



PU-25-086
Basin Electric Power Cooperative
Bison Generation Station
Topsoil Inspection Report

File No. 227708322

August 2025

Prepared for:

North Dakota Public Service Commission
600 E. Boulevard Avenue
Bismarck, ND 58505-0480

Prepared by:

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**PU-25-086 BASIN ELECTRIC POWER COOPERATIVE
BISON GENERATION STATION TOPSOIL INSPECTION REPORT**
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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 Basin Electric Power Cooperative's (i.e. Basin Electric) Bison Generation Station, PU-25-086 (i.e., the Project) in Williams, 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.

Construction involving soil disturbance for the Project began August 18th, 2025. Stantec was present to observe the commencement of topsoil salvage and stockpiling by Baranko Brothers, Inc. (i.e., Baranko Bros). Baranko Bros is currently conducting all topsoil stripping and mass grading of the Project site. Basin Electric has a project superintendent present on-site at all times during construction to oversee the subcontractors. The design engineer, Burns and McDonnell, also has inspectors present on-site during construction.

Stantec has observed topsoil removal and stockpiling performed by the Baranko Bros' crew on the Project. Basin Electric has not identified any other contractors for soil stripping.

This Topsoil Inspection Report includes documentation of topsoil stripping, segregation, and stockpiling during the August 18th, 2025 on-site inspection of the Project. By and large, soil removal and storage processes are satisfactory.



2.0 BACKGROUND INFORMATION

2.1 INTRODUCTION

Basin Electric has begun construction on the Bison Generation Station, a proposed 1,490 Megawatt natural gas conversion plant in Williams County North Dakota. The approximately 240 acre site is located in a cultivated field, and contained within private parcels, with two main entrances located off of 121st Avenue Northwest.

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-25-086 on August 7, 2025, granting Certificate of Site Compatibility No. 71.

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 #12, 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, roadways, and locations of associated facilities, 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.



2.3 REGIONAL SOILS

The entirety of Williams County is located in the Missouri Plateau. Soils in this region are generally formed from weathered sedimentary shale or glacial deposits. The regional geology typically consists of a mantle of till (when present) overlying the older residual sediments. The majority of the soils present throughout the Project would be classified as mollisols and characterized by a relatively dark, thick "A" (topsoil) horizon. The primary exception to this are soils found nearer summit and shoulder-slopes of hilltops that may lack a thick A horizon. Some soils may be salt-affected, which have adverse properties from salinity and/or sodicity.

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 clay-pan 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. Hilltops and steeper sloping terrain generally have thinner topsoil layers; while lower, flatter, foot-slopes and swales typically have thicker topsoil layers. The most common exception to this is salt-affected soils, where the accumulation of salts and clay 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 in the presence of Basin Electric's on-site representative. 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 Basin Electric 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

Topsoil removal began the day of the first inspection on August 18, 2025 roughly in the north center of the project site. Jordan Twete, Registered North Dakota Professional Engineer with Stantec, was present to ensure PSC order provisions were understood and followed.

During Stantec's inspection on August 18, approximately 5% to 10% of the project site was stripped. Stripping commenced roughly along two north/south and east/west corridors that were intended to be used as haul roads for the remaining topsoil stripping activities. Stripped topsoil was then hauled to the northwest corner of the site and stockpiled.

Mr. Twete met with representatives from Basin Electric, Burns and McDonnell, and Baranko Bros upon arrival to the site on the morning of August 18, 2025 to review PSC topsoil requirements with all involved parties. Mr. Twete stated the requirements set forth in PSC order provision #12 related to topsoil. Baranko Bros then began stripping topsoil with their heavy equipment, which consisted of approximately 10 CAT scrapers, a tractor with a pull-behind till, and a water truck which was used for dust control.

In conclusion, Baranko Bros did a good job with initial topsoil stripping. Initial topsoil stripped depths were determined to be in the 8" to 10" deep range. Basin Electric's representative noted their diligence at topsoil management for this project, as there are rigorous compaction compliance requirements during mass grading operations in order to support the plant, parking lot and associated facilities. The importance of segregation and stockpiling of the topsoil was also at the forefront of the contractor's and owner's attention, as the planned site revegetation will require adequate topsoil to achieve adequate quality.

Stantec has determined that equipment operators have demonstrated competency concerning topsoil and subsoil removal and segregation in compliance with the Commission's Order. Though no BMPs were installed during initial topsoil stripping, Basin Electric contractors stated erosion control would be installed in the near future. 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 and Registered North Dakota Professional Engineer, Jordan Twete 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 do 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.



Matt Retka
Project Manager
Senior Soil Scientist

August 29, 2025

Date



Jordan Twete
Project Inspector
Civil Engineer

August 29, 2025

Date



FIGURES

Figure 1: Topsoil Observation Locations Map

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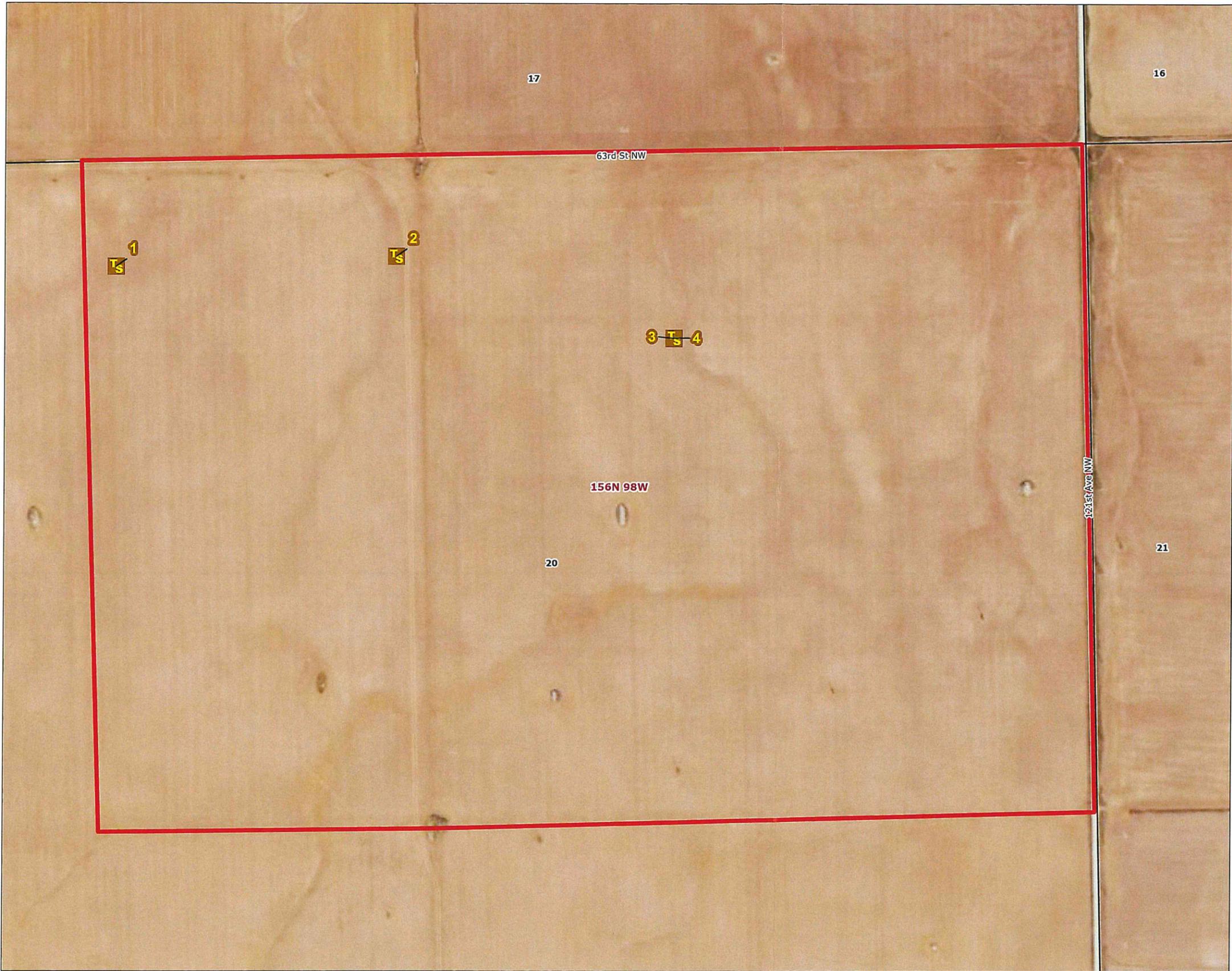


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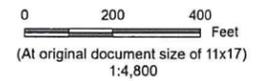
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Title

Bison Generation Station

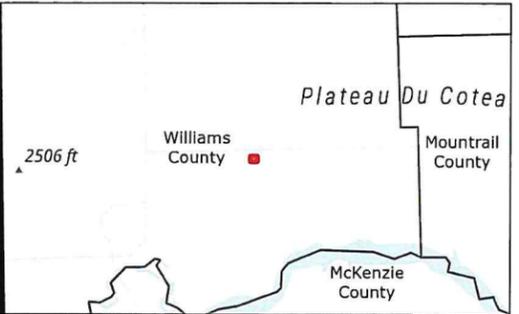
Client/Project 227708322
 North Dakota Public Service Commission
 PU-25-086

Project Location Prepared by BS on 2025-08-29
 T156N, R98W, S20
 Williams Co., ND



Legend

- Project Area (PU-25-086)
- TS Topsoil Observation Point Location



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 13N
 2. Data Sources: USDA
 3. Background: NAIP 2023 Imagery

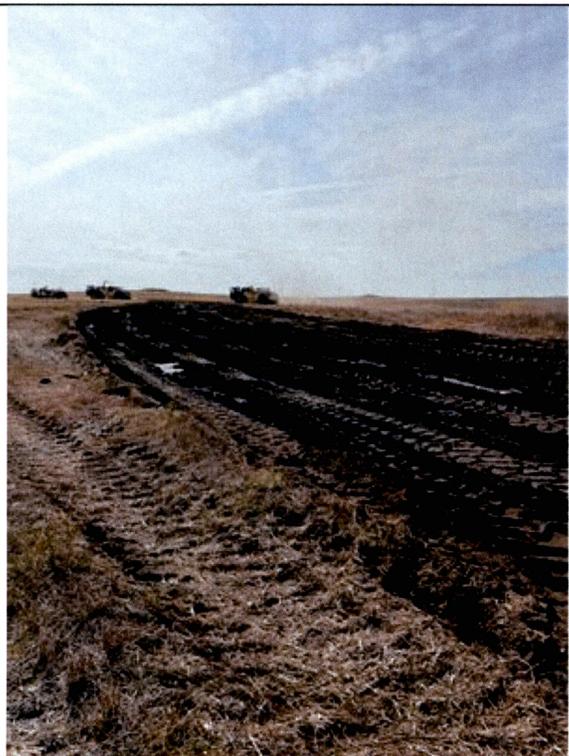


APPENDIX A

Observation Point Photolog

PU-25-86 (Bison Generation Station): Observation Point Photolog

	<p>Observation Point: 1 Date Taken: August 18, 2025 11:06 AM Direction Photo is Taken: East</p> <p>Photo Description: Beginning of topsoil stockpile, NW corner of site.</p> <p>Latitude: 48.326924 Longitude: -103.31903419</p>
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	<p>Observation Point: 2 Date Taken: August 18, 2025 11:15 AM Direction Photo is Taken: East</p> <p>Photo Description: Topsoil stripping, approx. 8" deep, subsoil not yet reached by construction equipment.</p> <p>Latitude: 48.32697011 Longitude: -103.31446636</p>
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PU-25-86 (Bison Generation Station): Observation Point Photolog



Observation Point: 3
Date Taken: August 18, 2025 11:24 AM
Direction Photo is Taken: South

Photo Description: Subsoil reached at approximately 8" depth (light brown in contrast with topsoil).

Latitude: 48.32601861
Longitude: -103.30995588



Observation Point: 4
Date Taken: August 18, 2025 11:26 AM
Direction Photo is Taken: East

Photo Description: Subsoil reached at approx 8" depth

Latitude: 48.32602219
Longitude: -103.3099507