongoing foundation work.

This Topsoil Inspection Report includes documentation of topsoil stripping, segregation, and stockpiling during the May 18th and June 1st, 2026, on-site inspections of the Project. Stantec has observed topsoil removal and stockpiling performed by Minnkota's contractors. By and large, soil removal and storage processes are satisfactory.



2.0 BACKGROUND INFORMATION

2.1 INTRODUCTION

Minnkota has begun construction on the Agassiz Transmission Line & Substation, a proposed 1.74 mile-long facility corridor in Cass County, North Dakota. The plan includes a 1.25 mile-long 345-kV transmission line and substation. The Project is located in a cultivated fields, and contained within private parcels, with two main entrances: the first is located off 52nd Ave. N. accessing the project area west of I-29 and the other access is located off US HWY 81 for the portion of the project east of I-29.

2.2 PURPOSE & SCOPE

The North Dakota Energy Conversion and Transmission Facility Act (North Dakota Century Code Chapter 49-22) authorizes the Public Service Commission to determine that the location, construction, and operation of jurisdictional energy conversion and transmission facilities will produce minimal adverse effects on the environment and the welfare of citizens of North Dakota. Construction inspections aim to ensure that such projects are constructed in compliance with the siting laws (North Dakota Century Code Chapter 49-22) and rules (North Dakota Administrative Code Article 69-06) and the applicable PSC Findings of Fact, Conclusions of Law, and Order (Order). The PSC issued its Findings of Fact, Conclusions of Law, and Order in Case No. PU-26-022 on April 29, 2026, granting Certificate of Corridor Compatibility No. 248.

The PSC retained Stantec to complete construction inspections, and specifically a topsoil inspection, of the Project. The inspection process included a review of the Application, the Project's Order, and other applicable documents. The primary intent of the initial topsoil inspection is to document compliance with PSC's Certificate Relating to Project Order Provision #11, which states: *"Company understands and agrees that topsoil, up to 12 inches, or topsoil to the depth of cultivation, whichever is greater, over and along trench areas, must be carefully stripped and segregated from the subsoil. Any area on which excavated subsoil will be placed must first be stripped of topsoil. The stripped topsoil must not be stockpiled in natural drainages, and must be protected from water erosion. Care must be taken to protect topsoil from unnecessary compaction by heavy machinery. Unless otherwise approved by the Commission, topsoil must be removed before topsoil freezes in the late fall/early winter to the point that frost inhibits proper soil segregation. After backfilling with subsoil is completed, any excess subsoil must be placed over the excavation area, blending the grade into existing topography. Topsoil must be replaced over areas from which it was stripped only after the subsoil is replaced."*

The project entails permanent development on cropland for the facility and topsoil replacement is not expected to occur over the entire project area.



**PU-26-022 MINNKOTA POWER COOPERATIVE
AGASSIZ TRANSMISSION LINE & SUBSTATION TOPSOIL INSPECTION REPORT**

Background Information

June 2026

2.3 REGIONAL SOILS

The entirety of the Project is located in the Red River Valley, also referred to as the Glacial Lake Agassiz Basin. Soils in this region are generally formed from Glacial Lake Agassiz sediment deposits underlain by glacial till. These lacustrine sediment deposits consist of very fine clay particles, with the topography of the region described as extremely flat. This leads to the area having fewer pothole wetlands than surrounding ecoregions, despite the area being very poorly drained and prone to flooding. The majority of the soils present throughout the Project would be classified as mollisols and vertisols characterized by a relatively dark, thick "A" (topsoil) horizon. Some soils may be salt-affected, which have adverse properties from salinity and/or sodicity. Many of the soils in this area are drained via surface ditches and/or subsurface tile.

The main difference between topsoil and subsoil in this region is most often the presence of calcium carbonates, accumulation of salts such as sodium, and a reduction in organic matter. Calcareous subsoils can be visually distinguished by the lighter colors associated with calcium carbonates and/or a reduction in organic matter. Subsoil generally has lower organic matter content than topsoil, making it typically lighter in color. It may also have different chemical and physical properties (i.e., texture) than the topsoil.

Topsoil identification on saline or sodium affected soils (i.e., alkali or sodic soils) is sometimes less apparent solely by color, but topsoil can be distinguished by accumulations of salt, clay and/or associated structure (i.e., columnar clay pans). Salt-affected sodic soils, when tilled or disturbed, are typically hard and cloddy when dry, often coated with a visible salt crust. Accumulation of salts in the subsoil is common and can severely restrict plant growth. The presence or absence of existing plant roots can be used as an indication between topsoil and unsuitable subsoil in certain situations, such as saline/sodic subsoils.

2.4 TOPSOIL STRIPPING AND SEGREGATION BEST PRACTICES

Topsoil has biological, physical and chemical properties that are critical to successful reclamation after soil disturbances, such as site mass grading requires. The surface layer of most soils is considered topsoil primarily due to its content of organic matter. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth. Topsoil, typically considered the A horizon, should be stripped according to natural variations in the depth of this darker layer of organic-matter-rich soil.

During site preparation and mass grading work, operators are to segregate topsoil and subsoil. Mixing subsoil with the topsoil can be detrimental to the re-vegetation and vegetative productivity of the soil. Soil productivity in this area is driven by the parent material of outwash and microtopography. Some areas have an accumulation of salts or smectitic clay that often restrict plant root growth. Equipment operators need to be aware of the natural soil landscape relationships, as well as the potential for accumulations of salts, both of which drive topsoil thicknesses, and adjust stripping depths accordingly.



2.5 INSPECTION METHODOLOGY

Stantec visually inspected the Project by walking or driving within the Project site. During the inspection, work done by contractors/equipment operators was observed to verify that the topsoil has been properly removed, piled, and kept segregated from subsoil. An iPhone was used to collect photographs during the inspection with the utilization of Arc GIS's Field Maps application for GPS locating and documentation purposes. Location-referenced photographs are provided in Appendix A and Geographical Information System (GIS) generated map(s) of observation locations are provided in Figures 1.

Stantec shared the PSC order provisions relating to topsoil stripping, segregation, and protection with individuals present during the inspection and provided opportunity for BMcD and its contractors to ask questions on expectations for topsoil stripping depths and segregation. Stantec then observed the contractor's topsoil stripping, segregation of stockpiling practices. Visual inspections were made by Stantec at various locations to confirm the proper depths of topsoil stripping were reached and mixing of the underlying subsoils were not being mixed with the topsoil being stripped.



3.0 INSPECTION RESULTS

Matt Retka and Jarrett Lardy, both Soil Scientists with Stantec, were present on May 18th to inspect ongoing work and to ensure PSC order provisions were understood and followed. Topsoil removal began prior to Stantec's inspection on May 18th, 2026, as approved under a temporary construction variance. Grading of the proposed substation was already well underway on May 18th, and imported sand was being placed and leveled. BMcD explained that topsoil has been stripped and placed in stockpiles outside of the Project Area, in conjunction with dirt work being done on adjacent properties associated with other project(s), including construction of a data-center. Therefore, Stantec was unable to verify prior topsoil handling.

Retka and Lardy met with representatives from BMcD upon arrival to the site on the afternoon of May 18th, 2026 to review PSC topsoil requirements with involved parties. Mr. Retka shared the requirements set forth in PSC order provision related to topsoil. Topsoil stripping was only taking place in a few locations during Stantec's inspection on May 18th, and only a small portion of the project site has received timber mats. More matting was placed by the time Stantec's 2nd inspection occurred, on June 1st, to access locations for transmission posts to minimize topsoil compaction. Matting was laid along a north/south corridor that was along the north side of 52nd Ave. N., within a laydown area. Matting was laid going north from the laydown area, to which Stantec observed two foundations having been drilled and installed, with a 3rd and 4th foundation actively being drilled.

On the May 18th inspection, topsoil was removed and stockpiled away from subsoil stockpiles at foundation locations. Stripped topsoil was noted to have included some minor subsoil. Stantec discussed this with BMcD to prevent further excess subsoil mixing. Stantec suggested ceasing drilling at the soil's color change and removing the darkest topsoil. At the substation, placement of sand and grading had already commenced prior to Stantec's arrival. Large topsoil stockpiles were observed outside of the project area to the north. Silt fence was installed surrounding the substation and some areas of the project had recently been seeded. No soil erosion issues were observed.

During the 2nd inspection, conducted on June 1st, 2026, Stantec observed appropriately stockpiled top and subsoil at the 3rd and 4th active foundation drillings. Photos are enclosed in the attached photo log.

In conclusion, contractors appear to appropriately removed and stockpiled initial topsoil stripping. Stantec believes that equipment operators have demonstrated competency concerning topsoil and subsoil removal and segregation in compliance with the Commission's Order. Topsoil handling and soil erosion will continue to be monitored by Stantec during the subsequent construction inspection(s) and reporting.



4.0 SIGNATURE

Stantec's Field Inspector, Jarrett Lardy prepared this report. The report was reviewed by Stantec's Project Manager and North Dakota Professional Soil Classifier, Matt Retka.

The conclusions in this Report are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the document was published and may not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from the ND PSC and third parties in the preparation of the Report to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This Report is intended solely for use by the ND PSC in accordance with Stantec's contract with the ND PSC. While the Report may be provided to applicable authorities having jurisdiction and others for whom the ND PSC is responsible, Stantec does not warrant the services to any third party. The report may not be relied upon by any other party without the express written consent of Stantec, which may be withheld at Stantec's discretion.



Jarrett Lardy
Field Inspector
Soil Scientist



Matt Retka
Project Manager
Senior Soil Scientist

June 8, 2026

Date

June 8, 2026

Date



FIGURES

Figure 1: Topsoil Observation Locations Map

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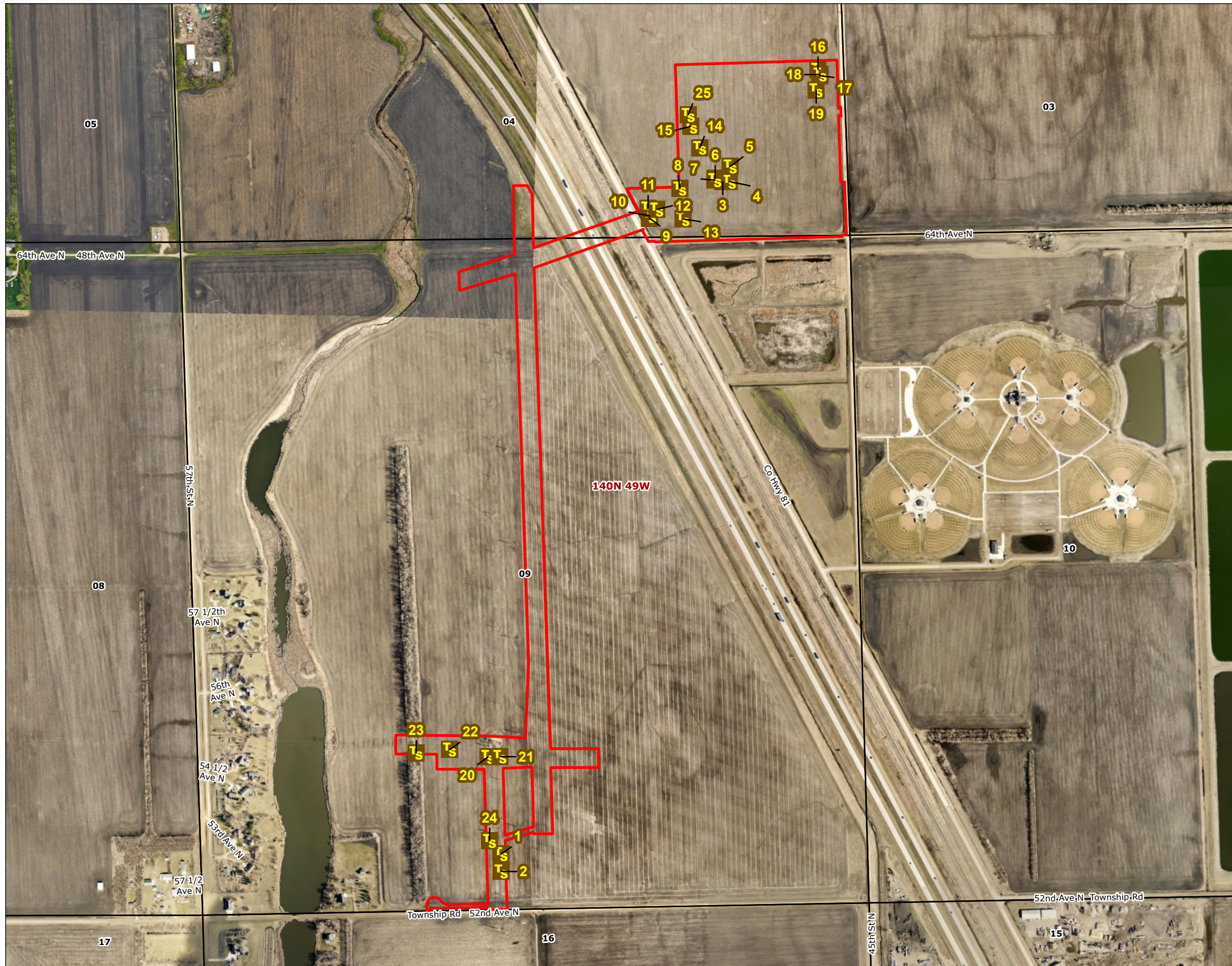


Figure No.

1

Title

Minnkota Agassiz Pipeline

Client/Project 227709053

North Dakota Public Service Commission
PU-26-22

Project Location
T149N, R49W, S09, S04
Cass Co., ND

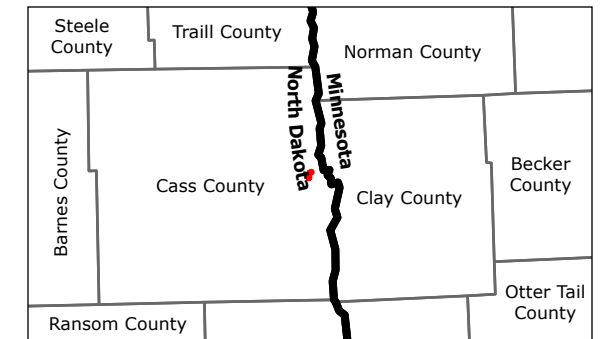
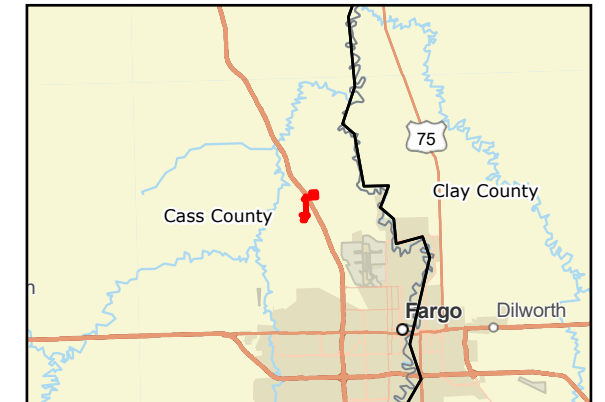
Prepared by BS on 2026-06-04



0 400 800 Feet
(At original document size of 11x17)
1:9,600

Legend

- Agassiz Project Corridor
- Ts Topsoil Observation Point Location



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 14N
 2. Data Sources: ESRI
 3. Background: ESRI World Imagery



APPENDIX A

Observation Point Photolog

PU-26-22 (Minnkota Agassiz): Observation Point Photolog



Observation Point: 1
Date Taken: May 18, 2026 2:02 PM
Direction Photo is Taken: North

Photo Description: Initial timber mat installation

Latitude: 46.94995371813874
Longitude: -96.87297818614296



Observation Point: 2
Date Taken: May 18, 2026 2:03 PM
Direction Photo is Taken: West

Photo Description: Initial timber mat installation

Latitude: 46.94957734918797
Longitude: -96.8729880452037



Observation Point: 3
Date Taken: May 18, 2026 2:32 PM
Direction Photo is Taken: Southeast

Photo Description: Recently seeded topsoiled area between laydown yard and substation

Latitude: 46.96444220167143
Longitude: -96.8653585768205

PU-26-22 (Minnkota Agassiz): Observation Point Photolog



Observation Point: 4
Date Taken: May 18, 2026 2:35 PM
Direction Photo is Taken: East

Photo Description: South side of substation footprint. Appropriate grading

Latitude: 46.96444131165491
Longitude: -96.86514814187935



Observation Point: 5
Date Taken: May 18, 2026 2:35 PM
Direction Photo is Taken: North

Photo Description: Edge of graded and filled substation

Latitude: 46.96476685560975
Longitude: -96.8651070888358



Observation Point: 6
Date Taken: May 18, 2026 2:36 PM
Direction Photo is Taken: Northwest

Photo Description: Gravel Laydown yard area.

Latitude: 46.96452198968012
Longitude: -96.86559823274028

PU-26-22 (Minnkota Agassiz): Observation Point Photolog



Observation Point: 7
Date Taken: May 18, 2026 2:37 PM
Direction Photo is Taken: South

Photo Description: Gravel lay down yard

Latitude: 46.96447885168614
Longitude: -96.86560361074605



Observation Point: 8
Date Taken: May 18, 2026 2:38 PM
Direction Photo is Taken: West

Photo Description: Ovelooking project boundary.

Latitude: 46.96431855979537
Longitude: -96.8667237794609



Observation Point: 9
Date Taken: May 18, 2026 2:45 PM
Direction Photo is Taken: North

Photo Description: Topsoil on top of matting with some mixed subsoil

Latitude: 46.96369140395471
Longitude: -96.86771747828995

PU-26-22 (Minnkota Agassiz): Observation Point Photolog



Observation Point: 10
Date Taken: May 18, 2026 2:45 PM
Direction Photo is Taken: Northeast
Photo Description: Foundation drilling.
Latitude: 46.96373939894807
Longitude: -96.86771106828358



Observation Point: 11
Date Taken: May 18, 2026 2:49 PM
Direction Photo is Taken: South
Photo Description: Overlooking foundatuo
drilling
Latitude: 46.96391097392932
Longitude: -96.8677533752428



Observation Point: 12
Date Taken: May 18, 2026 2:52 PM
Direction Photo is Taken: West
Photo Description: Subsoil pile from
foundation drilling
Latitude: 46.96387863791154
Longitude: -96.86747630332546

PU-26-22 (Minnkota Agassiz): Observation Point Photolog



Observation Point: 13
Date Taken: May 18, 2026 2:53 PM
Direction Photo is Taken: West
Photo Description: Timber mats insatlld leading to foundation
Latitude: 46.96365795587475
Longitude: -96.8666523095924



Observation Point: 14
Date Taken: May 18, 2026 3:00 PM
Direction Photo is Taken: Northeast
Photo Description: Foundation prep work
Latitude: 46.9651937236298
Longitude: -96.8660536294999



Observation Point: 15
Date Taken: May 18, 2026 3:01 PM
Direction Photo is Taken: North
Photo Description: Topsoil stockpile in background as described by Burns and Mac
Latitude: 46.96566426559077
Longitude: -96.86632600034454

PU-26-22 (Minnkota Agassiz): Observation Point Photolog



Observation Point: 16
Date Taken: May 18, 2026 3:08 PM
Direction Photo is Taken: West

Photo Description: edge of sand fill and topsoil at north end of proposed substation

Latitude: 46.9668222951183
Longitude: -96.86223897328803



Observation Point: 17
Date Taken: May 18, 2026 3:08 PM
Direction Photo is Taken: Southeast

Photo Description: Subsoil stockpile

Latitude: 46.96668712213167
Longitude: -96.86218798732504



Observation Point: 18
Date Taken: May 18, 2026 3:09 PM
Direction Photo is Taken: East

Photo Description: Excavation area

Latitude: 46.96671584612685
Longitude: -96.86217395532417

PU-26-22 (Minnkota Agassiz): Observation Point Photolog



Observation Point: 19
Date Taken: May 18, 2026 3:11 PM
Direction Photo is Taken: South

Photo Description: Edge of fill for substation

Latitude: 46.96637653618163
Longitude: -96.8623145333423



Observation Point: 20
Date Taken: June 1, 2026 2:54 PM
Direction Photo is Taken: Northeast

Photo Description: Proposed foundation

Latitude: 46.95207292089217
Longitude: -96.8733084716933



Observation Point: 21
Date Taken: June 1, 2026 2:57 PM
Direction Photo is Taken: Northeast

Photo Description: Timbet mats layed entire length of line

Latitude: 46.95207468986156
Longitude: -96.87292485079988

PU-26-22 (Minnkota Agassiz): Observation Point Photolog



Observation Point: 22
Date Taken: June 1, 2026 2:59 PM
Direction Photo is Taken: West

Photo Description: Work being conducted near shelterbelt

Latitude: 46.95225491996471
Longitude: -96.87452127232461



Observation Point: 23
Date Taken: June 1, 2026 3:02 PM
Direction Photo is Taken: West

Photo Description: Appropriately stockpiled

Latitude: 46.95220191905579
Longitude: -96.87558647203679



Observation Point: 24
Date Taken: June 1, 2026 3:09 PM
Direction Photo is Taken: East

Photo Description: Appropriately Stripped topsoil during drill for foundation

Latitude: 46.95024832312881
Longitude: -96.87333140299481

PU-26-22 (Minnkota Agassiz): Observation Point Photolog



Observation Point: 25

Date Taken: June 1, 2026 3:26 PM

Direction Photo is Taken: Northeast

Photo Description: Recently seeded topsoil

Latitude: 46.96591656656375

Longitude: -96.86639399128293