Dore Crude Oil Loop Pipeline, McKenzie County

Certificate of Corridor Compatibility Application

December 2014

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SERVICE & RELIABILITY SINCE 1998

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INTRODUCTION

Hiland Crude, LLC (Hiland), submits this Certificate of Corridor Compatibility Application to the North Dakota Public Service Commission (Commission) for an approximately 13-mile-long, 12-inch crude oil pipeline in McKenzie County. The pipeline, known as the Dore Crude Oil Loop Pipeline (Project), will interconnect with Hiland's existing Market Center pipeline system. The existing Market Center pipeline system is currently the only system capable of gathering crude oil from lease sites in Williams, McKenzie, and Mountrail Counties, North Dakota and connecting to transmission pipelines that can transport the crude oil to refineries located on the Gulf Coast, without ever utilizing truck or rail transport.

In accordance with Chapter 49-22 of the North Dakota Century Code, Section 69-06-08-02 of the North Dakota Administrative Code, and the Commission's Energy Conversion and Transmission Facility Siting Guidelines, Hiland provides the following information to support its request for a Certificate of Corridor Compatibility for the Project.

SECTION A DESCRIPTION OF PROPOSED FACILITY

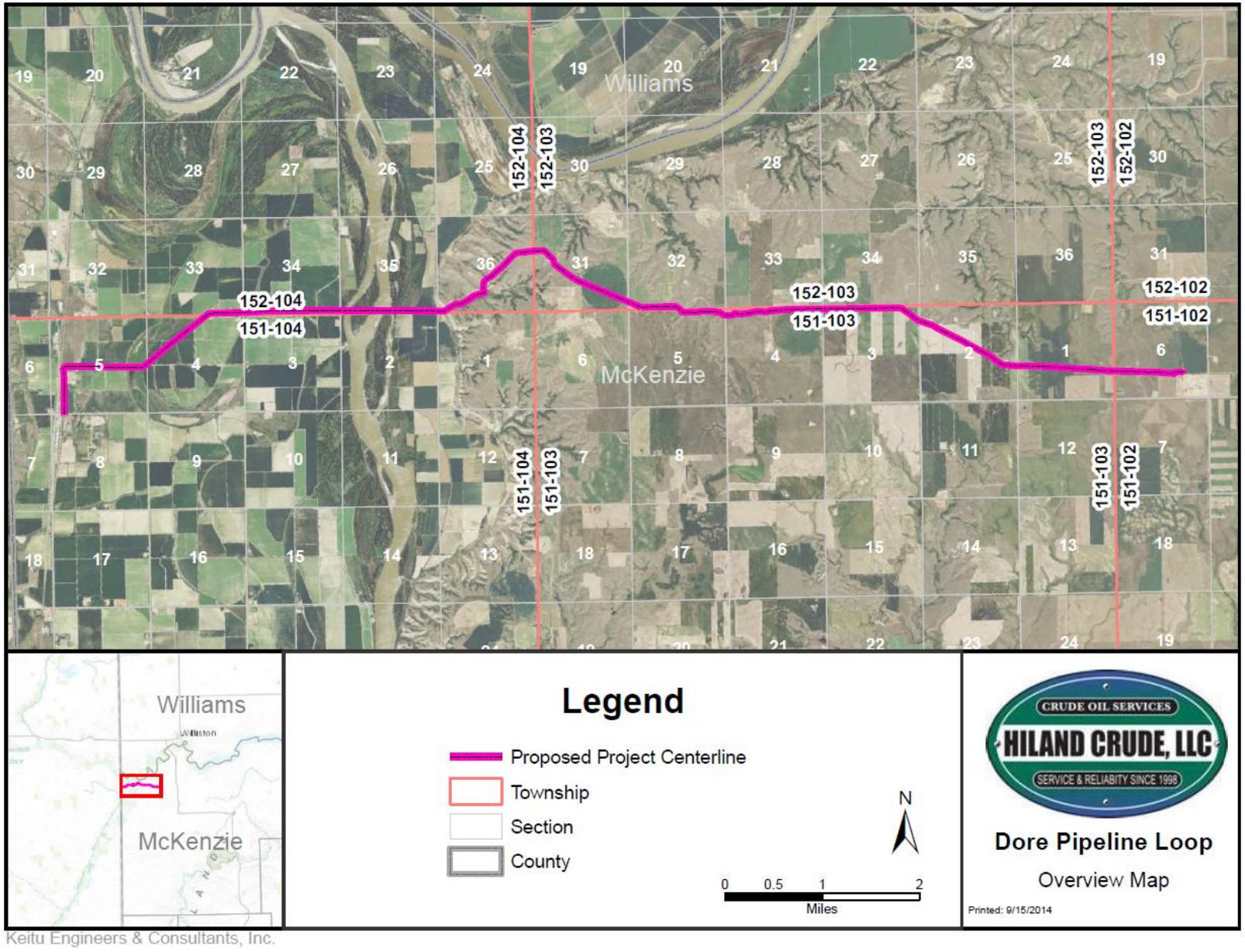
A.1 DESCRIBE THE TYPE OF TRANSMISSION FACILITY ADDRESSED IN THIS APPLICATION. THE DESCRIPTION SHALL INCLUDE THE PURPOSE OF THE FACILITY AND THE TECHNOLOGY TO BE EMPLOYED.

The Project consists of constructing and operating an underground approximately 13-mile-long, 12-inch crude oil pipeline in McKenzie County, to begin construction in February of 2015. The Project will parallel and interconnect with existing Hiland facilities on the Musket Lateral and/or the Dore Segment of Hiland's Market Center Pipeline from the Dore Junction to the Dore Terminal near Dore, North Dakota. The Project will be operationally integrated into the existing operations of Hiland.

New right-of-way (ROW) is being acquired from landowners adjacent to the existing Hiland ROW for its existing 8-inch pipeline. The pipeline will be buried underground. No new pumping facilities will be needed at this time within North Dakota. No new surface facilities will be installed in the State of North Dakota, other than pipeline markers, rectifiers, and block valves. Some small fenced-in enclosures to house associated power and control systems may be installed to allow some valves to be operated remotely. Figure 1.A.1 shows the general location of the Project.

The purpose of the Project will be to transport crude oil from smaller crude gathering systems and truck facilities to existing rail and pipeline network destinations. The Project will enable the transportation of crude oil produced in northwestern North Dakota to multiple shipping points for out of state sale.

The total cost of the Project is estimated to be $10.5 million.



Keitu Engineers & Consultants, Inc.

FIGURE 1.A.1 – General Project Location Map

A.2 DESCRIBE THE TYPE, SOURCE AND FINAL DESTINATION OF THE PRODUCT TO BE TRANSMITTED BY THE PROPOSED FACILITY.

The Project will provide needed capacity to transport increased production of petroleum from western North Dakota where oil production has more than doubled in the last three years.[1] This additional pipeline will increase the capacity of the system by 27,000 barrels per day and potentially in the future up to 100,000 barrels per day. This product will subsequently be delivered to major markets via Musket Rail using a loading station near Dore, North Dakota with a potential connection to Hiland's proposed Double H pipeline at this location.

Due to the increased volume of crude oil being transported through the existing Market Center pipeline, it is necessary for Hiland to install a parallel pipeline along the Musket Lateral and/or the Dore Segment to increase the system capacity.

Although Hiland does not explicitly specify the type of crude it will transport, historically Hiland has operated a light sweet common stream system and will continue to accept sweet crude oil into its common stream. This specification is consistent with the quality of crude oil produced from the Bakken formation, which is currently the largest exploration play in the region.

Generally, liquid pipelines are designed at a specified capacity for a known liquid. Most liquid pipelines transport a variety of different liquids. The change in fluid characteristics (density, viscosity, etc.) of the transported liquids will affect the capacity of the pipeline.

The Project will add (1) additional pipeline shipping capacity in North Dakota; (2) market delivery options on Hiland's crude oil pipeline; and (3) a pipeline transportation alternative to trucking or railing crude oil to other shipping points and markets.

A.3 PROVIDE A DESCRIPTION OF THE SIZE AND DESIGN OF THE PIPELINE FACILITY.

A.3 (a) Width of the Right of Way

The Project right-of-way (ROW) will be approximately 75 feet wide to allow adequate room for topsoil separation, work equipment and pipe stringing. This ROW will consist of both a permanent easement, 50 feet wide, and temporary workspace, 25 feet wide. The temporary ROW width may be necessary during construction in certain areas such as steep slopes and for staging areas for streams, wetlands, and road crossings. The temporary ROW may also be necessary for safety reasons, to provide an area for prefabrication of a section of pipeline, or for storage of top soil and subsoil material. Hiland will use existing public roads to access the ROW, and does not plan to modify existing roads or construct new permanent access roads.

Hiland acquired a 50-foot permanent easement for the Project. The permanent easement width was selected based on the following criteria:

- Provision of adequate space and line separation for future line maintenance; and
- Allowance of adequate space to facilitate construction of the 12-inch pipeline while minimizing potential damage to the existing lines.

[1] ND Department of Mineral Resources, "ND Historical Barrels of Oil Produced by County," *available at* https://www.dmr.nd.gov/oilgas/stats/countymot.pdf (accessed September 23, 2014).

A.3 (b) Estimated Distances Between Surface Structures

The Project's pipeline will be buried underground. Unlike power transmission lines with towers, only a few surface structures are associated with an underground pipeline system. –Surface structures will be limited to pipeline markers, rectifier sites, and block valves. Some small fenced-in enclosures to house associated power and control systems may be installed to allow valves to be operated remotely.

Block valves will be installed on either side of the Yellowstone River as required by US Department of Transportation regulations. Above-ground valve sets (block valves) are also installed at each gathering line and pipeline interconnection point.

A.3 (c) Pipe Size

The Project will involve the installation of 12-inch outside diameter steel pipe with a wall thickness of 0.219 inches. For crossings, 0.500 inch wall thickness FBE coated pipe will be used. The maximum operating pressure (MOP) will be 1440 pounds of pressure per square inch gauge (psig).

The valves to be installed will be 12-inch ANSI 600, flange end by flange end, full port, rising stem gate valves and similar ball valves. These valves will be manufactured in accordance with American Petroleum Institute (API) Standard 6D "API Specification for Steel, Gate, Plug, Ball and Check Valves for Pipeline Service." The maximum operating pressure of the valves will be 1440 psig.

The steel pipeline to be utilized for the Project will meet United States Department of Transportation (US DOT) regulations, specifically the design criteria outlined in 49 CFR Subpart 195(C). The Project will be constructed per 49 CFR Subpart 195(D), and will be operated and maintained per 49 CFR Subpart 195(F).

A.3 (d) Approximate Length of Facility

The Project will require the installation of approximately 13 miles of pipe.

A.3 (e) Maximum Design Operating Pressure and Temperature

The MOP of the pipe will be 1440 psig. The maximum temperature of the crude will be 120°F, which is within design parameters. However, the Project will typically operate at between 60°F to 120°F.

A.3 (f) Maximum Design Flow Rate

The maximum design flow rate of the Project will be 100,000 bbls/day.

A.3 (g) The Number and General Location of Pumping Stations

No new mid-route stations or pumping equipment will be added for the Project.

A.4 TIME SCHEDULE.

Hiland proposes to develop the Project on the following time schedule:

A.4 (a) Certificate of Corridor Compatibility

The Certificate of Corridor Compatibility Application is being submitted in December 2014 as part of this Consolidated Certificate of Corridor Compatibility and Route Permit Application.

A.4 (b) Route Application

The Route Permit Application is being submitted in December 2014 as part of this Consolidated Certificate of Corridor Compatibility and Route Permit Application.

A.4 (c) ROW Acquisition Date

Hiland plans to have ROW acquisition completed by December 25, 2014.

A.4 (d) Issuance of Certificate of Corridor Compatibility and Route Permit

A Certificate of Corridor Compatibility and a Route Permit for the Project are expected to be issued on or before January 31, 2015.

A.4 (e) Construction Start Date

Hiland desires to begin construction of the Project as soon as possible. The proposed commencement date for construction is February 1, 2015.

A.4 (f) Construction Complete

The estimated Project construction completion date is on or before May 1, 2015.

A.4 (g) Test Operations

The estimated test operations date is on or before May 10, 2015.

A.4 (h) In-Service Date

All facilities are expected to be in-service on or before May 10, 2015.

SECTION B STUDIES

Section 69-06-05-01(2)(f) of the North Dakota Administrative Code requires that a corridor's width be at least ten percent of the length of the proposed Project (i.e., 1.3 miles), but not less than one mile or greater than six miles wide unless approved by the Commission. A one- to two-mile-wide field corridor was studied. The accompanying waiver application requests that Hiland's application be approved using a one-mile-wide study corridor, rather than the 1.3-mile-wide corridor required by Section 69-06-05-01(2)(f).

Studies were undertaken to evaluate the Project's potential impacts on recreational, environmental and cultural resources. Specific study findings for the proposed corridor are discussed in detail in the Route Application (see Tab 3) and associated exhibits (see Tab 4). Significant features are depicted in Tab 4 on Figures 4.B.1b through 4.B.6b which are overlaid on an aerial photograph. The route is also presented superimposed on a USGS Topographic map as Figures 4.B.1a through 4.B.6a in Tab 4. This information is also presented as shapefiles on the enclosed CD-ROM disk in Tab 7 suitable for viewing with ESRI's ArcGIS mapping software.

Hiland engaged Keitu Engineers & Consultants, Inc. (Keitu) and Beaver Creek Archaeology, Inc. to perform the environmental and cultural resource siting studies for the Project.

Beaver Creek Archaeology, Inc. performed a Class I archeological file search in September 2014 using a 2-mile-wide study corridor on the entire 13 miles of the pipeline route. A Class III field survey was performed on a variable 300 to 473-foot-wide corridor in September and November 2014. The cultural resource location details are not presented here in a publicly available document per request of the North Dakota State Historic Society. Beaver Creek Archaeology has provided a redacted version of the report to be submitted as part of this application. Additional details of these sites will be provided to the North Dakota Public Service Commission staff upon request.

Keitu conducted a database search using a 1-mile-wide study corridor for all other exclusion or avoidance criteria outlined in the North Dakota Administrative Code along the proposed route. Items reviewed included federal and state parks, protected and sensitive plant and animals, and civil and social structures such as recreational areas, rural homes and farmsteads. In September 2014 a field study was completed with a 500-foot-wide corridor for botany and a 1-mile wide corridor for wildlife, in accordance with US Fish and Wildlife Service field study protocols.

SECTION C NEED FOR FACILITY

C.1 DESCRIBE THE NEED FOR THE FACILITY BASED ON CURRENT AND PROJECTED DEMAND FOR THE PRODUCT TRANSMITTED BY THE FACILITY, INCLUDING THE MOST RECENT SYSTEM STUDIES SUPPORTING THE ANALYSIS OF THE NEED.

C.1 (a) Planned Use and Purpose

Application of horizontal drilling technology and steady and relatively historically high crude oil prices have resulted in a resurgence of oil drilling activity in North Dakota. Unprecedented success has occurred in the Bakken oil formation, resulting in more than doubling of oil production in North Dakota in the last three years. A summary of annual crude oil production in the state is presented in Table 1.1, below.

Table 1.1 – Historical Oil Production North Dakota[2]		
Year	Total Crude Oil Production, Barrels	% Gain over 2008
2009	79.7 million	26.9 %
2010	113.1 million	80.1 %
2011	153.0 million	143.6 %
2012	243.8 million	288.2 %
2013	313.9 million	399.8 %

Oil production in North Dakota is expected to continue to grow until 2025. The purpose of the Project is to provide "midstream" transportation alternatives for the expanding volumes of crude oil produced in North Dakota.

C.1 (b) Pipeline Capacity is Constrained in Western North Dakota

Crude oil produced in North Dakota is shipped to one of three pipeline sale outlets or demand points: (1) Tesoro's Mandan, North Dakota refinery; (2) the Guernsey, Wyoming interconnection hub; and/or (3) the Clearbrook, Minnesota interconnection hub.

Rail transportation of crude oil increased more than tenfold during the period from April 2011 to April 2013 from approximately 60,000 bbls/day to over 650,000 bbls/day. Shipments are made to East Coast, West Coast and Gulf Coast destinations. Over 70% of all crude oil produced in North Dakota leaves the state by rail.[3]

C.1 (c) Statement Concerning Deviations from Most Recent 10-year Plan

Hiland's Ten Year Plan for 2014-2024 was filed with the Commission on July 1, 2014.

At this time, Hiland has no firm plans to construct additional transmission pipeline facilities outside the Project, and related Market Center pipeline project, within the next five years. However, Hiland's customers continue to expand their operations, which has the potential to require expanded Hiland system capacity as well as further extension of Hiland's system to accommodate the continued growth of crude oil production in western North Dakota.

C.1 (d) Other Expansions on the Hiland System

No additional Hiland expansions are planned at this time. However, market forces may open the economics of other alternatives considered. As predominately a gathering and transfer system, much of the Hiland transportation flexibility is subject to changes by larger pipeline transportation companies. As the pipeline and rail transportation systems expand, more opportunities may present themselves.

[2] U.S. Department of Energy, EIA webpage statistics, crude oil production by state (accessed October 10, 2014).

[3] N.D. Pipeline Authority, North Dakota Oil and Gas Research Council Presentation, Justin J. Kringstad, May 23, 2013.

C.1 (e) Recent System Studies Supporting the Analysis of the Need

An excerpt from "The Williston Basin: Greasing the Gears for Growth in North Dakota" prepared by Bentek Energy, LLC under contract from the North Dakota Pipeline Authority is presented in Tab 2 as Appendix 2.A. The 129-page report released July 25, 2012 highlights that oil production from the Williston Basin, which includes the Dakotas and Montana, soared more than 400% in the five years prior to the report. Oil production from the Williston Basin is expected to continue to grow until 2025. In the report, Bentek Energy, LLC also estimates that planned refinery and pipeline projects will not be able to keep up with the increased production. Producers will continue to rely on more expensive transportation options.[4]

Due in large part to production from the Bakken and Three Forks formations, the State of North Dakota is currently the second largest producer of crude oil in the United States. The state produced an all-time high of 1,110,642 bbls/day in July 2014.[5]

One challenge North Dakota faces is moving crude oil intrastate. The Project is connected to the Market Center pipeline system which touches three counties in North Dakota: McKenzie, Williams, and Mountrail. In each of these counties, over 50% of the production is currently being moved by truck from the wellhead. Williams was the highest with 75% of oil production transported by truck, McKenzie with 70%, and Mountrail with 59%.[6] Gathering system pipelines are being encouraged throughout the state to limit truck transportation and provide a safer, more efficient solution.

Key slides from the May 23, 2013 presentation of the North Dakota Pipeline Authority to the North Dakota Oil & Gas Research Council are presented in Tab 2 as Appendix 2.C.

C.2 ALTERNATIVES TO THE PROPOSED FACILITY

Three alternatives to the proposed Project were considered.

C.2 (a) No Action Alternative

The status quo could be allowed to continue, supported by trucking crude oil to current truck unloading facilities at the existing pipeline unloading facilities and/or rail trans-ship facilities. Finding qualified cargo tank operators, already a critical issue, will continue to be difficult. Further, there will be additional wear and tear to county and state roads due to high truck traffic. Pipeline transportation (1) reduces truck traffic on the area's road network; (2) provides access to a wider range of markets; and (3) is a more efficient and safer mode of transportation, reducing both costs and the potential for accidents.

C.2 (b) Alternative Pipeline Design/Size

The alternatives examined with respect to sizing the Project to efficiently and cost effectively provide the needed addition of crude petroleum capacity included 8-inch, 10-inch, and 12-inch

[4] Bentek Energy, LLC, "The Williston Basin: Greasing the Gears for Growth in North Dakota," July 25, 2012, pp. 35, 47.

[5] NDIC, "Director's Cut," available at: https://www.dmr.nd.gov/oilgas/directorscut/directorscut-2014-09-12.pdf (accessed October 10, 2014). This document is also presented in Tab 2 as Appendix 2.B.

[6] N.D. Pipeline Authority, North Dakota Oil and Gas Research Council Presentation, Justin J. Kringstad, May 23, 2013

diameters. The 12-inch design provides the most efficient and cost effective combination of capital cost and pumping horsepower requirements for the required capacity.

- The 12-inch Dore Pipeline Loop Project operations will be operationally integrated with the Hiland Pipeline transportation and gathering system located in North Dakota, Wyoming and Montana.

- The cost of the 12-inch Dore Pipeline Loop Project is $10.5 million.

- The economic life of the 12-inch Dore Pipeline Loop Project for this purpose is based on 25-year depreciation; however, the functional life of this pipeline is indefinite following normal maintenance and inspection practices of a federally regulated interstate pipeline system.

- The 12-inch Dore Pipeline Loop Project will reliably operate year-round, round-the-clock, with the exception of planned system down-time for inspection, maintenance or repair purposes, or unplanned down-time due to interruptions in receipts or refinery outages, and/or operational disruptions caused by regional power outages or other reasons.

C.2 (c) Alternative Pipeline Route

A full route alternative analysis was completed by Hiland. Hiland identified and evaluated several options for routing its Project. These studies were designed to define a preferred route that achieves Project objectives, is technologically and economically feasible to construct, and minimizes impacts on landowners and the environment. Based on this assessment, Hiland focused the examination of routing alternatives to a route generally within or adjacent to existing Hiland ROW. This approach allowed the Applicant the benefit of utilizing existing pumping stations and equipment at existing Hiland fee-owned pump station sites to further reduce the Project's environmental and public impact.

SECTION D LOCATION

D.1 STUDY AREA

The study area and corridor selected comprise the existing ROW in which Hiland's Musket Lateral and/or the Dore segment of the Market Center pipeline system is located, along with newly acquired ROW. Hiland has historically maintained the existing easements in North Dakota by clearing brush and trees for approximately a 50-foot width. The pipeline is proposed to be installed adjacent to the existing 8-inch pipeline.

The Project originates at the Dore Junction and terminates at Hiland's Dore Terminal near Dore, North Dakota. This segment is approximately 13 miles in length.

The Project area is located in rural areas of McKenzie County, North Dakota.

As stated in the accompanying Application for Waiver, Hiland requests the Public Service Commission waive the requirement that a study corridor width equal to ten percent of the length of the pipeline be studied and instead allowed a one-mile corridor, subject to deviations imposed by any exclusion or avoidance area or other selection criteria.

D.2 MAP OF PROPOSED CORRIDOR

Since a consolidated application for a Certificate of Corridor Compatibility and a Route Permit is being submitted, maps (including U.S.G.S. Quad and Aerial Maps) of the proposed corridor and route for the Project can be found in Appendix 4.B of the Route Application (see Tab 4). The location of Exclusion and Avoidance Areas, as defined in Section 69-06-08-02 of the North Dakota Administrative Code, within the corridor are also depicted on the maps provided.

D.3 CRITERIA TO BE EVALUATED

Since this application is part of a consolidated application for a Certificate of Corridor Compatibility and a Route Permit, these matters are discussed in Sections B.4, B.5 and B.6 of the Route Permit portion of the application (see Tab 3).

D.4 RELATIVE VALUE OF EACH OF THE CRITERIA

Since this application is part of a consolidated application for a Certificate of Corridor Compatibility and Route Permit, the relative value of each of the criteria considered is discussed in Sections B.4, B.5 and B.6 of the Route Permit portion of the application (see Tab 3).

D.5 GENERAL MITIGATIVE MEASURES TO BE TAKEN

Since this application is part of a consolidated application for a Certificate of Corridor Compatibility and a Route Permit, the mitigation measures that Hiland proposes to take with respect to the Project are discussed in Sections B.4, B.5 and B.6 of the Route Permit application (see Tab 3).

D.6 QUALIFICATIONS OF PERSONS CONTRIBUTING TO THE STUDY

The qualifications of the personnel who contributed to the corridor location study are:

(1) Jim Suttle, Senior Vice President - Hiland Crude, LLC

Degrees: Bachelor of Art — Political Science, Wichita State University
Masters of Philosophy, Houston Baptist University

Experience: 33 years in petroleum industry serving in multiple assignments including pipeline design, operation and construction. Senior Vice President of Hiland Crude, LLC since 2010.

(2) Kathleen Spilman, Managing Director — Keitu Engineers & Consultants, Inc.

Degrees: Bachelor of Science - Chemical Engineering, University of North Dakota
Masters in Management, University of Mary

Experience: 32 years' experience in petroleum refining and fuels transportation field as well as regulatory affairs and compliance.

Professional License:

Registered Professional Engineer: North Dakota, South Dakota, Montana

(3) Heather Patch, Staff Engineer (Chemical) — Keitu Engineers & Consultants, Inc.

Degree: Bachelor of Science - Chemical Engineering, University of North Dakota

Experience: 3 years' experience in regulatory affairs and compliance.

D.7 MAPS

D.7 (a) Map of Criteria within Study Area

Since a consolidated application for a Certificate of Corridor Compatibility and a Route Permit is being submitted, the maps (including U.S.G.S. Quad and Aerial Maps) of the proposed corridor and route of the Project can be found in Appendix B of the Route Permit portion of the application (see Tab 4). The location of Exclusion and Avoidance Areas, as defined in Section 69-06-08-02 of the North Dakota Administrative Code, within the corridor are also depicted on the maps provided.

D.7 (b) Maps of Study Area

The GIS software in current use by the Commission staff is ESRI's ArcGIS and companion software packages. A CD-ROM containing electronic copies of ArcGIS shapefiles outlining the proposed corridor has been included with this application as Tab 7.

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