Stantec

PU-25-84

Hiland Crude, LLC
Hiland Express Spine Pipeline
Topsoil Inspection Report

File No. 193807520

September 2025

Prepared for:

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

Prepared by:

Stantec Consulting Services Inc.
100 Collins Avenue, Suite 101
Mandan, ND 58554

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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 Hiland Crude, LLC (i.e. Hiland) Express Spine Pipeline, PU-25-84 (i.e., the Project) in McKenzie County, 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 25th, 2025. Stantec was present to observe the commencement of topsoil salvage and segregation by Loenbro Construction Company, Inc. (i.e., Loenbro). Loenbro is currently conducting all topsoil stripping of the Project. Hiland Crude also has multiple third party inspectors present on-site at all times during construction. The third party inspectors, Natural Energy Field Services (NEFS), are contracted through Kinder Morgan (to which Hiland Crude is a subsidiary).

Stantec has observed topsoil removal and segregation performed by the Loenbro crew on the Project. Hiland has not identified any other contractors for soil stripping.

This Topsoil Inspection Report includes documentation of topsoil stripping, segregation, and stockpiling during the August 25th, 2025 on-site inspection of the Project. By and large, soil removal and storage processes are satisfactory. Initial occurrences of improper topsoil stripping depths were observed during the inspection. The Contractor and Kinder Morgan inspectors were made aware of and resolved this issue during Stantec's on-site inspection.

2.0 BACKGROUND INFORMATION

2.1 INTRODUCTION

Hiland has begun construction on the Express Spine Pipeline, a proposed 28 mile natural gas pipeline in McKenzie County North Dakota. The Project stretches from Hiland's Roosevelt Natural Gas Plant south of Watford City, ND, to the Forthune compressor station north of Alexander, ND.

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-25-84 on August 7, 2025, granting Certificate of Corridor Compatibility No. 242.

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.*"

2.3 REGIONAL SOILS

The entirety of McKenzie 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 sub-soils 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 PRACTICIES

Topsoil has biological, physical and chemical properties that are critical to successful reclamation after soil disturbances, such as pipeline installation 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 pipeline preparation and excavation 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 and driving within the Project corridor in the presence of Hiland's on-site third party inspectors. 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 Figure 1.

Stantec shared the PSC order provisions relating to topsoil stripping, segregation, and protection with individuals present during the inspection and provided opportunity for Hiland 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.

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, the NEFS inspectors 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 Project Manager and Registered North Dakota Professional Engineer, Jordan Twete prepared this report. The report was reviewed by Matt Retka, North Dakota Professional Soil Classifier.

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.

Jordan Twete
Project Manager
Civil Engineer

September 8, 2025
Date

FIGURES

Figure 1: Topsoil Observation Locations Map

Figure No
1

Title
Hiland Express Spine Pipeline

Client/Project
North Dakota Public Service Commission
PU-25-084

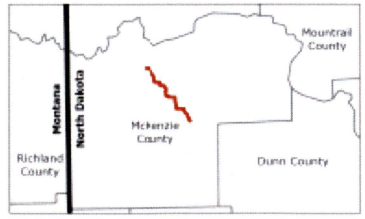
Project Location
T149N, R99W, S11
McKenzie Co., ND

Prepared by BS on 2025-09-08

N

0 100 200 Feet
(At original document size of 11x17)
1:2,400

Legend
- Hiland Express Spine Pipeline
- Topsoil Observation Point Location



Notes
1. Coordinate System: NAD 1983 UTM Zone 13N
2. Data Sources: ESRI
3. Background: ESRI World Imagery

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Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

APPENDIX A

Observation Point Photolog

PU-25-84 (Hiland Express Spine Pipeline): Observation Point Photolog

Observation Point: 1
Date Taken: August 25, 2025 3:15 PM
Direction Photo is Taken: West

Photo Description: Final depth of topsoil 6"-8"

Latitude: 47.74652990543966
Longitude: -103.31492319399658

Observation Point: 2
Date Taken: August 25, 2025 3:00 PM
Direction Photo is Taken: Northwest

Photo Description: Visual distinction of topsoil/subsoil layers

Latitude: 47.74654719653359
Longitude: -103.31598686772183

Observation Point: 3
Date Taken: August 25, 2025 2:06 PM
Direction Photo is Taken: Southwest

Photo Description: First pass of topsoil stripping, not yet reached subsoil

Latitude: 47.74660143343828
Longitude: -103.314995211964

PU-25-84 (Hiland Express Spine Pipeline): Observation Point Photolog

Observation Point: 4
Date Taken: August 25, 2025 2:23 PM
Direction Photo is Taken: East

Photo Description: Topsoil stockpile placed on ground stripped of vegetation.

Latitude: 47.7464127146144
Longitude: -103.31672070956127

Observation Point: 5
Date Taken: August 25, 2025 1:35 PM
Direction Photo is Taken: West

Photo Description: Mowing of grass/crop cover prior to stripping topsoil

Latitude: 47.74654429243648
Longitude: -103.3149052399983

Observation Point: 6
Date Taken: August 25, 2025 1:18 PM
Direction Photo is Taken: West

Photo Description: Contractor demonstrating use of rig matting across wet/low areas

Latitude: 47.74633824144077
Longitude: -103.31470251609078