Office of
Energy Projects

December 2019

Northern Natural Gas Company **Docket No. CP19-500-000**

Palmyra to South Sioux City A-Line Abandonment Project

Environmental Assessment

Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:
OEP/DG2E/Gas 2
Northern Natural Gas Company
Palmyra to South Sioux City A-Line Abandonment Project
Docket No. CP19-500-000

TO THE INTERESTED PARTY:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) for the Palmyra to South Sioux City A-Line Abandonment Project, proposed by Northern Natural Gas Company (Northern) in the above-referenced docket. Northern requests authorization to abandon a segment of its A-Line Pipeline and construct, own, and operate two new natural gas pipeline loops[1].

The EA assesses the potential environmental effects of the construction and operation of the Palmyra to South Sioux City A-Line Abandonment Project in accordance with the requirements of the National Environmental Policy Act (NEPA). The FERC staff concludes that approval of the proposed project, with appropriate mitigating measures, would not constitute a major federal action significantly affecting the quality of the human environment.

The proposed Palmyra to South Sioux City A-Line Abandonment Project is in Nebraska and includes the following facilities:

- abandonment in place of 44.2 miles of 20-inch-diameter and 14.8 miles of 16-inch-diameter mainline in Otoe, Lancaster, Saunders, and Dodge Counties (M581A);
- abandonment in place of 58.7 miles of 16-inch-diameter mainline in Dodge, Burt, Thurston, and Dakota Counties (M570A);

[1] A loop is a pipeline that is constructed adjacent to another pipeline for the purpose of increasing capacity in this portion of the system.

- construction of 1.7 miles of new 24-inch-diameter pipeline loop in Otoe County (Palmyra North D-Line Loop);

- construction of 2.5 miles of new 24-inch-diameter pipeline loop in Dodge County (Fremont North D-Line Loop);

- construction of a new pig[2] launcher and two valve sites within the existing Palmyra Compressor Station at the beginning of the Palmyra D-Line Loop and a pig receiver and one valve site at the end of the pipeline loop; and

- construction of a new pig launcher and one valve site within the existing Fremont Compressor Station and one valve site at the end of the Fremont North D-Line Loop.

The Commission mailed a copy of the *Notice of Availability* to federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; Native American tribes; potentially affected landowners and other interested individuals and groups; and newspapers and libraries in the project area. The EA is only available in electronic format. It may be viewed and downloaded from the FERC's website (www.ferc.gov), on the Environmental Documents page (https://www.ferc.gov/industries/gas/enviro/eis.asp). In addition, the EA may be accessed by using the eLibrary link on the FERC's website. Click on the eLibrary link (https://www.ferc.gov/docs-filing/elibrary.asp), click on General Search, and enter the docket number in the "Docket Number" field, excluding the last three digits (i.e. CP19-500). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FercOnlineSupport@ferc.gov or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659.

Any person wishing to comment on the EA may do so. Your comments should focus on the EA's disclosure and discussion of potential environmental effects, reasonable alternatives, and measures to avoid or lessen environmental impacts. The more specific your comments, the more useful they will be. To ensure that the Commission has the opportunity to consider your comments prior to making its decision on this project, it is important that we receive your comments in Washington, DC on or before 5:00pm Eastern Time on **January 13, 2020.**

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[2] A "pig" is a tool that the pipeline company inserts into and pushes through the pipeline for cleaning the pipeline, conducting internal inspections, or other purposes.

For your convenience, there are three methods you can use to file your comments to the Commission. The Commission encourages electronic filing of comments and has staff available to assist you at (866) 208-3676 or FercOnlineSupport@ferc.gov. Please carefully follow these instructions so that your comments are properly recorded.

(1) You can file your comments electronically using the eComment feature on the Commission's website (www.ferc.gov) under the link to Documents and Filings. This is an easy method for submitting brief, text-only comments on a project;

(2) You can also file your comments electronically using the eFiling feature on the Commission's website (www.ferc.gov) under the link to Documents and Filings. With eFiling, you can provide comments in a variety of formats by attaching them as a file with your submission. New eFiling users must first create an account by clicking on "eRegister." You must select the type of filing you are making. If you are filing a comment on a particular project, please select "Comment on a Filing"; or

(3) You can file a paper copy of your comments by mailing them to the following address. Be sure to reference the project docket number (CP19-500-000) with your submission: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street NE, Room 1A, Washington, DC 20426

Any person seeking to become a party to the proceeding must file a motion to intervene pursuant to Rule 214 of the Commission's Rules of Practice and Procedures (18 CFR 385.214). Motions to intervene are more fully described at http://www.ferc.gov/resources/guides/how-to/intervene.asp. Only intervenors have the right to seek rehearing or judicial review of the Commission's decision. The Commission may grant affected landowners and others with environmental concerns intervenor status upon showing good cause by stating that they have a clear and direct interest in this proceeding which no other party can adequately represent. **Simply filing environmental comments will not give you intervenor status, but you do not need intervenor status to have your comments considered.**

Additional information about the project is available from the Commission's Office of External Affairs, at **(866) 208-FERC**, or on the FERC website (www.ferc.gov) using the eLibrary link. The eLibrary link also provides access to the texts of all formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission offers a free service called eSubscription which allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries, and direct links to the documents. Go to www.ferc.gov/docs-filing/esubscription.asp.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

TECHNICAL ABBREVIATIONS AND ACRONYMS

APE	area of potential effects
AQCR	Air Quality Control Regions
ATWS	additional temporary workspace
CAA	Clean Air Act
CEQ	Council on Environmental Quality
Certificate	Certificate of Public Convenience and Necessity
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
Commission	Federal Energy Regulatory Commission
dB	decibels
dBA	A-weighted decibels
DKM	DKM Enterprises, LLC
EA	environmental assessment
EI	environmental inspector
EPA	U.S. Environmental Protection Agency
fbs	feet below the ground surface
FERC	Federal Energy Regulatory Commission
FWS	U.S. Fish and Wildlife Service
GHG	greenhouse gas
GWP	global warming potential
HCA	high consequence area
HDD	horizontal directional drill
IR	inadvertent return
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
MAOP	maximum allowable operating pressure
MBTA	Migratory Bird Treaty Act
MP	milepost
NAAQS	National Ambient Air Quality Standards
NDEQ	Nebraska Department of Environmental Quality
NDNR	Nebraska Department of Natural Resources
NEPA	National Environmental Policy Act
NGA	Natural Gas Act
NGPC	Nebraska Game and Parks Commission
NHPA	National Historic Preservation Act
NNSR	Nonattainment New Source Review
NO_2	nitrogen dioxide
NO_x	nitrogen oxides

NOI	*Notice of Intent to Prepare an Environmental Assessment for the Proposed Palmyra to South Sioux City A-Line Abandonment Project and Request for Comments on Environmental Issues*
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	noise sensitive area
NSR	New Source Review
OEP	Office of Energy Projects
Order	Commission's Order
Pb	lead
PEM	palustrine emergent
PFO	palustrine forested
Plan	Commission's *Upland Erosion Control, Revegetation, and Maintenance Plan*
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to 10 microns
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
Project	Palmyra to South Sioux City A-Line Abandonment Project
PSA	Purchase and Sale Agreement
PSD	Prevention of Significant Deterioration
Procedures	Commission's *Wetland and Waterbody Construction and Mitigation Procedures*
SHPO	State Historic Preservation Officer
SO_2	sulfur dioxide
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
SWPPP	Stormwater Pollution Prevention Plan
tpy	tons per year
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USGCRP	U.S. Global Change Research Program
USGS	U.S. Geological Survey
VOC	volatile organic compounds

A. PROPOSED ACTION

1. Introduction

The staff of the Federal Energy Regulatory Commission (Commission or FERC) prepared this environmental assessment (EA) to assess the environmental impacts of the abandonment and construction of certain natural gas pipeline facilities proposed by Northern Natural Gas Company (Northern). We[1] prepared this EA in compliance with the requirements of the National Environmental Policy Act (NEPA), Title 40 of the Code of Federal Regulations (CFR), Parts 1500-1508 [40 CFR 1500-1508], and with the Commission's implementing regulations under 18 CFR 380.

FERC is the lead federal agency for authorizing interstate natural gas transmission facilities under the Natural Gas Act (NGA), and the lead federal agency for preparation of this EA. No other federal agencies elected to become cooperating agencies for the preparation of this EA.

On August 15, 2019, Northern filed an application with the Commission in Docket No. CP19-500-000 under sections 7(b) and 7(c) of the NGA and Part 157 of the Commission's regulations. Northern seeks authorization to abandon a segment of its A-Line Pipeline and construct, own, and operate two new natural gas pipeline loops.[2] The project is referred to as the Palmyra to South Sioux City A-Line Abandonment Project (Project).

Section 7(b) of the NGA specifies that no natural gas company shall abandon any portion of its facilities subject to the Commission's jurisdiction without the Commission first finding that the abandonment would not negatively affect the present or future public convenience and necessity.

Under section 7(c) of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate of Public Convenience and Necessity (Certificate) to construct and operate them. The Commission bases its decisions on financing, rates, market demand, gas supply, environmental impact, and other issues concerning a proposed project.

Our EA is an integral part of the Commission's decision on whether to issue Northern a Certificate to construct and operate the proposed facilities and authorization to abandon facilities. Our principal purposes in preparing this EA are to:

- identify and assess potential impacts on the natural and human environment that could result from implementation of the proposed action;

[1] "We," "us," and "our" refer to environmental staff of the Office of Energy Projects.

[2] A loop is a pipeline that is constructed adjacent to another pipeline for the purpose of increasing capacity in this portion of the system.

- identify and recommend reasonable alternatives and specific mitigation measures, as necessary, to avoid or minimize project-related environmental impacts; and

- facilitate public involvement in the environmental review process.

2. Purpose and Need

Northern states that the purpose of the Project is to enhance the safety, security, and operational efficiency of Northern's pipeline system through the abandonment of approximately 117.7 miles of the M581A and M570A mainlines. These pipelines were originally placed in-service in the 1930's and have substantially escalating maintenance demands and are no longer needed to support customer's current or future needs. Northern states that construction of additional natural gas looping pipeline would be required to ensure that Northern is capable of meeting gas transportation requirements and continuing to provide reliable and safe gas deliveries throughout its market area.

3. Proposed Facilities

The Project is in Nebraska (figure 1) and consists of:

- abandonment in place of 44.2 miles of 20-inch-diameter and 14.8 miles of 16-inch-diameter mainline in Otoe, Lancaster, Saunders, and Dodge Counties (M581A);

- abandonment in place of 58.7 miles of 16-inch-diameter mainline in Dodge, Burt, Thurston, and Dakota Counties (M570A);

- construction of 1.7 miles of new 24-inch-diameter pipeline loop in Otoe County (Palmyra North D-Line Loop);

- construction of 2.5 miles of new 24-inch-diameter pipeline loop in Dodge County (Fremont North D-Line Loop);

- construction of a new pig[3] launcher and two valve sites within the existing Palmyra Compressor Station at the beginning of the Palmyra D-Line Loop and a pig receiver and one valve site at the end of the pipeline loop; and

- construction of a new pig launcher and one valve site within the existing Fremont Compressor Station and one valve site at the end of the Fremont North D-Line Loop.

[3] A "pig" is a tool that the pipeline company inserts into and pushes through the pipeline for cleaning the pipeline, conducting internal inspections, or other purposes.

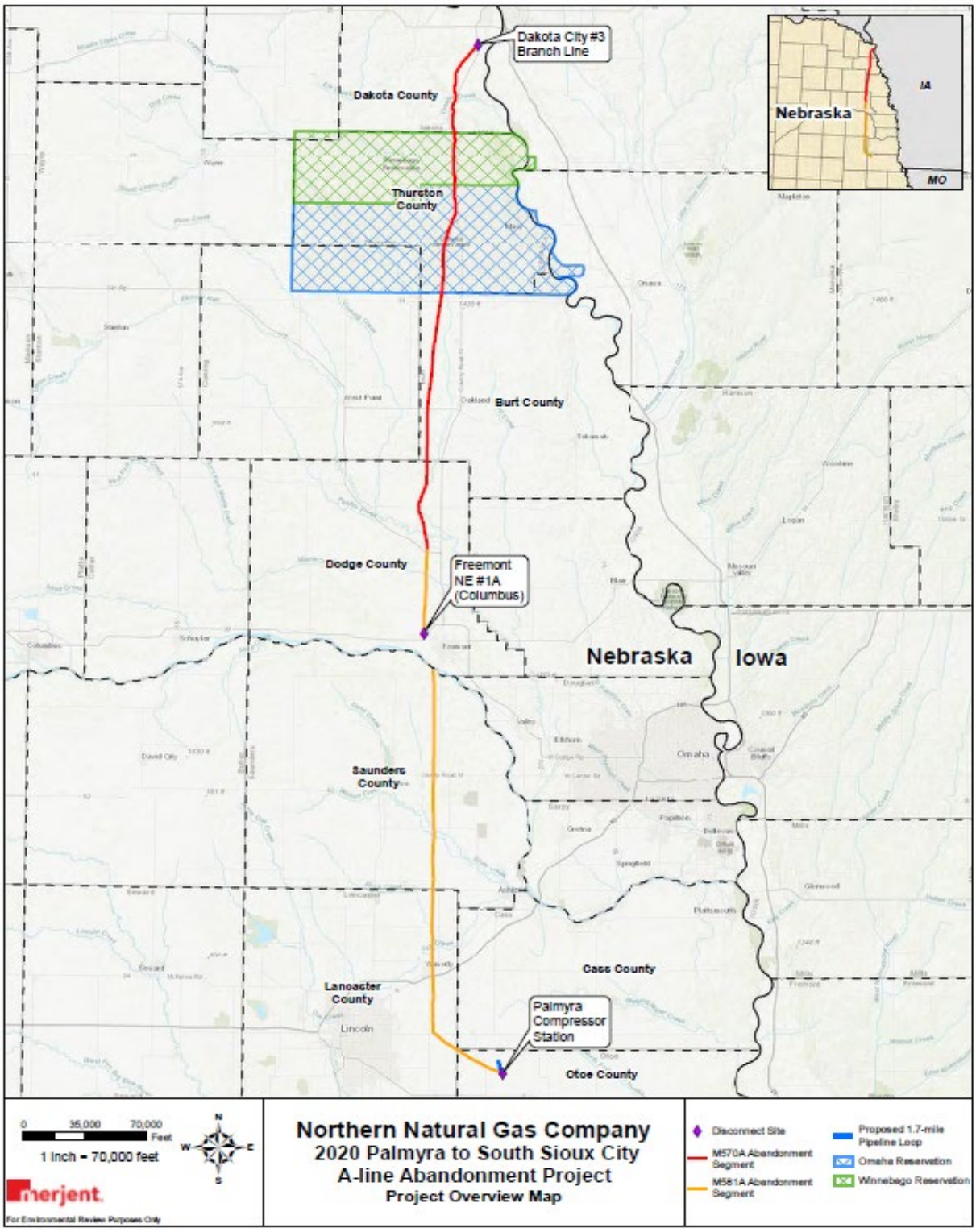

Figure 1: General Project Location

Maps showing the location of the proposed facilities are included in appendix A.

Northern anticipates commencing construction in summer 2020. Construction activities are expected to be complete by November 2020.

4. Public Participation and Comment

On September 18, 2019, the Commission issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed Palmyra to South Sioux City A-Line Abandonment Project and Request for Comments on Environmental Issues* (NOI). The NOI was mailed to interested parties including federal, state, and local officials; agency representatives; Native American tribes; local libraries and newspapers; and property owners affected by the proposed facilities. This notice opened the scoping period for 30 days. We received comments in response to the NOI from the Rosebud Sioux Tribe, the Nebraska Department of Natural Resources (NDNR), the Lower Platte South Natural Resources District, and one landowner. We also received a comment in response to our October 28, 2019 *Notice of Schedule for Environmental Review of the Palmyra to South Sioux City A-Line Abandonment Project* from Union Pacific Railroad. The primary issues raised by the commentors are cultural resources; surface waters and wetlands; land use and property access; and floodplains. Union Pacific Railroad was concerned with the proper permits being obtained for survey access on its property. While the railroad's property would not be affected by the Project, it may be affected by DKM Enterprises, LLC's (DKM) salvage of the abandoned pipeline. Therefore, DKM would be responsible for obtaining any required permits to access Union Pacific Railroad property. All other substantive comments are addressed in the relevant resource sections of the EA.

The majority of the comments received were related to the DKM salvage of the abandoned A-Line. Although Northern has indicated that DKM intends to purchase and salvage the abandoned pipeline, the eventual salvage of the pipeline after abandonment, if it does occur, is not part of Northern's proposed action. We discuss the DKM Project in more detail in section A.7; however, if the Commission grants the abandonment, the pipeline would no longer be under the Commission's jurisdiction. Any subsequent construction by DKM or any other entity related to the abandoned pipeline would also not be under the Commission's jurisdiction. However, this EA does disclose available resource impact information for the DKM Project in section B.8 and B.9 to inform stakeholders and decision makers. A portion of the DKM Project would be within the geographic scope of the cumulative impacts analysis for the Project and is included in that analysis.

5. Land Requirements

A-Line Disconnection

The disconnection activities would require a total of 2.0 acres of temporary workspace to isolate the A-Line from its existing facilities. At the Palmyra Compressor Station disconnect site, Northern would use temporary workspace and additional temporary workspace (ATWS) associated with the installation of the Palmyra North D-Line Loop to complete the disconnection

work. At the Columbus disconnect site, Northern would use temporary workspace centered around the existing Columbus town border station to complete the disconnection work. At the disconnect site located at the Dakota County Launcher, Northern would use temporary workspace centered on the A-Line and the existing Dakota County Launcher as well as ATWS to complete the disconnection work. Northern would not relinquish its rights under its existing easement agreements where other pipelines in the right-of-way are covered under these same easements, and Northern would continue to operate the other pipelines in the right-of-way and maintain its pipeline easements.

Pipeline Loops

Construction of the new Palmyra North D-Line Loop would impact a total of 121.6 acres of land, which includes approximately 16.0 acres of new permanent pipeline right-of-way, 0.9 acre of new aboveground facilities, and a 0.1 acre new permanent access road to the receiver at the end of the pipeline loop. Approximately 104.7 acres of temporary workspace, ATWS, staging areas, and temporary access roads would be temporarily impacted during construction of the pipeline loops and returned to previous use after construction. The pipeline loop would be installed adjacent to Northern's existing NEB61601 line and B-Line and offset by 25 feet, except between milepost (MP) 0.0 to 0.2 and MP 0.4 to 1.2 where the offset is greater to avoid impacts on environmentally sensitive resources and to allow for proper alignment of horizontal directional drill (HDD) crossings. The Fremont North D-Line Loop would be offset by 25 feet from Northern's existing C-Line for its entire route.

Aboveground Facilities

Northern proposes to install a pig launcher and one valve site within the existing Fremont Compressor Station at the beginning of the Fremont North D-Line Loop and one valve site at the end of the pipeline loop. In addition, Northern proposes to install a pig launcher and two valve sites within the existing Palmyra Compressor Station at the beginning of the Palmyra North D-Line Loop and a pig receiver and one valve site at the end of the pipeline loop.

Northern would construct the new pipeline loops using a 100-foot-wide construction right-of-way in uplands to allow for full right-of-way topsoil segregation. The footprint of all Project-related disturbances during construction is estimated at 123.6 acres. Tables 1 and 2 provide a summary of the acreages of land required for construction and new land requirements for operation of the Project.

Table 1: Land Requirements for the A-Line Disconnection		
Facility	**Milepost Location**	**Temporary Workspace (acres)**
M581A Mainline		
Palmyra Compressor Station Disconnect Site[a]	0.0	--
Columbus Disconnect Site (Fremont NE #1A)	49.7	1.0
	M581A Subtotal	**1.0**
M570A Mainline		
Dakota County Launcher	58.7	1.0
	M570A Subtotal	**1.0**
	Project Total	**2.0**
a = Temporary workspace associated with the Palmyra North D-Line Loop would be used for the disconnect at this location; therefore, no additional workspace is needed at this site.		

Table 2: Land Requirements for the Pipeline Loops		
Facility	**Construction (acres)**	**Operation (acres)**
Palmyra North D-Line Loop		
Construction Right-of-Way	13.7	7.8
Additional Temporary Workspace	34.3	0.0
Staging Areas	9.0	0.0
Access Roads	1.0	0.0
Aboveground Facilities	4.8	0.6
Palmyra North D-Line Loop Subtotal	**62.8**	**8.4**
Fremont North D-Line Loop		

Table 2: Land Requirements for the Pipeline Loops		
Facility	**Construction (acres)**	**Operation (acres)**
Construction Right-of-Way	24.7	8.2
Additional Temporary Workspace	12.8	0.0
Staging Areas	14.3	0.0
Access Roads	6.5	0.0
Aboveground Facilities	0.6	0.3
Fremont North D-Line Loop Subtotal	**58.8**	**8.5**
PROJECT TOTAL	**121.6**	**16.9**

Operation of the Project would require a 50-foot-wide permanent right-of-way centered on the pipeline. The Project would require approximately 16.9 acres of permanent right-of-way for operation.

Access Roads, Staging Area/Pipe Yards, and Additional Temporary Workspace

Extra workspaces, including ATWS and staging areas, are typically required at road, railroad, existing utility, pipeline interconnections, wetland and waterbody crossings, as well as aboveground facility locations. Northern identified ATWS and two pipe storage/staging areas required for the construction of the Project. ATWS vary in size and depend on site-specific conditions and the construction method or need. The area impacted by ATWS for the Project is included in table 2.

Northern proposes to use eight staging areas during construction of the pipeline loops for construction equipment, pipe, and construction material storage; temporary field offices; parking; and pipe preparation and preassembly staging areas. These staging areas would impact a total of 23.3 acres of land. After construction is complete, the staging areas would be restored to pre-construction conditions in accordance with the Commission's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan), or as requested by the landowner. Seven new, temporary access roads would be required to access the pipeline loops. One new permanent access road to the receiver would be constructed at the end of the Palmyra North D-Line Loop. Only existing access roads, without any modifications, would be used for the disconnection activities. The acreage of impact from access roads is included in table 2.

Although Northern has identified areas where ATWS would be required, additional or alternative areas could be identified in the future due to changes in site-specific construction

requirements. Northern would be required to file information on each of those areas for review and approval prior to use.

6. Construction, Operation, and Maintenance Procedures

The proposed facilities would be designed, constructed, tested, operated, and maintained in accordance with the U.S. Department of Transportation (USDOT) Minimum Federal Safety Standards in 49 CFR 192. The USDOT's regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. Part 192 specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

Northern proposes to follow the construction procedures and mitigation measures contained in the Commission's Plan and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures).[4] In addition, Northern has prepared an acceptable Spill Prevention, Control, and Countermeasures Plan (SPCC Plan) which contains measures to prevent and respond to any inadvertent releases of hazardous materials as well as notification procedures in the event of a release.

In accordance with the FERC Plan, Northern would use at least one full-time environmental inspector (EI) during construction of the Project. The EI would be on site during Project construction activities to ensure compliance with the construction procedures contained in the Plan and Procedures. A full list of the EI's duties is presented in section II.B of the Plan. The EI's responsibilities include:

- ensuring compliance with applicable federal, state, and local environmental permits;
- ordering corrective actions for acts that violate the environmental conditions of the Commission's Certificate, or any other authorizing document;
- ensuring compliance with site-specific construction and restoration plans or other mitigation measures and landowner agreements; and
- maintaining construction status reports.

Northern would conduct environmental training sessions in advance of construction to ensure that all individuals working on the Project are familiar with the environmental mitigation measures appropriate to their jobs and the EI's authority. FERC staff would also conduct compliance inspections during construction and restoration to verify compliance with the Commission's requirements.

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[4] Copies of the Plan and Procedures may be accessed on our website (http://www.ferc.gov/industries/gas/enviro/guidelines.asp) or obtained through our Office of External Affairs at 1-866-208-3372.

6.1 Pipeline Construction

Northern would use conventional techniques for buried pipeline construction and aboveground facility construction and follow the requirements set forth in the Plan and Procedures to ensure safe, stable, and reliable transmission facilities consistent with Commission and USDOT specifications. To comply with USDOT specifications, Northern would hydrostatically test all pipeline facilities prior to placing them in service.

Northern would conduct construction activities during daylight hours between 7:00 am and 7:00 pm. Some construction activities may require 24-hour construction on a limited basis such as HDD activities, tie-ins, and hydrostatic testing.

Clearing and Grading

Clearing operations involve removing vegetation, including trees, within the construction right-of-way or construction work areas. Northern's proposed pipeline loop consists mainly of agricultural land, open land, and developed land. Northern does not propose any tree clearing for the Project.

After clearing is complete, Northern would install temporary erosion control devices along the limits of wetland boundaries within the construction right-of-way. Grading of the construction right-of-way would be necessary for the movement of heavy equipment and safe passage for work crews. In agricultural and residential lands, topsoil would be segregated from subsoil during trenching and would remain segregated during construction to avoid loss due to mixing with subsoil material. Upon completion of backfilling operations, the topsoil would be replaced over the graded area.

Trenching

Typically, the trench for a pipeline must be excavated to a depth which allows for a minimum of 36 inches of cover in accordance with USDOT regulations. However, at crossings of foreign pipelines, utilities, or other structures the trench may be buried deeper to allow for a minimum of 12 inches of clearance. Additionally, the depth of the pipeline would be greater where the pipeline would be installed by HDD. In accordance with the Plan, measures such as installing trench plugs would be taken to prevent the flow of water through the trench.

Pipe Stringing, Preparation, and Lowering In

Pipe stringing involves moving the pipe into position along the construction right-of-way in a continuous line parallel to the excavated trench in preparation for subsequent lineup and welding operations. The pipe is then bent, where necessary, to conform to changes in the direction of the alignment and natural ground contours. After the pipe has been bent, it would be lined-up and welded, and then the welds and pipe coating are inspected. Side-boom tractors are used to lower the pipe into the trench. Trench dewatering would be performed in accordance with the Plan and Procedures.

Backfilling and Hydrostatic Testing

After the pipe is lowered into the trench, the trench would be backfilled using the material originally excavated from the trench. Topsoil would not be used for padding the pipeline. In some cases, additional backfill material from other sources may be used. In areas where topsoil has been segregated, the subsoil would be placed in the bottom of the trench, followed by replacing the topsoil over the subsoil layer. The surface of the construction work space would be graded to conform to pre-existing contours of the adjoining area, except for a slight crown of soil over the trench (in upland areas only) to compensate for natural subsidence of the backfill material.

Hydrostatic testing is a process in which a pipeline is tested for leaks using a pressurized medium, such as water, which ensures the integrity of facilities and the pipeline. The process is generally carried out after backfilling and after completion of other construction activities. Northern would be required to hydrostatically test all pipe in accordance with USDOT pipeline safety regulations. A hydrostatic test involves filling the lowered-in pipeline with water and pressurizing the pipeline above its maximum allowable operating pressure. The pressure in the pipeline is then monitored for several hours. If a drop in pressure is recorded, the pipeline is examined to determine if any leaks have occurred. Northern would use water from a municipal source, and after testing is complete, haul the water offsite for disposal at an approved facility.

Cleanup and Restoration

Weather and soil conditions permitting, final cleanup would occur within 20 days after the trench is backfilled (within 10 days in residential areas). After backfilling is complete, all disturbed areas would be graded to the original contours, any remaining debris properly disposed of, permanent erosion controls constructed or installed, and the right-of-way seeded with an appropriate seed mix. Examples of typical erosion control devices include slope breakers, sediment barriers (such as silt fence or straw bales), and mulch. All restoration activities would be completed according to the Plan and Procedures. Seeding would be completed according to the recommendations of the Natural Resources Conservation Service (NRCS), the applicable County Conservation Districts, and landowner agreements.

Special Pipeline Construction Procedures

Special construction techniques are typically required when constructing across waterbodies, wetlands, roads and railroads, and residential areas. The special construction methods that Northern proposes to use are described below.

<u>HDD</u>

HDD is a trenchless crossing method involving drilling a hole beneath the waterbody and installing a pre-fabricated pipe segment through the hole. The first step in an HDD is to directionally drill a small-diameter pilot hole from one side of the crossing to the other. The pilot hole is then enlarged by several reaming passes using successively larger reaming tools

until the borehole is of sufficient diameter to allow for pullback of the pre-fabricated pipe. Throughout the drilling process, a slurry of non-toxic, bentonite clay and water is pressurized and pumped through the drilling head to lubricate the drill bit, remove drill cuttings, and hold the hole open. Although requiring overall greater land disturbance on either side of a feature to accommodate the drilling and receiving equipment, the HDD method reduces impacts on the feature (e.g., roads; streams; riparian areas). Northern proposes to cross most waterbodies and all wetlands using the HDD method. This method is proposed for Hooper Creek, Rawhide Creek, the canal north of Rawhide Creek, County Road C, and the planned U.S. Highway 30 Schuyler to Fremont Expressway Project. About 315,000 gallons of water would be required to complete the HDD crossings. The water for HDDs would be obtained from a municipal source.

Conventional Bore

The conventional bore crossing method is similar to an HDD in that it is a trenchless construction technique; however, conventional bores are not directionally drilled and are not typically as deep underground as an HDD. The conventional bore method involves excavating large bell holes on each side of the feature that are deep enough for the bore equipment to auger a hole horizontally from one bell hole to the other, typically a minimum of 5 feet below the surface or feature. Once the bell hole has been created, the pipeline is then pushed or pulled through the hole. This method is proposed for the crossing most of the roads and some waterbodies along the Project pipeline alignment.

Open-cut Waterbody Crossing

One waterbody would be crossed using a wet open-cut method. The waterbody crossing using the wet open-cut method would be completed within 24 hours. After the crossing is complete, the streambed would be returned to its preconstruction contours, and streambanks restored to preconstruction condition and allowed to re-vegetate in accordance with the FERC Procedures and any applicable permit conditions. Waterbodies crossed by the Project are further discussed in section B.2.2.

Road Crossings

Construction of the Project would cross four existing public roads and one private driveway, all of which are gravel covered. One of the public roads would be crossed by HDD and the rest would be crossed using a bore method.

6.2 Aboveground/Associated Facility Construction

Construction of the new pig launchers, receiver, and valve sites would include clearing, grading, installation of foundations, erection of aboveground facilities, installation of piping, testing of equipment, and cleanup and restoration of the temporary workspaces.

At the beginning of the Palmyra North D-Line Loop, a launcher and two valves would be constructed within the existing Palmyra Compressor Station. Upon completion, the launcher and

one valve would be located on a gravel pad and the second valve would be positioned on another separate gravel pad. A total of 0.2 acre of land would be converted to impervious surfaces for the operation of these facilities. No access roads would be required for these facilities.

Northern would construct the receiver and new valve site at the end of the Palmyra North D-Line Loop. A new permanent access road would be constructed to the facility at County Road B. A total of 0.4 acre would be converted to developed land or impervious surface for the operation of the receiver, valve, and permanent access road.

At the beginning of the Fremont North D-Line Loop, Northern would construct a launcher and one valve site within the existing Fremont Compressor Station. The valve site would be constructed entirely within temporary workspace used for construction of the Fremont North D-Line Loop. After construction, these facilities would be positioned on gravel pads and no access roads would be required.

During construction, workspaces at the aboveground facilities would be cleared of vegetation, as necessary, and graded. Erosion control devices would be installed as needed to prevent erosion and offsite impacts in accordance with the FERC Plan and any applicable state permit requirements. After construction, all temporary workspaces would be revegetated in accordance with the FERC Plan.

7. Non-jurisdictional Facilities

Non-jurisdictional facilities are those associated facilities related to a proposed project that are constructed, owned, and operated by other entities that do not come under the jurisdiction of FERC. These non-jurisdictional facilities may be integral to the project objective (e.g., a new or expanded power plant that is not under the jurisdiction of FERC at the end of a pipeline) or they may be merely associated as minor, non-integral components of the jurisdictional facilities that would be constructed and operated with the proposed facilities (e.g., a meter station constructed by a customer of the pipeline to measure gas off-take). There are no non-jurisdictional facilities that would be constructed as a result of this Project.

As described previously, if the Commission approves the Project, Northern has indicated that it would sell the abandoned pipeline facilities to DKM. After assuming ownership of the A-line, DKM intends to reclaim most of the facilities for salvage. A brief overview of the DKM Project is given below and a more detailed description is presented in section B.9 of this EA.

The Purchase and Sale Agreement (PSA) between Northern and DKM, executed on August , 2019,[5] outlines certain environmental provisions agreed upon by both parties that are relevant to the assessment of environmental impacts. DKM would reclaim the pipeline within two years of the executed PSA and would be responsible for coordinating reclamation activities with landowners. DKM would use a 50-foot-wide corridor centered on the pipeline, and reclamation activities would occur within Northern's easement. DKM would use existing public

[5] FERC Docket CP19-500; accession number 20190815-5166.

and private roads and the A-Line right-of-way to gain access to the work area. Per the PSA, DKM and the respective landowners may agree that the facilities be abandoned in-place. Any facilities left in-place based on landowner preference would be transferred to and owned by the respective landowners. Northern would contractually exclude approximately 2.9 miles of the 58.7-mile-long M570A line abandoned segment where prehistoric archaeological sites are present. This includes approximately 0.1 mile in Burt County, 0.6 mile in Thurston County, and 2.2 miles in Dakota County which would be excluded to avoid ten prehistoric sites that have not been evaluated for National Register of Historic Places (NRHP) eligibility. Other segments of the pipeline (e.g., pipe at road crossings, wetlands and waterbodies) may also not be removed. At these locations, the pipeline would instead be cut and capped/grouted, as deemed necessary. If DKM elects to remove the pipeline segments under environmentally sensitive areas, DKM would be responsible for obtaining all applicable permits and authorizations. Following salvage operations, DKM would restore the land to pre-existing conditions.

8. Permits, Approvals, and Regulatory Requirements

Table 3 lists the major federal and state permits, approvals, and consultations for the Project and provides the current status of each. Northern would be responsible for obtaining and abiding by all permits and approvals required for the Project. Northern stated that all relevant permits and approvals would be provided to the respective contractors who would be required to be familiar with and adhere to applicable requirements.

Table 3: Major Permits and Approvals for the Project

Issuing Agency	Permit/Approval	Filing Date (*Anticipated*)	Receipt Date (*Anticipated*)
Federal			
Federal Energy Regulatory Commission	Section 7 of the Natural Gas Act, Certificate of Public Convenience and Necessity	8/15/19	*Pending*
U.S. Army Corps of Engineers-Omaha District	Clean Water Act- Section 404, Nationwide Permit 12	6/26/19	8/5/19
U.S. Fish and Wildlife Service-Nebraska Field Office	Endangered Species Act- Section 7 Consultation	4/2/19	No further consultation necessary
U.S. Department of Agriculture- Natural Resources Conservation Service	Conservation Easement Program and seeding recommendations	Project Notification 1/24/19 and project update 4/12/19. No response to date.	N/A
State-Nebraska			
Nebraska Department of Environmental Quality- Water Quality Division- Stormwater	Section 102 Clean Water Act, National Pollution Discharge Elimination System and Title 119 of Nebraska Administrative Code	N/A	To be obtained prior to construction

Table 3: Major Permits and Approvals for the Project			
Issuing Agency	**Permit/Approval**	**Filing Date (*Anticipated*)**	**Receipt Date (*Anticipated*)**
	Nebraska General Permit for construction dewatering of groundwater or groundwater mixed with stormwater	N/A	To be obtained prior to construction
	Title 456, Chapter 6 Groundwater Appropriation	N/A	To be obtained prior to construction
Nebraska Natural Heritage Program- Nebraska Game and Parks Commission	Nebraska Nongame and Endangered Species Conservation Act	April 2019	May 2019
Nebraska State Historical Society	Section 106 of the National Historic Preservation Act	4/2/19	Concurrence received May 7 and 20, 2019

B. ENVIRONMENTAL ANALYSIS

Construction and operation of the Project would have temporary, short-term, long-term, and permanent impacts. As discussed throughout this EA, temporary impacts are defined as occurring only during the construction phase up to a few months after construction. Short-term impacts are defined as lasting up to three years. Long-term impacts would eventually recover, but require more than three years. Permanent impacts are defined as lasting throughout the life of the Project.

1. Geology and Soils

1.1 Geology

Activities at the three disconnect sites would be limited to previously disturbed areas within Northern's property boundary or maintained right-of-way. Based on the limited ground disturbance at these sites, the modifications at these facilities would result in minimal impact on geologic resources and are not discussed further in this section.

The pipeline loops would be in the Dissected Till Plains section of the Central Lowlands physiographic province (National Park Service [NPS], 2019). The Dissected Till Plains is characterized by moderately dissected, flat to rolling plains. The Palmyra North D-Line loop would cross gently rolling land with a typical local relief of approximately 100 feet and maximum slopes of approximately 6.5 percent. The Fremont North D-Line loop would traverse flat land within the floodplain of the Platte River, with less than 10 feet of relief and maximum slopes of less than 2 percent along the loop.

Surficial deposits in the Project areas consist of unconsolidated glacial deposits ranging from fine clay to gravel with isolated boulders created as material dropped out of the retreating ice sheet, and outwash, a well sorted and stratified deposit composed primarily of sand and gravel deposited by moving water emanating from the ice sheet. These unconsolidated deposits are typically 0 to 150 feet thick in the Project vicinity. The Palmyra North D-Line Loop would cross clay loam till and clayey silt colluvium (Soller et. al., 2009). The five geotechnical soil borings conducted along the loop for proposed HDDs and conventional bores encountered unconsolidated clay, silt, and sand within glacial till, alluvium, and loess deposits from the surface to depths of 9 to 70 feet. The Fremont North D-Line Loop would cross clay, silt, sand, and gravel alluvial deposits associated with the Platte River, currently about 1.5 miles to the south of the pipeline loop (Soller et. al., 2009). The eight geotechnical soil borings conducted along the loop for proposed HDDs and conventional bores encountered clay, silt, and sand from the surface to the termination of each boring, which ranged from 20 to 70 feet deep.

Based on the NRCS soils data and the site-specific geotechnical soil borings, blasting is not anticipated during construction of the pipeline loops. Shallow bedrock could be encountered in an approximately 0.3 acre of workspace associated with an access road to the Palmyra North D-Line Loop. However, the geotechnical soil borings indicate that the uppermost bedrock is

weathered shale, which Northern would remove utilizing hydraulic hammers and other conventional excavation methods.

Mineral Resources

Based on a review of recent high resolution digital aerial photography, U.S. Geological Survey (USGS) topographic and mineral resources maps, information from the Nebraska Geological Survey (Burchett et al., 1983), and online data (University of Nebraska - Lincoln, 2019a), active, inactive, or historic mineral resource operations (quarries or mines) were not identified within 0.5 mile of the Project pipeline loops. Further, there are no active, inactive, or abandoned oil or natural gas extraction wells within 5 miles of the pipeline loops (Nebraska Oil and Gas Commission, 2019). Therefore, we conclude the Project would not impact mineral resources.

Paleontological Resources

No known fossil locations were identified within the Project area based on a review of known paleontological sites. The likelihood of encountering and disturbing paleontological resources such as vertebrate fossils or scientifically significant invertebrate or plant fossils during Project construction is considered to be low due to the type of deposits that underlie the Project areas and the previously disturbed nature of the pipeline loops due to agriculture. Thus, we conclude that significant paleontological resources are unlikely to be affected by construction or operation of the Project.

Geologic Hazards

Geologic hazards are natural, physical conditions that can result in damage to land and structures or injury to people. Such hazards include earthquakes, surface faulting, and soil liquefaction; landslides, flooding, and karst terrain; or ground subsidence hazards. These hazards, as well as the feasibility of utilizing HDD, based on hydrogeologic conditions present in the Project area are discussed below.

The Project would be in an area with low seismicity (USGS, 2014) and no quaternary surface faults have been mapped in the Project areas (USGS, 2006). A review of high-resolution aerial photography did not identify any apparent landslide activity at or near proposed workspaces. Additionally, the USGS indicates that the pipeline loops are within areas of low landslide susceptibility and occurrence (Radbruch-Hall et al., 1982) and no documented landslides have been documented within four miles of the pipeline loops (University of Nebraska - Lincoln, 2019b).

Ground subsidence, involving the localized or regional lowering of the ground surface, may be caused by karst formation due to limestone or gypsum bedrock dissolution; or sediment compaction due to groundwater pumping. The potential for karst formation in this area is very low because the limestone formations are relatively thin and are encased in shale above and below. Consequently, there is little potential for groundwater to move through the limestone in

adequate volumes to cause significant dissolution (Weary, D.J. and D.H. Doctor, 2014). Therefore, we conclude that the Project is not likely to be significantly affected by ground subsidence.

Northern has proposed the use of the HDD construction method in four locations: County Road C, Hopper Creek, Rawhide Creek, and the planned U.S. Highway 30 Schuyler to Fremont Expressway project (and adjacent canal). During HDD operations, bentonite-based drilling mud is pumped under pressure through the inside of the drill pipe and flows back (returns) to the drill entry point along annular space between the outside of the drill pipe and the drilled hole. Because the drilling mud is pressurized, it can be lost, resulting in an inadvertent return of fluids to the ground surface (IR), if the drill path encounters porous material and/or fractures or fissures in the bedrock. Chances for an IR to occur are greatest near the drill entry and exit points where the drill path has the least amount of ground cover. It is also possible for HDD operations to fail, primarily due to encountering unexpected geologic conditions such as coarse materials or if the pipe were to become lodged in the hole during pullback operations.

Northern drilled five geotechnical borings along the proposed alignments for the Hooper Creek and County Road C HDD crossings to depths of approximately 56 to 90 feet below the ground surface (fbs). Eight geotechnical borings were drilled along the proposed alignment for the Rawhide Creek and the planned U.S. Highway 30 project HDD crossings to depths of approximately 20 and 70 fbs. Geotechnical investigations revealed subsurface geology comprised of soil underlain by lean to fat clay followed by silt and sand with silt. Surficial material was underlain by shale and siltstone, interbedded with generally thin (less than 20 feet thick) layers of limestone. Rock quality for bedrock at each crossing (based on rock quality designations) was found to generally be fair to excellent; evidence of voids or cavities within limestone layers were not identified. Proposed HDD alignments would maintain approximately 34 to 48 feet of cover beneath the County Road C, Hopper Creek, Rawhide Creek, and the planned U.S. Highway 30 Schuyler to Fremont Expressway project (and adjacent canal) and are anticipated to primarily be installed within clay or shale layers. Based on the above assessment, we conclude that HDDs are a feasible construction method in the Project vicinity.

While use of the HDD method would significantly minimize potential impacts on the proposed crossings of waterbodies and wetlands, HDDs could result in an unanticipated release of drilling fluids into a waterbody or wetland during drilling. In the event of an IR, Northern would implement measures outlined in its HDD Feasibility Reports and Contingency Plans.[8] Northern's HDD Contingency Plan would ensure that drill operations are monitored and adjusted to avoid potential IRs, and if one should occur, the release would be contained to the extent practicable and remediated. We have reviewed Northern's HDD Contingency Plan and find it acceptable.

[8] Northern's HDD Feasibility Reports and Contingency Plans can be found as appendix 1H to Resource Report 1 at: https://elibrary.ferc.gov/IDMWS/file_list.asp?document_id=14792826

Based on the above assessment, we conclude that the impact from geologic hazards on the Project facilities during construction and/or operation would be minimal and the Project would not have significant impacts on geologic resources.

1.2 Soils

Activities at the three disconnect sites would be limited to previously disturbed areas within Northern's property boundary or maintained right-of-way. Based on the limited ground disturbance at these sites, the modifications at these facilities would result in minimal impact on soils and are not discussed further in this section. Northern's adherence to the measures contained in FERC's Plan and Procedures would ensure that all disturbed areas at these sites are adequately restored following construction.

The properties and designations of individual soil map units from NRCS sources were used to describe the soil resources associated with the pipeline loops and assess potential limitations, impacts, and mitigation measures to be implemented to reduce impacts on soil resources. Construction activities that create soil disturbance, such as clearing, grading, trench excavation, backfilling, and the movement of construction equipment along the right-of-way, would result in temporary and minor impacts on soil resources. Soil characteristics could affect construction performance or increase the potential for adverse construction-related soil impacts. The activities that have the potential to impact soils and reduce soil quality are the mixing of topsoil with subsoil, bringing excess rocks to the surface, compacting soil by heavy equipment, and disrupting surface and subsurface drainage patterns.

Prime Farmland

The U.S. Department of Agriculture (USDA) defines prime farmland as land that has the best combination of physical and chemical characteristics for the production of food, feed, fiber, and oilseed crops. Unique farmland is identified as land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. Prime and unique farmland soils can include either actively cultivated land or land that is potentially available for cultivation. Farmland that does not meet the criteria for prime farmland may still be considered farmland of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the local conservation districts. Generally, this land includes soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Construction in agricultural and pasture areas would temporarily disrupt ongoing agricultural activities; however, following construction, agricultural activities would be allowed to resume without restrictions.

Approximately 80.6 acres (about 65 percent) of the soils temporarily impacted by the pipeline loops construction activities are considered prime farmland or farmland of statewide importance. Of this, about 0.3 acre would be taken out of agricultural use for operation of the Project. Potential impacts on agricultural soils would be minimized and mitigated in accordance

with our Plan. These include measures to conserve and segregate the upper 12 inches of topsoil, alleviate soil compaction, protect and maintain existing drainage tile and irrigation systems, prevent the introduction of weeds, and retain existing soil productivity. The Plan also includes restoration and revegetation measures such as seedbed preparation, fertilization, and seeding to actively promote revegetation. Therefore, we conclude that impacts on prime farmland soils would be temporary and not significant.

Hydric Soils, Soil Rutting, and Compaction

Hydric soils are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Soils that are artificially drained or protected from flooding (e.g., by levees) are still considered hydric if the soil in its undisturbed state would meet the definition of a hydric soil. Generally, hydric soils are those soils that are poorly and very poorly drained. About 46.5 acres (38 percent) of the soils that would be affected by construction of the pipeline loops are considered hydric. Hydric soils are susceptible to rutting and compaction. Northern would minimize compaction with measures contained in the FERC Plan and Procedures.

About 123.2 acres (99.7 percent) of the soils that would be affected by construction of the pipeline loops have severe rutting potential. To minimize rutting, Northern would stabilize the proposed access road using gravel or equipment mats. If rutting 6 inches or greater occurs along ungraded portions of the Project areas, Northern would immediately limit activities in that area or implement protective measures (e.g., install equipment mats) to prevent additional rutting. If rutting occurs along the access road, Northern would repair the ruts to pre-construction conditions or better as soon as ground conditions permit.

The use of heavy mechanical equipment could compact soils. About 49.7 acres (40 percent) of the soils that would be affected by construction of the pipeline loops are compaction-prone. Compaction would be minimized through implementation of the measures outlined in our Plan, including topsoil segregation and de-compaction in agricultural areas.

Soil Erosion and Revegetation Potential

Soil erosion is the wearing away of physical soil properties by wind and water, and could result in a loss of soil structure, organic matter, and nutrients, all of which, when present, contribute to healthy plant growth and ecosystem stability. About 3.3 acres (3 percent) of the soils that would be affected by construction of the pipeline loops are water erodible. In addition, about 6.9 acres (6 percent) of the soils that would be affected by construction of the pipeline loops have revegetation concerns. To minimize soil erosion, Northern would install temporary and permanent erosion control devices as specified in our Plan and applicable Project-specific permits. The effectiveness of temporary erosion control devices would be monitored by Northern's EI and modified by Northern's construction contractor. Temporary erosion control devices would be inspected on a regular basis and after each rainfall event of 0.5 inch or greater to ensure controls function properly.

Inadvertent Spills or Discovery of Contaminants

Northern conducted a database search using publicly available databases to identify facilities with potential and/or actual sources of contamination within 500 feet of the Project's construction workspace. The U.S. Environmental Protection Agency (EPA) Facility Registry Service (EPA, 2019a) and the Nebraska Department of Environmental Quality's Petroleum Remediation and Surface Spill Site Information database (NDEQ, 2019a) were reviewed. No reported sources of known or potential soil contamination were identified in the vicinity of the pipeline loops. During Project activities, contamination from accidental spills or leaks of fuels, lubricants, and coolant from equipment could adversely impact soils. To minimize impacts, Northern would implement measures contained in its SPCC Plan which specifies cleanup procedures in the event of inadvertent spills.

Given Northern's proposed mitigation measures and because it would return disturbed areas to pre-construction conditions, permanent impacts on soils would be minor and not significant.

2. Water Resources

2.1 Groundwater

The Project is predominantly over Mesozoic and Paleozoic age sedimentary bedrock strata, separated by a layer of glacial drift materials. Aquifers occur in both the unconsolidated glacial drift and sedimentary rock sequences. In eastern Nebraska, glacial drift and buried valley aquifers are the predominant source of water. Bedrock aquifers are generally unusable due to high levels of total dissolved solids (Miller and Appel, 1997).

The Project area does not overlie any EPA-designated sole-source aquifers (EPA, 2019b) and no wellhead or source water protection areas would be affected (Nebraska Department of Environmental Quality [NDEQ], 2019b). Further, Northern did not identify springs within 150 feet of Project workspaces during field surveys. According to well records data from the NDNR, potable water wells were not identified within 150 feet of the Palmyra North D-Line loop or the three disconnect sites. Two private water supply wells were identified within 150 feet of Project work areas (NDNR, 2019). These wells are located at approximate MP 0.6 and 1.1 along the Fremont North D-Line Loop.

Surface drainage and groundwater recharge patterns can be temporarily affected by construction activities. Changes to these patterns can cause minor fluctuations in groundwater levels and/or increased turbidity; however, we expect water levels to quickly re-establish equilibrium and turbidity levels to rapidly subside.

Northern would not appropriate groundwater, other than as necessary to dewater the pipeline trench for disconnection activities. Excavations required to expose the pipeline for disconnection activities would typically be above the minimum depth of the bedrock aquifers and is expected to be above the water table in surficial aquifers underlying the Project.

Groundwater Contamination

Northern conducted a database search using publicly available databases to identify facilities with potential and/or actual sources of contamination within 500 feet of the Project's construction workspace. The EPA's Facility Registry Service (EPA, 2019a) and the Nebraska Department of Environment and Energy's Petroleum Remediation and Surface Spill Site Information database (NDEQ, 2019) were reviewed. No reported sources of known or potential soil contamination were identified in the vicinity of the Project areas.

The introduction of contaminants into groundwater due to accidental release of Project-related chemicals, fuels, or hydraulic fluid during isolation activities could have an adverse effect on groundwater quality. To avoid spill-related impacts, Northern would implement its SPCC Plan. In the unlikely event that contaminated groundwater is encountered, Northern would immediately notify the appropriate state and federal agencies. Containment measures would be implemented to isolate and contain the suspected groundwater contamination. Northern would collect and test samples of the substrate or groundwater to identify the contaminants. Once the type, magnitude, and extent of the contamination are determined, the material would be disposed of at a licensed facility and/or backfilled in the trench, dependent on agency consultation.

Groundwater Impacts and Mitigation

Surface drainage and groundwater recharge patterns can be temporarily altered by clearing, grading, trenching, and soil stockpiling activities, potentially causing minor fluctuations in groundwater levels and/or increased turbidity, particularly in shallow surficial aquifers. We expect the resulting changes in water levels and/or turbidity in these aquifers to be localized and temporary because water levels quickly re-establish equilibrium and turbidity levels rapidly subside. Construction and restoration activities would comply with the measures contained in the FERC Plan and Procedures. Specifically, upon completion of construction, Northern would restore the ground surface to original contours, to the extent practicable, and would re-vegetate disturbed areas, excluding areas within permanent aboveground facility fence lines and access roads, with the goal of restoring preconstruction overland flow and recharge patterns.

Northern would offer pre-and post-construction water quality and yield testing to landowners with water supply wells and springs located within 150 feet of Project construction workspace. If a well is determined to have been impaired by construction activities, Northern would compensate the landowner for the repair of the well, installation of a new well, or otherwise arrange for a suitable water supply.

While not anticipated, in the event that an unknown well is identified within the Project workspace, Northern would contact the landowner and/or the NDNR as applicable, to determine the type of well and its status (active or inactive). If the well is determined to be an active water well, Northern would implement measures to ensure the well is not affected during construction.

We conclude no significant or long-term impacts from construction or operation of the facilities would occur on groundwater resources.

2.2 Surface Water

The Palmyra Compressor Station disconnect site and the Palmyra North D-Line Loop are within the Nemaha River Region Basin watershed. The Fremont NE #1A (Columbus) disconnect site and the Fremont North D-Line Loop are in the Elkhorn River Region Basin watershed. The Dakota County Launcher disconnect site is within the Missouri River Region Basin watershed. Sub-watersheds crossed by the three disconnect sites and the two pipeline loops are presented in table 4.

Table 4: Hydrologic Unit Code 12 Sub-watersheds Crossed by the Project

Facility/County	Watershed (HUC 12)	Drainage Area (acres)
PIPELINE DISCONNECT SITES		
Palmyra compressor station, Otoe County	Hooper Creek	38,648
Fremont NE #1A (Columbus), Dodge County	Rawhide Creek	28,372
Dakota County launcher, Dakota County	Bacon Creek – Missouri River	89,559
PIPELINE FACILITIES		
Palmyra North D-Line Loop, Otoe County	Hooper Creek	38,648
Fremont North D-Line Loop, Dodge County	Rawhide Creek	28,372

The proposed pipeline loops would cross two perennial waterbodies, two intermittent waterbodies, and three ephemeral waterbodies. There would be four ephemeral waterbodies (roadside ditches) within the Project's construction work areas. No waterbodies were identified at the pipeline disconnect sites. With the exception of waterbody s-019015a-001, all waterbodies along the pipeline loops would be crossed using HDD or conventional bore methods. Waterbody s-019015a-001 is an intermittent agricultural drainage that would be crossed by the Palmyra North D-Line Loop using the wet open cut method. Construction within the drainage would be completed within 24 hours and the stream beds and banks would be immediately restored to pre-construction contours following the crossing. Table 5 lists the waterbodies crossed by the Project.

Waterbodies s-19015b-001, s-109015b-007, s-19015b-008, s-19015b-009, s-19015b-005, and s-19015b-006 are ephemeral drainages in roadside ditches that would be impacted by use of access roads during construction. These drainages would be temporarily matted or crossed using temporary culverts to minimize disturbance during construction.

We received a comment from a landowner concerned about pipeline and bridge removal over the Elkhorn River and possible consequences it could have on the river and downstream wetland habitat. While the possible future salvage of the pipeline by a third-party buyer may affect this waterbody crossing, the proposed jurisdictional Project would not involve crossing the Elkhorn River or removing pipeline along the river.

Table 5: Waterbodies Crossed by the Project						
Feature ID	**Approx. MP**	**Feature Name**	**Flow Regime**	**Crossing length (feet) [a]**	**State Water Quality Classification [b]**	**Crossing Method**
PALMYRA NORTH D-LINE LOOP						
s-19015a-001	0.1	Unnamed	Ephemeral	6	NA	Open Cut
s-19015a-002	0.5	Unnamed	Intermittent	6	NA	Bore [c]
s-19015a-007	1.2	Hooper Creek	Perennial	30	Aquatic Life – Warmwater A Water Supply – Agricultural A Aesthetics	HDD [c]
FREMONT NORTH D-LINE LOOP						
s-19015b-001	0.3	Unnamed Road Ditch	Ephemeral	5	NA	Culvert or Construction Matting
s-19015b-007	0.3	Unnamed Road Ditch	Ephemeral	3	NA	Culvert or Construction Matting
s-19015b-008	None [d]	Unnamed Road Ditch	Ephemeral	5	NA	Culvert or Construction Matting
s-19015b-003	1.5	Rawhide Creek	Perennial	30	Aquatic Life – Warmwater B Water Supply – Agricultural A Aesthetics	HDD [c]
s-19015b-009	None [d]	Unnamed Road Ditch	Ephemeral	3	NA	Culvert or Construction Matting
s-19015b-004	2.0	Unnamed (Canal)	Intermittent	25	NA	HDD [c]
s-19015b-005	None [d]	Unnamed Road Ditch	Ephemeral	3	NA	Culvert or Construction Matting
s-19015b-006	None [d]	Unnamed Road Ditch	Ephemeral	3	NA	Culvert or Construction Matting

[a] Crossing Length measured during field surveys as ordinary high-water mark to ordinary high-water mark.
[b] State Water Classification: Primary Contact Recreation, Aquatic Life (Coldwater A, Coldwater B, Warmwater A, Warmwater B), Water supply (Public Drinking Water, Agriculture and Industrial, and Aesthetics).
[c] Direct waterbody impacts would be avoided or minimized due to use of the HDD or conventional bore crossing method.
[d] Where no MP is listed, the waterbody will not be crossed by the pipeline loop, but will be temporarily impacted by use of access roads during construction.

None of the waterbodies identified are part of the National Wild and Scenic River System, nor are they designated trout waters or outstanding resource value waters. There are no navigable waterbodies or waterbodies with contaminated sediments crossed by the Project.

Soil disturbances in waterbodies, and Project work areas adjacent to waterbodies, could result in erosion and sedimentation into the waterbodies. As part of Northern's temporary erosion and sediment control measures for the Project, Northern would construct or install

sediment barriers, stormwater diversions, mulch, and seed to establish ground cover to protect waterbodies. Northern would restore slopes and contours to pre-construction conditions and restore vegetation using native grass seed mixes. The temporary and permanent erosion and sediment control measures would be installed as specified in the Plan and Procedures, the Project Stormwater Pollution Prevention Plan (SWPPP), and applicable stormwater permits. Construction work areas would be allowed to return to preconstruction vegetation and would be permanently maintained in accordance with the Plan and Procedures. The implementation of these measures would minimize the Project's erosion and sedimentation impacts on waterbodies.

In the event of an inadvertent release of drilling mud during HDD activities, Northern would implement measures outlined in its HDD Feasibility Reports and Contingency Plans (see discussion in section B.1.1 of this EA) and Plan for Inadvertent Release of Drilling Mud. A release of fuel or hazardous material into a waterbody could cause direct mortality to aquatic organisms and potentially to wildlife that use the waterbody. The SPCC Plan would prevent, contain, and clean-up spills and address necessary precautions during material storage.

Trench dewatering would be necessary if precipitation or seepage of groundwater occurs. During trench dewatering, water would be pumped from the trench, discharged into a well vegetated upland area and/or filtered through a geotextile sediment filter bag or sediment barrier. Dewatering would be conducted in a manner designed to prevent the flow of silt-laden water directly into adjacent waterbodies and in accordance with state permitting requirements.

Hydrostatic Testing and Water Use

Northern would conduct hydrostatic testing of the new pipeline loops prior to placing them into service. Northern would obtain approximately 650,000 gallons of water for the testing from a municipal source. The hydrostatic test discharge water would be hauled off for disposal at an offsite facility. Approximately 315,000 gallons of water would be used for the proposed HDD crossings and approximately 106,000 gallons of water would be used to control and mitigate fugitive dust in areas disturbed during construction. Water for HDD and dust control would be obtained from the same water municipal source as the hydrostatic testing. Water use could vary based on weather conditions during construction, but it is estimated that a total of approximately 1,071,000 gallons would be used for hydrostatic testing, HDD activities, and dust control.

Floodplains

The Federal Emergency Management Agency defines flood zones based on flood risk and the type of flooding. Special Flood Hazard Areas are those that would be inundated by flood events having a 1 percent annual chance of being equaled or exceeded in any given year (i.e., the 100-year or base flood). The Federal Emergency Management Agency defines moderate flood hazard areas as those between the limits of the base flood and the 0.2 percent annual chance, or 500-year flood. Areas of minimal flood hazard (i.e., areas outside the regulatory floodplain) are those that are above the elevation of the 0.2 percent annual chance flood. We received

comments from the NDNR that the proposed Project may be located within a regulated (1 percent annual chance) floodplain and/or floodway. The NDNR comments further stated that all development within a regulated floodplain and/or floodway needs to comply with local floodplain regulations, which includes obtaining a floodplain development permit. The Columbus disconnect site and the Fremont North D-Line Loop would be entirely within a Special Flood Hazard Area. The Palmyra compressor station disconnect site, the disconnect site at the Dakota County Launcher, and the Palmyra North D-Line Loop would not cross Special Flood Hazard Areas. Northern would be responsible for acquiring all necessary permits for the proposed Project, which may include a permit from the NDNR for construction in floodplains.

2.3 Wetlands

Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of wetland vegetation adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation (U.S. Army Corps of Engineers, 1987). Wetlands can be a source of substantial biodiversity and serve a variety of functions that include providing wildlife habitat, recreational opportunities, flood control, and naturally improving water quality. Both palustrine emergent (PEM) and palustrine forested (PFO) wetlands were identified within the Project area. PEM wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. PFO wetlands are dominated by hydrophytic tree species at least 20 feet tall.

Northern conducted wetland delineation surveys in April 2019. The surveys found that no wetlands were present at the three disconnect sites. Five wetlands were identified within the environmental clearance boundary of the Palmyra North D-Line loop and two wetlands were identified within the environmental clearance boundary of the Fremont North D-Line Loop; however, only two of these wetlands would be crossed by the pipeline facilities. The wetlands crossed by the Project are shown in table 6.

Table 6: Wetlands Crossed by the Project

Facility/County	Approx. MP	Wetland ID	Wetland Type	Crossing Type	Crossing Length (feet)	Impact Acreage
Palmyra North D-Line Loop, Otoe County	0.5	w-19015a-003	PEM/PFO	HDD	160	0.0
Fremont North D-Line Loop, Dodge County	1.6	w-19015b-001	PEM	HDD	73	0.0

Wetland w-19015a-003 is a mixed wetland comprised of both PFO and PEM wetlands and is dominated by cottonwood, green ash, and reed canary grass. This wetland is associated with Hooper Creek (waterbody s-19015a-002) and would be crossed using the HDD method.

Wetland w-19015b-001 is a PEM wetland that is dominated by reed canary grass and cattails. This wetland directly abuts Rawhide Creek (waterbody s-19015b-003) and would be crossed by an HDD during construction of the Fremont North D-Line Loop. The Project would not involve any ground disturbance within wetlands.

Northern would implement the measures in the Plan and Procedures to minimize potential impacts of sedimentation and erosion on wetlands, including wetlands that were identified adjacent to the construction right-of-way. In addition, implementation of Northern's SPCC Plan would minimize the potential for spills to impact wetlands. In the event of an inadvertent release of drilling mud during HDD activities, Northern would implement measures outlined in its HDD Feasibility Reports and Contingency Plans and Plan for Inadvertent Release of Drilling Mud. Therefore, we conclude that the Project would not have significant or long-term impacts on wetlands.

3. Vegetation, Wildlife and Fisheries

3.1 Vegetation

The vegetation within the Project area is characterized by the Western Corn Belt plains ecoregion. The vegetation community consists of agricultural lands, abandoned agricultural land/shrubland, grasslands, and existing pipeline right-of-way. Construction of the Project would impact 110.5 acres of vegetation and operation would impact 16.5 acres of vegetation. Operational impacts would be related to new right-of-way maintenance and the permanent conversion of 0.9 acre of upland vegetation to developed land. No forested areas or wetland vegetation would be affected by the Project. The primary impact on upland vegetation would be a temporary loss of vegetative cover associated with ground-disturbing activities during disconnection activities and pipeline installation. The degree of impact would depend on the type and amount of vegetation affected, the rate at which the vegetation would regenerate after construction, and the frequency of vegetation maintenance during operation. Secondary effects associated with disturbances to vegetation could include increased soil erosion, loss of topsoil, increased potential for the introduction and establishment of invasive weedy species, potential increases in fugitive dust, potential visual resource impacts, and potential wildlife and agricultural productivity impacts.

Noxious weeds and invasive plants can outcompete native vegetation and change the composition of native vegetation communities. Northern obtained lists of noxious weeds and invasive plants by review of federal, state and local sources. Although no noxious weeds were identified within the Project workspaces during field surveys, Northern developed a Project-specific Noxious Weed/Invasive Plant Control and Mitigation Plan[9] to prevent, mitigate, and control the introduction and spread of noxious weeds and invasive plants during construction. Following construction, Northern would monitor the construction corridor in accordance with the

[9] Northern's Noxious Weed/Invasive Plant Control and Mitigation Plan can be found as appendix 3A to Resource Report 1 at: https://elibrary.ferc.gov/IDMWS/file_list.asp?document_id=14792826.

Plan and its Noxious Weed/Invasive Plant Control and Mitigation Plan to ensure that if noxious weeds are found, they do not spread outside of the areas where they have been identified.

Following construction, disturbed areas would be restored to preconstruction conditions, except for the 0.9 acre of newly converted developed land. Northern would seed and stabilize disturbed areas in accordance with the Plan and stormwater permit requirements. Actively cultivated agricultural land would not be seeded. Open uplands would be seeded using seed mixes recommended by landowners or pursuant to NRCS seeding recommendations. Since the Project would avoid forested and wetland vegetation and only permanently impact 0.9 acre of upland vegetation, we conclude the Project would not result in significant impacts on vegetation.

3.2 Wildlife

The wildlife in the Project area are typical of those found in the Western Corn Belt Plains ecoregion and more specifically the Nebraska and Kansas Loess-Drift Hills. Some of these species include coyote, elk, beaver, raccoon, Canada goose, American bullfrog, and the black rat snake. The impact of the Project on wildlife species and their habitats would vary depending on the species and habitat present within the proposed Project workspaces. Construction activities, especially clearing vegetation, would reduce feeding, nesting, and cover habitat for some species until vegetation becomes re-established. Mobile species may be disturbed or displaced temporarily from portions of their habitats, and mortality of individuals of less mobile species, such as some small mammals, reptiles, or amphibians, may occur. Indirect wildlife impacts associated with construction noise and increased human activity would be temporary and could include abandoned reproductive efforts, displacement, and avoidance of work areas. All construction impacts on wildlife would generally be temporary.

Open trenches could block movement of wildlife wand livestock and there is the possibility that small animals could become trapped in open trench section. Larger animals could become injured upon falling into an open trench. To protect livestock and wildlife from injury from the open trench, the EI would inspect the trench daily prior to construction for wildlife or livestock. Additionally, in locations where wildlife activity is anticipated, Northern would install ramps in the trench if the trench is left open overnight. Ramps would be assessed on a site-specific basis with the landowner and would be applied based on the presence or absence of livestock and the amount of wildlife activity in a given area. Northern would implement the Plan and Procedures and would minimize the amount and time of open trench to minimize impacts on wildlife and livestock. Therefore, we conclude that impacts on wildlife would be temporary and minor.

Migratory Birds

Migratory birds are species that nest in the United States and Canada during the summer and then migrate to and from the tropical regions of Mexico, Central and South America, and the Caribbean for the non-breeding season. Migratory birds are protected under the Migratory Bird Treaty Act (16 U.S. Code 703-711), and Bald and Golden Eagles are additionally protected

under the Bald and Golden Eagle Act (16 U.S. Code 668-668d). The Migratory Bird Treaty Act, as amended, prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. Executive Order 13186 (66 Federal Register 3853) was enacted in 2001 to, among other things, ensure that environmental analyses of federal actions evaluate the impacts of federal actions on migratory birds. Executive Order 13186 directs federal agencies to identify where unintentional take is likely to have a measurable negative effect on migratory bird populations; avoid or minimize adverse impacts on migratory birds through enhanced collaboration with the U.S. Fish and Wildlife Service (FWS); emphasize species of concern, priority habitats, and key risk factors, and give particular focus to population-level impacts.

Direct and indirect impacts can occur on birds, especially if construction occurs during the migratory bird nesting season. Examples of potential impacts include habitat loss, disruption of foraging adults, and abandonment or destruction of active nests. Pipeline rights-of-way could fragment large areas of intact forest habitat that many birds require. During active construction, noise and human presence would cause birds to avoid the construction area and relocate to other nearby suitable habitat.

Birds of Conservation Concern were identified in the Project area and are listed in table 7. Important Bird Areas are discrete sites that provide essential habitat for one or more bird species and include habitat for breeding, wintering, and/or migrating birds. There are no Important Bird Areas in the Project area. A variety of migratory bird species may occur seasonally within the vicinity of the Project because these areas are located within the Central and Mississippi Flyways for waterfowl. Many species of migratory birds such as ducks, geese, doves, and pigeons, as well as sandhill and whooping cranes, use the flyways during spring and fall migration between the Gulf of Mexico and central Canada. All of these species use open land and wetland areas and could be sensitive to Project activities.

Table 7: Birds of Conservation Concern Potentially Occurring in the Project Area	
	Listed Birds
Bird Conservation Region	**Common Name [a]** **Scientific Name**
22 (Eastern Tallgrass Prairie)	Pied-billed grebe *Podilymbus podiceps* Horned grebe (nb) *Podiceps auritus* American bittern *Botaurus lentiginosus* Least bittern *Ixobrychus exilis* Black-crowned night-heron *Nycticorax nycticorax* Bald eagle (b) *Haliaeetus leucocephalus* Peregrine falcon (b) *Falco peregrinus* Black rail *Laterallus jamaicensis* Solitary sandpiper (nb) *Tringa solitaria* Upland sandpiper *Bartramia longicauda* Whimbrel (nb) *Numenius phaeopus* Hudsonian godwit (nb) *Limosa haemastica* Marbled godwit (nb) *Limosa fedoa* Red knot (roselaari ssp.) (nb) *Roselaari ssp.* Red knot (rufa ssp.) (a) (nb) *Rufa ssp.* Buff-breasted sandpiper (nb) *Tryngites subruficollis* Short-billed dowitcher (nb) *Limnodromus griseus* Black tern *Chlidonias niger* Common tern *Sterna hirundo* Black-billed cuckoo *Coccyzus erythropthalmus* Short-eared owl (nb) *Asio flammeus* Whip-poor-will *Caprimulgus vociferous* Red-headed woodpecker *Melanerpes erythrocephalus* Northern flicker *Colaptes auratus* Acadian flycatcher *Empidonax virescens* Loggerhead shrike *Lanius ludovicianus* Bell's vireo (c) *Vireo bellii* Bewick's wren (bewickii ssp.) *Thryomanes bewickii bewickii* Wood thrush *Hylocichla mustelina* Blue-winged warbler *Vermivora cyanoptera* Cerulean warbler *Setophaga cerulea* Prothonotary warbler *Protonotaria citrea* Kentucky warbler *Oporornis formosus* Field sparrow *Spizella pusilla* Grasshopper sparrow *Ammodramus savannarum ammolegus* Henslow's sparrow *Ammodramus henslowii* Smith's longspur (nb) *Calcarius pictus* Dickcissel *Spiza Americana* Rusty blackbird (nb) *Euphagus carolinus*
[a] (a) Endangered Species Act candidate, (b) Endangered Species Act delisted, (c) non-listed subspecies or population of Threatened or Endangered species, (d) Migratory Bird Protection Act protection uncertain or lacking, (nb) non-breeding in this Bird Conservation Region.	

In Nebraska, the migratory bird nesting season is from April 1 to August 31. There would be no tree clearing required for the Project; therefore, the Project would not impact migratory species sensitive to forest fragmentation. Migratory birds that use open habitats for nesting would be unable to nest in the Project area during construction. However, the limited nesting habitat that would be affected is marginal because much of it consists of agricultural

fields that is regularly disturbed. Therefore, the Project is not expected to result in population-level impacts on birds. For these reasons, we conclude that the Project would not have a significant impact on migratory birds.

To further minimize potential impacts on migratory birds, Northern plans to start construction in late summer/early fall and conduct pre-construction migratory bird and raptor surveys. If active nests are identified, they would be marked and protected by a buffer until the nests are no longer occupied.

Bald Eagle

The bald eagle is no longer a federally listed species under the Endangered Species Act, but is still protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The majority of the Project area provides suitable foraging and/or wintering habitat. Bald eagles nest in tall trees near large bodies of water. Northern has committed to conducting pre-construction raptor surveys. If bald eagle nests are identified in the vicinity of the Project, Northern would consult with the FWS to determine the appropriate mitigation measures to minimize impacts on bald eagles. During operation of the Project, vegetative maintenance clearing would occur outside of the nesting season in accordance with the FERC Plan. Therefore, the Project would not have a significant impact on bald eagles.

3.3 Fisheries

Fisheries and aquatic habitats in the Project area are primarily characterized by water temperature (warmwater or coldwater) and flow (perennial, intermittent, ephemeral). As discussed in section B.2.2 of this EA, Northern identified two perennial waterbodies, two intermittent waterbodies, and three ephemeral waterbodies that would be crossed by the proposed pipeline loops and four ephemeral waterbodies (roadside ditches) that are within the Project's construction work areas. The two perennial streams, Hooper Creek and Rawhide Creek, are both classified as warmwater fisheries. The perennial and intermittent waterbodies would be crossed by HDD and no essential fish habitat was identified within the Project area. Northern would implement measures from the Plan and Procedures, its SWPPP and its SPCC Plan to prevent and reduce impacts on nearby waterbodies and fisheries. Therefore, we conclude that the Project would not have any significant impacts on fishery resources.

3.4 Special Status Species

Federal

Federal agencies are required under section 7 of the Endangered Species Act, as amended, to ensure that any actions authorized, funded, or carried out by the agency would not jeopardize the continued existence of a federally listed endangered or threatened species, or result in the destruction or adverse modification of the designated critical habitat of a federally listed species. The federally listed species that could potentially occur in the Project area are the

northern long-eared bat, piping plover, interior least tern, pallid sturgeon, and the western prairie fringed orchid. On January 14, 2019, Northern contacted the FWS regarding the Project. To date, no response has been received.

Based on Northern's field surveys, the Project area does not provide suitable habitat for any of these species; therefore, we conclude that the Project would have *no effect* on any federally listed species. No further Endangered Species Act consultation is necessary for the Project. Table 8 summarizes the status, habitats, and our determinations of effect for all federal and state-listed species that could potentially occur in the Project area.

Table 8: Special Status Species Potentially Occurring in the Project Area

Common name (*Scientific Name)*	**Federal Status**	**State Status**	**Habitat description**	**Project Impacts and Habitat Assessment**
Northern long-eared bat (*Myotis septentrionalis*)	Threatened	Threatened	Over winters in caves and mines and roosts either singly or in colonies under loose bark or in crevices of live and dead trees	*No effect*; No suitable habitat within work areas and no proposed tree clearing
Piping plover (*Charadrius melodus)*	Threatened	Threatened	Wide, sparsely vegetated beaches and barren river sandbars	*No effect;* No suitable habitat in Project area
Interior least tern *(Sterna antillarum)*	Endangered	Endangered	Nests on barren river sandbars, sand and gravel pits, lake and reservoir shorelines, and occasionally gravel rooftops	No effect; No suitable habitat in Project area
Pallid sturgeon *(Scaphirhynchus albus)*	Endangered	Endangered	Benthic environment associated with swift waters of large turbid, free-flowing rivers with braided channels, dynamic flow patterns, periodic flooding of terrestrial habitats, and requiring extensive micro habitat diversity	*No effect*; No suitable habitat in Project area
Western prairie fringed orchid *(Platanthera praeclara)*	Threatened	Threatened	Mesic to wet unplowed tallgrass prairies and meadows, old fields, roadside ditches	*No effect*; No suitable habitat in Project area
Southern flying squirrel (*Glaucomys volans)*	N/A	Threatened	Existing cavities such as old woodpecker nests and holes in trees	*No impact*; No suitable habitat in Project area and no Proposed tree clearing
River Otter (*Lontra Canadensis)*	N/A	Threatened	Rivers that flow through Nebraska's tallgrass, mixed grass, and shortgrass prairies, and Sandhills around streams, lakes, ponds, marshes and swamps	Suitable habitat present in Fremont North D-Line Loop. Northern would conduct surveys and coordinate with the Nebraska Game and Parks Commission
Lake sturgeon (*Acipenser fulvescens)*	N/A	Threatened	Large river and lake systems	*No impact*; No suitable habitat in Project area
Sturgeon Chub *(Macrhybopsis gelida)*	N/A	Endangered	Fast, free flowing rivers with high turbidity and low visibility	*No impact*; No suitable habitat in Project area

Table 8: Special Status Species Potentially Occurring in the Project Area				
Common name (*Scientific Name)*	**Federal Status**	**State Status**	**Habitat description**	**Project Impacts and Habitat Assessment**
Western massasauga *(Sistrurus tergeminus)*	N/A	Threatened	Wet mesic tallgrass prairie, wet meadow/marsh/wet prairie, lower-middle tallgrass prairie, cordgrass wet prairie, crayfish burrows	*No impact*; No suitable habitat in Project area
American ginseng *(Panax quinquefolium)*	N/A	Threatened	The understory of eastern deciduous forest with rich soils	*No impact*; No suitable habitat in Project area

State

Northern used the Nebraska Game and Parks Commission (NGPC) Conservation and Environmental Review Tool report to review the possible presence of state-listed species in the Project area. According to the reports generated on March 24, 2019, the Project does not impact suitable habitat for the southern flying squirrel, lake sturgeon, sturgeon chub, pallid sturgeon, western massasauga, or American ginseng.

Suitable habitat for the river otter was identified near the Fremont North D-Line Loop. The NGPC requested that Northern conduct pre-construction surveys for the river otter within the Fremont North D-Line Loop Project area. Northern would perform these surveys according to the protocol provided by the NGPC and conduct them no more than 10 days prior to the onset of construction activities. The Conservation and Environmental Review Tool review also identified potential habitat for the western prairie fringed orchid near the Palmyra North D-Line Loop. Field surveys identified wet meadows within the Project area, but these areas have been tilled and hayed in the past and no longer provide suitable habitat for the western prairie fringed orchid. These areas would also be avoided by HDD. Therefore, there would be no impact on the western prairie fringed orchid as a result of the Project. We conclude that the Project would have no significant impact on state-listed species.

4. Land Use, Recreation, and Visual Resources

4.1 Land Use

The Project would disturb approximately 123.6 acres of land during construction and 16.9 acres for operation. Affected land use types within the Project workspaces are classified as agricultural, developed, and open land. Impacts on land use types are summarized in table 9.

Table 9: Land Use Impacts		
Land Use	**Temporary Impacts (acres)**	**Permanent Impacts (acres)**
Agricultural	86.2	14.9
Developed Land	13.3	0.4
Open Land	24.1	1.5
Total	**123.6**	**16.9**

Northern either owns property, holds easements, would obtain easements, or would have temporary agreements in-place with landowners for the use of Project workspaces and new aboveground facilities. Project activities include ground disturbance to disconnect and cap the A-Line at three locations and construction of approximately 4.2 miles of pipeline looping and associated aboveground facilities. At the Palmyra Compressor Station Disconnect Site, Northern would use temporary workspace and ATWS associated with installation of the Palmyra North D-Line Loop to complete the disconnection work, and no additional workspace would be required for this site. For the Fremont NE #1A (Columbus) disconnect site, Northern would use temporary workspace centered on the existing Fremont NE #1A TBS to complete the disconnection work. At the disconnect site at the Dakota County launcher, Northern would use temporary workspace centered on the A-Line and the existing Dakota County launcher, as well as ATWS to complete the disconnection work.

Approximately 1.0 acre of agricultural land, 0.2 acre of developed land, and 0.8 acre of open land would be temporarily impacted by the proposed disconnection activities. At the A-Line disconnection sites, 100% of the A-Line pipeline is co-located with other Northern pipelines. Northern would use existing public and private roads to access the disconnect sites, so no new roads would be required for this portion of the Project.

Approximately 86.2 acres of agricultural land, 13.3 acres of developed land, and 24.1 acres of open land would be temporarily impacted by construction of the pipeline loops. After construction is complete, approximately 14.9 acres of agricultural land, 0.4 acre of developed land, and 1.5 acres of open land would be within the permanent right-of-way for the pipeline loops. In addition, approximately 0.1 acre of forest land that is being crossed by the County Road C HDD would be within the permanent right-of-way. Operation of the pipeline loops would result in 16.0 acres of new permanent right-of-way outside of Northern's existing easements. An additional 8.3 acres (34 percent) of permanent right-of-way associated with the pipeline loops would overlap with the existing Northern permanent right-of-way. Land uses in the right-of-way would be restored to preconstruction conditions and agricultural activities would be allowed to continue following installation of the pipeline.

Northern would install pig launchers and new valve sites at the start of each pipeline loop. At the end of each pipeline loop, Northern would install valve sites to tie-in the new loops to its existing pipeline system. In addition, Northern would install a pig receiver at the end of the Palmyra North D-Line Loop. Approximately 4.6 acres of agricultural land, 0.7 acre of open land and 0.1 acre of developed land would be temporarily impacted by construction of the aboveground facilities for the Project.

During construction of the receiver and new valve site at the end of the Palmyra North D-Line Loop, Northern would use 1.6 acres of ATWS and a 2 acre staging area in addition to 0.7 acre of temporary workspace. Following construction, the receiver and valve site would share a new 80-foot by 225-foot (0.4 acre) gravel pad, just north of County Road B. A new permanent driveway would be constructed to the facility that would be approximately 16 feet in length, 40-foot-wide at County Road B then tapering to 20-foot-wide (less than 0.1 acre). A total of 0.5

acres, consisting of agricultural land (0.3 acre), open land (0.1 acre), and developed land (0.1 acre) would be converted to developed land and impervious surfaces for operation of the receiver, new valve site, and permanent driveway. The remainder of the temporary workspace, ATWS, and staging area would be restored in accordance with the Plan and Procedures, or as requested by the landowner.

A launcher and one valve site would be constructed within the Fremont Compressor Station and a new valve site would be constructed at the end of the Fremont North D-Line loop. No temporary workspace or ATWS would be required for these sites. The launcher and valve at the beginning of the loop would convert 0.3 acre of agricultural land to developed land. The valve site at the end of the loop would convert less than 0.1 acre of agricultural land to developed land. This site would be constructed within the pipeline's permanent right-of-way and would be surrounded by a guard rail.

Agricultural

Agricultural land is defined as cultivated or rotated cropland, hayfields, orchards, and vineyards, including specialty crops. Construction of the Project would impact 86.2 acres of agricultural land and operation would impact 14.9 acres. A maximum of 12 inches of topsoil would be segregated. Where the existing topsoil is less than 12 inches, the contractor would strip the soil to a depth where the topsoil and lower horizon of soil are visible in equal amounts, as determined by soil color. Topsoil and subsoil would be stored in separate windrows along the construction right-of-way and would not be allowed to mix. Northern would test the soil for compaction in agricultural areas and Northern's project-specific Noxious Weed/Invasive Plant Control and Mitigation Plan would be used to prevent and control the spread of noxious weeds and invasive plants.

Northern would maintain landowner access to the fields, storage areas, structures, and other agricultural facilities during construction to the extent practicable. Crop production on some agricultural lands would be temporarily interrupted for one growing season while pipeline facilities are installed. Landowners would be compensated for any temporary or permanent crop loss resulting from construction and operation of the Project. The erosion and sediment control and restoration measures (e.g., soil stabilization, topsoil segregation, compaction avoidance) detailed in the Plan, the project-specific SWPPP, and applicable permits would be used to minimize and mitigate impacts on agricultural land. Based on these measures, crop yields are expected to return to normal after construction.

Agricultural drain tile systems are used to improve drainage in areas where the water table is within the excavation depth and/or the soil characteristics inhibit proper drainage. Drain tile systems in agricultural areas are designed to remove water from the top 3 to 4 feet of soil to improve soil productivity and crop yield. Construction activities such as trenching and heavy equipment traffic can damage existing drain tile systems. Damage to existing drain tile systems, if not repaired, can result in lower soil productivity and crop yields. Based on Northern's landowner outreach efforts, the Project would not cross any known drain tiles or irrigation

systems. If drain tiles are encountered, Northern would communicate with landowners, perform preliminary assessments to identify existing drain tiles, repair damaged drain tiles, and monitor the Project area following the completion of construction.

Specialty crops include fruits, vegetables, tree nuts, dried fruits, nursery, floriculture, and horticulture crops (USDA-AMS 2019). Based on a review of the Organic Integrity Database, aerial photography, field surveys, and Northern's landowner outreach efforts, no specialty crops or organic farms have been identified within the Project area. If any organic farms or specialty crops are identified later, Northern would work with landowners to determine measures to avoid and minimize impacts on these resources.

Forested/Woodland

Forested land is defined as deciduous and mixed woody vegetation totaling greater than 20 percent of cover and wetland areas with greater than 20 percent of forest or shrubland vegetation. Approximately 0.1 acre of forest/woodland would be crossed by the permanent right-of-way of the Palmyra North D-Line loop. This area would be crossed by HDD and would not be impacted during construction. Due to the depth of the HDD routine mowing and tree clearing would not occur in pipeline right-of-way associated with forested land. Therefore, the Project would not impact forest/woodland.

Developed Land

Developed land includes urban land (industrial, commercial, residential), roads, and impervious surfaces. Construction of the Project would impact 13.3 acres of developed land. Developed land in the Project area consists of existing roads and Northern facilities. Northern would minimize impacts on developed land within the Project workspaces through restricting timing of construction activities to avoid peak road use periods and expediting construction through these areas. Operation of the Project would convert 0.7 acre of agricultural land and 0.2 acre of open land to developed land for the launchers, valve sites, and the receiver and permanent access road, resulting in an additional 0.9 acre of developed land.

Open Land

Open land consists of non-wetland, non-agricultural, herbaceous land used for open space or pasture. Construction of the Project would impact 24.1 acre of open land, and operation would impact 1.5 acres. In open land, clearing would occur as necessary within the Project workspace and would be restored and allowed to revert to previous uses following construction. Therefore, impacts on open land would be reduced.

Wetlands

Wetlands crossed by the Project are defined as PEM and PEM/PFO mixed wetlands. Although these wetlands are within the Project area, they would be crossed by HDD and would not be impacted during construction or operation of the Project.

4.2 Residential Areas

There are no residences located within 50 feet of the Project workspaces. Northern contacted the planning and zoning departments Otoe County, Dodge County, Dakota County, Dakota City, South Sioux City, and Fremont City in Nebraska to identify any known residential or commercial developments that are planned within 0.25 mile of the Project areas. No future residential developments were identified within 0.25 mile of the Project.

In addition to the consultation with the county's and municipalities in the Project area, Northern consulted with the Nebraska Department of Transportation during early easement negotiations for the proposed Fremont North D-Line Loop. The Nebraska Department of Transportation identified the U.S. Highway 30 Schuyler to Fremont Expressway Project as occurring within the same area as the proposed pipeline loop. The U.S. Highway 30 Schuyler to Fremont Expressway Project would provide regional connectivity by expanding Nebraska's statewide expressway system. Based on the current schedule, the segment of the U.S. Highway 30 Schuyler to Fremont Expressway Project that falls between North Bend and Fremont is expected to begin collecting construction bids in 2020, with the proposed construction lasting two years. However, there is no other publicly available information.

4.3 Recreation and Special Interest Areas

Possible recreational sites, public lands or designated special use areas that could be in the Project area are defined as:

- lands administered by federal, state, county, or local agencies or private conservation
- organizations, including publicly funded conservation easements;
- lands and trails used for designated recreational purposes;
- local historical or culturally significant lands;
- national and state scenic rivers and designated scenic areas or roads;
- cemeteries, churches, or schools; and
- landfills, quarries, mines, and other special uses.

The Project would not cross any and is not located within 0.25 mile of any federally, state, or locally designated recreational or special interest areas. No designated coastal zones pursuant to the Coastal Zone Management Act would be affected by the Project. Additionally, there are no landfills, active or inactive mines, or NRCS easements within 0.25 mile of the Project. To ensure that all NRCS easements were accounted for, Northern consulted with the

NRCS state office and the Otoe, Dodge, and Dakota County Farm Service Agency office via letter to confirm that no easements were located within 0.25 mile of the Project. To date, Northern has not received a response from the NRCS state office or the county Farm Service Agency office.

The Lewis & Clark Nebraska Scenic Byway is adjacent to the disconnect site at the Dakota County launcher. Disconnection of the A-Line within the existing Dakota County Launcher site would result in temporary visual impacts on the scenic byway during construction from clearing and use of temporary workspaces. However, these impacts would be limited to the period of construction (5 to 10 days), and, following construction, temporary workspaces would be restored. There would not be significant or long-term visual impacts.

A comment was received from the Lower Platte South Natural Resources District that the pipeline to be abandoned crosses two of their easements. However, there would not be any land disturbance associated with the proposed action along these easements. The Lower Platte South Natural Resources District agrees that the Project would not have any adverse environmental effects within their jurisdictional boundaries.

4.4 Visual Resources

The land in the Project area is typically flat and mostly agricultural. The Project would be located on private land. Visual impacts would be greater where the workspaces are adjacent to the roads. Temporary visual impacts would occur from clearing, grading, and construction of the Project. At the disconnect sites, visual impacts would be minimal and would only last 5 to 10 days. The valve sites and launcher/receiver facilities may be visible from nearby roadways. These aboveground features would result in minor visual impacts because they are low to ground. Valve sites would be co-located with the launcher/receiver facilities to reduce visual impacts further.

Following construction activities, temporary workspaces would be restored to original contours and disturbed areas would be reseeded according to the Plan and Procedures. The duration of visual impacts following construction would depend on the type of vegetation that is cleared or altered and would be shortest in open areas where the re-establishment of vegetation following construction would be relatively rapid (generally within one growing season). Therefore, we conclude that the Project would not result in any significant impacts on visual resources.

5. Cultural Resources

In addition to accounting for impacts on cultural resources under NEPA, section 106 of the National Historic Preservation Act (NHPA), as amended, requires FERC to take into account

the effects of its undertakings on historic properties listed, or eligible for listing on the NRHP,[10] and to afford the Advisory Council on Historic Preservation an opportunity to comment. Northern, as a non-federal party, is assisting FERC in meeting our obligations under Section 106 and its implementing regulations at 36 CFR 800.

5.1 Area of Potential Effects

The area of potential effects (APE) is the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR 800.16(d)). The Project APE is the Project area, including the new route of the pipeline which would be located adjacent to an existing pipeline corridor. Due to the Project's location within an existing right-of-way, the APE is sufficient to account for all the potential direct and indirect effects to historic properties by the Project.

5.2 Cultural Resources Investigations

In an effort to identify historic properties within the APE and to account for any effects to those properties by the proposed Project, Northern conducted a cultural resources investigation which included background research and a historic architectural survey (Buhta 2019). During field investigations for the Project area, no prehistoric, or historic period artifacts, or archaeological features, were observed in the APE.

Northern conducted the historic architectural survey to identify architectural resources 45 years of age or older within the Project APE. The architectural field survey was limited to the exterior inspection of buildings and structures visible from the public right-of-way. The field survey included a visual assessment, site walkover, and photographic documentation of historic architectural resources in the APE. No aboveground features are within the APE or the Project viewshed.

Northern recommended a *no historic properties affected* for the Project. On May 20, 2018, the State Historic Preservation Office (SHPO) concurred with Northern's assessment, that no historic properties within the APE will be affected by the Project, and approving Northern's plan to abandon the A-Line in place and have a third-party contractor remove and salvage the lines, with the exception of several defined segments where sensitive resources are present. We agree.

[10] In accordance with 36 CFR 800.16(l)(1), a historic property is any prehistoric or historic district, site, building, structure, object, or property of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization, included in, or eligible for inclusion in, the NRHP. This term includes artifacts, records, and remains that are related to and located within such properties. Cultural resources are those properties that have not been evaluated for NRHP eligibility.

5.3 Tribal Communication and Consultation

Northern contacted the following Native American tribes regarding the proposed Project: Apache Tribe of Oklahoma, Cheyenne and Arapaho Tribes, Comanche Nation, Iowa Tribe of Kansas and Nebraska, Iowa Tribe of Oklahoma, Northern Cheyenne Tribe, Oglala Sioux Tribe, Omaha Tribe of Nebraska, Otoe-Missouria Tribe of Indians, Pawnee Nation of Oklahoma, Ponca Tribe of Nebraska, Rosebud Sioux Tribe, Sac & Fox Nation of Missouri in Kansas and Nebraska, Sac & Fox Nation, Sac & Fox Tribe of the Mississippi in Iowa, Santee Sioux Nation, Winnebago Tribe of Nebraska, and the Yankton Sioux Tribe. On December 26, 2018, Northern provided a Project information package, a cultural resources assessment, and a draft unanticipated discoveries plan. We sent the Project NOI to these same tribes. On October 21, 2019, FERC staff sent a letters providing Project details for the proposed action to these same tribes.

On February 21, 2019, the Pawnee Nation acknowledged receipt of the December 2018 packet from Northern. On November 11, 2019, the Pawnee Nation of Oklahoma responded by letter indicating that "the proposed project should have no potential to adversely effect the cultural landscape of the Pawnee Nation." On October 1, 2019, the Rosebud Sioux Tribe THPO indicated he had "concerns for the cultural resources along and/or are in proximity to this project. It has not been established nor determined whether a cultural resources report or Class III survey was ever done on the original project footprint." As indicated in this EA, the extent of the FERC undertaking for this Project is the abandonment of the A-line by sale, the construction of 4.2 miles of 24-inchdiameter pipeline and associated appurtenances, and disconnect activities at three locations; as defined in the APE. The possible future salvage of the pipeline by a third-party buyer is not a FERC jurisdictional action, and is outside of the boundaries of our NEPA and NHPA reviews. However, we do consider non-jurisdictional activities under the Cumulative Impacts section of this EA. There have been no additional comments to date.

5.4 Unanticipated Discoveries Plan

Northern developed a Project-specific plan titled: *Unanticipated Discoveries Plan for Archaeological Resources and Human Remains in Nebraska*, which outlines the procedures to follow, in accordance with state and federal laws, in the event that unanticipated cultural resources or human remains are discovered during construction of the Project, including consultation with FERC, the SHPO, and tribes regarding discoveries. The plan was submitted to the SHPO and to FERC. On May 7, 2019, the SHPO responded by letter that the plan was acceptable. FERC requested minor revisions to the plan. Northern provided a revised plan which we find acceptable.

5.5 Compliance with the NHPA

FERC has completed its compliance requirements with Section 106 of the NHPA for the Project.

6. Air Quality and Noise

6.1 Air Quality

Air quality would be affected by construction and operation of the Project. During construction, short-term emissions would be generated from the usage of equipment, land disturbance, and increased traffic from worker and delivery vehicles for all locations. Other than fugitive methane emissions associated with the pipeline, no operational emissions would be associated with the Project.

Ambient air quality is protected by federal and state regulations. Under the Clean Air Act (CAA) and its amendments, the EPA has established National Ambient Air Quality Standards (NAAQS)[11] for carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_x) ozone, particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), and sulfur dioxide (SO_2). The NDEQ has the authority to implement permit programs under the CAA for the proposed Project facilities. These standards incorporate short-term (hourly or daily) levels and long-term (annual) levels to address acute and chronic exposures to the pollutants, as appropriate. The NAAQS include primary standards, which are designed to protect human health, including the health of sensitive subpopulations such as children and those with chronic respiratory problems. The NAAQS also include secondary standards designed to protect public welfare, including economic interests, visibility, vegetation, animal species, and other concerns not related to human health. Table 10 presents the NAAQS.

Air quality control regions (AQCRs) are areas established by the EPA and local agencies for air quality planning purposes, in which State Implementation Plans describe how the NAAQS would be achieved and maintained. The AQCRs are intra- and interstate regions such as large metropolitan areas where improvement of the air quality in one portion of the AQCR requires emission reductions throughout the AQCR. Each AQCR, or smaller portion within an AQCR (such as a county), is designated, based on compliance with the NAAQS, as attainment, unclassifiable, maintenance, or nonattainment, on a pollutant by-pollutant basis. Areas in compliance or below the NAAQS are designated as attainment, while areas not in compliance or above the NAAQS are designated as nonattainment. Areas previously designated as nonattainment that have since demonstrated compliance with the NAAQS are designated as maintenance for that pollutant. Maintenance areas may be subject to more stringent regulatory requirements to ensure continued attainment of the NAAQS. Areas that lack sufficient data to determine attainment status are designated unclassifiable and treated as attainment areas. All Project components occur within areas that are designated as attainment for all criteria pollutants.

[11] The current NAAQS are listed on EPA's website at https://www.epa.gov/criteria-air-pollutants/naaqs-table.

Table 10: National Ambient Air Quality Standards

Pollutant	Averaging Period	Standards	
		Primary	Secondary
Sulfur dioxide (SO_2)	1-hour [l,m]	75 ppb 196 µg/m^3	
	3-hour [b]	--	0.5 ppm 1300 µg/m^3
	Annual [a,m]	0.03 ppm 80 µg/m^3	--
	24-hour [b,m]	0.14 ppm 365 µg/m^3	--
PM_{10}	24-hour [d]	150 µg/m^3	150 µg/m^3
$PM_{2.5}$ (2012 Standard)	Annual [e]	12.0 µg/m^3	15.0 µg/m^3
$PM_{2.5}$ (2006 Standard)	24-hour [f]	35 µg/m^3	35 µg/m^3
Nitrogen Dioxide (NO_2)	Annual [a]	0.053 ppm (53 ppb) 100 µg/m^3	0.053 ppm (53 ppb) 100 µg/m^3
	1-hour [c]	100 ppb 188 µg/m^3	--
Carbon Monoxide (CO)	8-hour [b]	9 ppm 10,000µg/m^3	--
	1-hour [b]	35 ppm 40,000 µg/m^3	--
Ozone (2008 Standard)	8-hour [g,h]	0.075 ppm	0.075 ppm
Ozone (2015 Standard)	8-Hour [i]	0.070 ppm	0.070 ppm
Ozone (O_3)	1-hour [j,k]	0.12 ppm	0.12 ppm
Lead (Pb)	Rolling 3-month [a]	0.15 µg/m^3	0.15 µg/m^3

a. Not to be exceeded
b. Not to be exceeded more than once per year
c. Compliance based on 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area
d. Not to be exceeded more than once per year on average over 3 years
e. Compliance based on 3-year average of weighted annual mean $PM_{2.5}$ concentrations at community-oriented monitors
f. Compliance based on 3-year average of 98th percentile of 24-hour concentrations at each population-oriented monitor within an area
g. Compliance based on 3-year average of fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area
h. The 2008 8-hour ozone standard would remain in effect until one year after an area is designated for the 2015 8-hour ozone standard, which corresponds with January 16, 2019 based upon attainment designations for the 2015 ozone standard issued on January 16, 2018
i. Permit applications that have not met EPA's grandfathering criteria would have to demonstrate that the proposed project does not cause or contribute to a violation of any revised ozone standards that are in effect when the permit is issued, including the 2015 revised standards
j. Maximum 1-hour daily average not to be exceeded more than one day per calendar year on average
k. The 1-hour ozone standard has been revoked in all areas in which Project activities would occur
l. Compliance based on 3-year average of 99th percentile of the daily maximum 1-hour average at each monitor within an area
m. The 24-hour and annual average primary standards for SO_2 have been revoked
ppm = parts per million by volume
ppb = parts per billion by volume
µg/m^3 = micrograms per cubic meter

6.2 Permitting/Regulatory Requirements

Prevention of Significant Deterioration and Nonattainment New Source Review

The Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NNSR) air permit programs are designed to protect air quality when air pollutant emissions are increased either through the construction of new major stationary sources or major modifications to existing stationary sources. The NDEQ administers the PSD and NNSR permitting programs in its state. There are no new or modified sources of emissions, and therefore, these programs do not apply to the Project.

Title V Permitting

Title V is an operating air permit program run by each state for each facility that is considered a "major source." Emissions associated with the Project would result from construction activities and would not result in any new sources, and thus, this program does not apply to the Project.

New Source Performance Standards

The EPA promulgates New Source Performance Standards to establish emission limits and fuel, monitoring, notification, reporting, and recordkeeping requirements for stationary source types or categories that cause or contribute significantly to air pollution. Emissions associated with the Project are from construction activities and would not result in any new sources, and therefore, this program does not apply to the Project.

National Emission Standards for Hazardous Air Pollutants

The 1990 CAA Amendments established a list of 189 hazardous air pollutants (HAPs), resulting in the promulgation of National Emission Standards for Hazardous Air Pollutants. The National Emission Standards for Hazardous Air Pollutants regulate HAP emissions from specific source types located at major or area sources of HAPs by setting emission limits, monitoring, testing, record keeping, and notification requirements. This program is not applicable because the emissions associated with the Project are from construction activities and no new sources of emissions are proposed.

State Regulations and County Ordinances

There are no state permitting requirements that apply to the Project. No ordinances from Otoe, Dodge or Dakota counties apply to the Project.

General Conformity

The EPA promulgated the General Conformity Rule to implement the conformity provision of Title I, Section 176(c)(1) of CAA. Section 176(c)(1) requires that the federal

government not engage, support, or provide financial assistance for licensing or permitting, or approve any activity not conforming to, an approved CAA implementation plan.

The General Conformity Rule is codified in Title 40 CFR Part 51, Subpart W and Part 93, Subpart B, Determining Conformity of General Federal Actions to State or Federal Implementation Plans. A conformity determination must be conducted by the lead federal agency if a federal action's construction and operational activities is likely to result in generating direct and indirect emissions that would exceed the conformity threshold (*de minimis*) levels of the pollutant(s) for which an air basin is in nonattainment or maintenance. According to the conformity regulations, emissions from sources that are subject to any NNSR or PSD permitting/licensing (major or minor) are exempt and are deemed to have conformed.

The General Conformity Rule was developed to ensure that federal actions in nonattainment and maintenance areas do not impede states' attainment of the NAAQS. The lead federal agency must conduct a conformity determination if a federal action's construction and operational activities is likely to result in generating direct and indirect emissions that would exceed the General Conformity Applicability threshold levels of the pollutant(s) for which an air basin is designated nonattainment or maintenance. Section 176(c)(1) states that a federal agency cannot approve or support any activity that does not conform to an approved State Implementation Plan. Conforming activities or actions should not, through additional air pollutant emissions:

- cause or contribute to new violations of the NAAQS in any area;
- increase the frequency or severity of any existing violation of any NAAQS; or
- delay timely attainment of any NAAQS or interim emission reductions.

The General Conformity Rule entails both an applicability analysis and a subsequent conformity determination, if deemed necessary. A General Conformity Determination must be completed when the total direct and indirect emissions of a project would equal or exceed the specified pollutant thresholds on a calendar year basis for each nonattainment or maintenance area.

As noted earlier, the Project facilities would be constructed and operated within counties in attainment for all criteria pollutants, therefore, a General Conformity Determination would not be required.

Greenhouse Gases

Greenhouse gases (GHGs) occur in the atmosphere both naturally and as a result of human activities, such as the burning of fossil fuels. GHGs are gases that absorb infrared radiation in the atmosphere, and an increase in emissions of these gasses has been determined by the EPA to endanger public health and welfare by contributing to global climate change. The most common GHGs emitted during fossil fuel combustion and natural gas transportation are

carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Emissions of GHGs are typically expressed in terms of CO_2 equivalents (CO_2e), where the potential of each gas to increase heating in the atmosphere is expressed as a multiple of the heating potential of CO_2 over a specific timeframe, or its global warming potential (GWP).[12] The 100-year GWP of CO_2 is 1, CH_4 is 25, and N_2O is 298. During construction and operation of the Project, these GHGs would be emitted from non-electrical construction and operational equipment, as well as from fugitive CH_4 leaks from the pipeline and aboveground facilities.

On November 8, 2010, the EPA signed a rule that finalizes reporting requirements for the petroleum and natural gas industry under 40 CFR 98. Subpart W of 40 CFR 98 requires petroleum and natural gas facilities that emit 25,000 metric tons or more of CO_2e per year to report annual emissions of specified GHGs from various processes within the facility. Construction emissions are not covered under the GHG Reporting Rule, but those related to the proposed Project are expected to be well below the 25,000 metric tons reporting threshold. Operational emissions from the proposed facilities are likewise not expected to exceed this threshold and be reported to the EPA. The EPA has expanded its regulations to include the emission of GHGs from major stationary sources under the PSD program. The EPA's current rules require that a stationary source that is major for a non-GHG-regulated New Source Review pollutant must also obtain a PSD permit prior to beginning construction of a new or modified major source with mass-based GHG emissions equal to or greater than 100,000 tons per year (tpy) and significant net emission increases in units of CO_2e equal to or greater than 75,000 tpy. There are no NAAQS or other significance thresholds for GHGs.

Construction Emissions

Construction of the Project would result in short-term increases in emissions of some pollutants from the use of fossil fuel-fired equipment and the generation of fugitive dust due to earthmoving activities. Some temporary indirect emissions, attributable to construction workers commuting to and from work sites during construction and from on-road and off-road construction vehicle traffic, could also occur. Large earth-moving equipment and other mobile equipment are sources of combustion-related emissions, including criteria pollutants (i.e., NO_x, CO, volatile organic compounds [VOC], SO_2, and PM_{10}).

Northern would mitigate exhaust emissions from construction equipment by requiring contractors to meet all air quality regulations and emission standards associated with each piece of equipment. Fugitive dust emissions during construction would be mitigated by measures outlined in the Fugitive Dust Control Plan, such as spraying water on unpaved areas subject to frequent vehicle traffic, reducing vehicle speed, and removal of material from roadways. Construction related emission estimates were based on a typical construction equipment list, hours of operation, and vehicle miles traveled by the construction equipment and supporting vehicles for each area of the Project. These emission-generating activities would include earthmoving, construction

[12] These GWPs are based on a 100-year time period. We have selected their use over other published GWPs for other timeframes because these are the GWPs the EPA has established for reporting of GHG emissions and air permitting requirements. This allows for a consistent comparison with these regulatory requirements.

equipment exhaust, on-road vehicle traffic, and off-road vehicle traffic. Northern conservatively utilized emission factors from EPA's AP-42. These emissions present the combined emissions for each facility of construction equipment combustion, on-road vehicle travel, off-road vehicle travel, and earthmoving fugitives.

Construction is estimated to occur between summer 2020 and November 2020. The air quality impacts of Project construction would be considered short-term and would be further minimized by Northern's implementation of fugitive dust control measures outlined in the Fugitive Dust Control Plan, which we have reviewed and find acceptable. Following construction, air quality would revert back to previous conditions. Construction emissions for the Project are presented in table 11.

Table 11: Estimated Construction Emissions (tpy)

Description	Criteria Pollutants							
	NO_x	**CO**	**VOC**	**SO_2**	**PM_{10}**	**PM2.5**	**GHG CO_2e**	**Total HAPs**
Off-Road Engine Emissions	158.66	36.85	12.73	0.08	6.62	6.43	7,516	0.31
Unpaved Roads	--	--	--	--	12.50	1.25	--	--
Pipeline Venting	--	--	0.21		--	--	4	--
Earthmoving	--	--	--	--	4.68	0.49	--	--
Total	**158.66**	**36.85**	**12.94**	**0.08**	**23.80**	**8.17**	**7,520**	**0.31**

Given the temporary nature of construction, and the intermittent nature of construction emissions, we find that emissions from construction-related activities for the Project would not be expected to cause or significantly contribute to a violation of any applicable ambient air quality standard, or significantly affect local or regional air quality.

Operational Emissions

There are no permanent sources of operational emissions proposed as part of the Project.

Considering the minimal operational emissions associated with the Project, we conclude that operational emissions would not have a significant impact on air quality.

6.3 Noise

Construction and operation of the Project would affect the local noise environment in the Project area. The ambient sound level of a region, which is defined by the total noise generated within the specific environment, is usually comprised of sounds emanating from both natural and artificial sources. At any location, both the magnitude and frequency of environmental noise

may vary considerably over the course of the day and throughout the week, in part due to changing weather conditions and the impacts of seasonal vegetative cover.

The EPA published its Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Two measurements used by some federal agencies to relate the time-varying quality of environmental noise to its known effects on people are the equivalent sound level (L_{eq}) and the day-night sound level (L_{dn}). The L_{eq} is an A-weighted sound level containing the same sound energy as the instantaneous sound levels measured over a specific time period. Noise levels are perceived differently, depending on length of exposure and time of day. The L_{dn} takes into account the duration and time the noise is encountered. Specifically, in the calculation of the L_{dn}, late night to early morning (10:00 p.m. to 7:00 a.m.) noise exposures are penalized +10 decibels (dB), to account for people's greater sensitivity to sound during the nighttime hours. The A-weighted scale (dBA) is used because human hearing is less sensitive to low and high frequencies than mid-range frequencies. For an essentially steady sound source that operates continuously over a 24-hour period and controls the environmental sound level, the L_{dn} is approximately 6.4 dB above the measured L_{eq}.

The EPA has indicated that an L_{dn} of 55 dBA protects the public from indoor and outdoor activity interference. We have adopted this criterion and use it to evaluate the potential noise impacts from the proposed Project at noise sensitive areas (NSAs), such as residences, schools, or hospitals. Also, in general, a person's threshold of perception for a perceivable change in loudness on the A-weighted sound level is about 3 dBA, whereas a 5 dBA change is clearly noticeable, and a 10 dBA change is perceived as either twice or half as loud.

There are no applicable county, or local noise regulations associated with the Project.

Construction Noise

Construction of the facilities would involve operation of general construction equipment and noise would be generated during the installation of the Project components. Construction of the Project would include crossing one waterbody and one wetland and an existing roadway using the HDD method for the Palmyra North D-Line Loop. For the Fremont North D-Line Loop, Northern would use the HDD method to cross one waterbody, one canal, and the planned location of the U.S. Highway 30 Schuyler to Fremont Expressway project.

Construction noise would be highly variable because the types of equipment in use at a construction site changes with the construction phase and the types of activities. Noise from construction activities may be noticeable at nearby NSAs. However, construction equipment would be operated on an as-needed basis during the short-term construction period. Further, Northern would limit construction activities to occur during daytime hours, except when required for activities such as hydrostatic testing, operation of pumps at waterbody crossings, and certain HDD activities such as pull back that require continuous work. Noise from HDDs and construction activities would be episodic and temporary. FERC staff considers daytime hours to

be 7:00 AM to 7:00 PM. If night time construction is required, advanced notice would be provided to the residents informing them of the planned activities and duration.

Measures to mitigate construction noise would include compliance with federal regulations limiting noise from trucks, proper maintenance of equipment, and ensuring that sound muffling devices provided by the manufacturer are kept in good working condition. Eight NSAs were identified by Northern near the HDD entry and exit sites. Predicted noise levels for HDD activities are presented in table 12.

Table 12: HDD Noise Analysis

HDD No.	Description	Entry/Exit Point and Location	Distance/ Direction to nearest NSA (feet)	Ambient Ldn (dBA)	Calculated HDD Ldn (dBA)	HDD + Ambient Ldn (dBA)	Increase Above Ambient (dBA)
#1	Palmyra North D-Line Loop	Entry MP 0.6	300/ E	47.0	70.8	70.8	23.8
		Exit MP 0.4	700/ W	47.0	51.1	52.5	5.5
#2	Palmyra North D-Line Loop	Entry MP 1.1	2,300/ S	47.0	50.2	51.9	4.9
		Exit MP 1.3	2,150/ NW	51.1	36.8	51.3	0.2
#3	Fremont North D-Line Loop	Entry MP 1.5	1,300/ E	48.5	53.4	54.6	6.1
		Exit MP 1.7	1,700/NE	52.6	42.1	53.0	0.4
#4	Fremont North D-Line Loop	Entry MP 1.9	1,800/SE	52.6	52.2	55.4	2.8
		Exit MP 2.3	800/NE	46.7	49.8	51.5	4.8

Two NSA's would exceed 55 dBA during construction activities. Impacts to these NSAs would be minimized with installation of Northern's proposed mitigation measures, including installing a temporary noise barrier, and providing temporary relocation for landowners if extended workdays are required to complete the HDD crossing. Mitigated noise levels for the affected NSA are presented in table 13. To ensure that noise impacts are adequately minimized at these NSA's during construction, we recommend that:

- **Prior to construction of HDD No. 1 (Palmyra North D-Line Loop MP 0.6) and HDD No. 4 (Fremont North D-Line Loop MP 1.9), Northern should file with the Secretary, for the review and written approval by the Director of Office of Energy Projects (OEP), an HDD noise mitigation plan to reduce the projected noise level attributable to the proposed drilling operations at the No. 1 entry site, and No. 4 entry site. During drilling operations, Northern should implement the approved plan, monitor noise levels, document the noise levels in**

the biweekly status reports, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than a L_{dn} of 55 dBA at the NSAs.

Table 13: Mitigated HDD Noise Levels					
HDD Crossing	**Distance/Direction of NSA (feet)**	**Measured Ambient (dBA)**	**Mitigated HDD Sound Level (dBA)**	**HDD + Ambient (dBA)**	**Increase over Ambient (dBA)**
Palmyra North D-Line Loop #1	300/ E	47.0	53.5	54.4	7.4

Based on the proposed mitigation measures, our recommendation, and that construction of the Project would be intermittent and mostly be limited to daytime hours, we conclude that construction noise would not have a significant impact on the environment.

Operation

There are no sources of operational noise associated with the Project.

Based on the duration of construction, proposed mitigation measures during construction activities and lack of operational noise, we conclude that the Project would not result in significant noise impacts on residents and the surrounding communities.

7. Reliability and Safety

The transportation of natural gas by pipeline involves some incremental risk to the public due to the potential for accidental release of natural gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death. Methane has an auto-ignition temperature of 1,000 degrees Fahrenheit and is flammable at concentrations between 5.0 percent and 15.0 percent in air. An unconfined mixture of methane and air is not explosive, however it may ignite and burn if there is an ignition source. A flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

7.1 Safety Standards

The DOT is mandated to prescribe minimum safety standards to protect against risks posed by pipeline facilities under Title 49, U.S.C. Chapter 601. The DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards which set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. PHMSA's safety mission is to ensure that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level.

Title 49, U.S.C. Chapter 601 provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal standards. A state may also act as DOT's agent to inspect interstate facilities within its boundaries; however, the DOT is responsible for enforcement actions.

The DOT pipeline standards are published in Parts 190-199 of Title 49 of the CFR. Part 192 specifically addresses natural gas pipeline safety issues.

The DOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of the FERC's regulations require that an applicant certify that it would design, install, inspect, test, construct, operate, replace, and maintain the facility for which a Certificate is requested in accordance with federal safety standards and plans for maintenance and inspection. Alternatively, an applicant must certify that it has been granted a waiver of the requirements of the safety standards by the DOT in accordance with Section 3(e) of the Natural Gas Pipeline Safety Act. Under a Memorandum of Understanding on Natural Gas Transportation Facilities (Memorandum) dated January 15, 1993, between the DOT and the FERC, the FERC accepts this certification and does not impose additional safety standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the Memorandum to promptly alert DOT. The Memorandum also provides for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipelines under the Commission's jurisdiction.

The FERC also participates as a member of the DOT's Technical Pipeline Safety Standards Committee which determines if proposed safety regulations are reasonable, feasible, and practicable.

The pipelines associated with the Project must be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas

facility accidents and failures. The DOT specifies material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion.

The DOT also defines area classifications, based on population density in the vicinity of the pipeline, and specifies more rigorous safety requirements for populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined below:

Class 1	Location with 10 or fewer buildings intended for human occupancy.
Class 2	Location with more than 10 but less than 46 buildings intended for human occupancy.
Class 3	Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period.
Class 4	Location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. For instance, pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock. Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock.

Class locations also specify the maximum distance to a sectionalizing block valve (*e.g.*, 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4). Pipe wall thickness and pipeline design pressures; hydrostatic test pressures; maximum allowable operating pressure (MAOP); inspection and testing of welds; and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas. Preliminary class locations for the Project have been developed based on the relationship of the pipeline centerline to other nearby structures and manmade features.

If a subsequent increase in population density adjacent to the right-of-way results in a change in class location for the pipeline, Northern would reduce the MAOP or replace the segment with pipe of sufficient grade and wall thickness, if required to comply with the DOT requirements for the new class location.

The DOT Pipeline Safety Regulations require operators to develop and follow a written integrity management program that contain all the elements described in 49 CFR 192.911 and

address the risks on each transmission pipeline segment. The rule establishes an integrity management program which applies to all high consequence areas (HCA).

High Consequence Areas

The DOT has published rules that define HCAs where a gas pipeline accident could do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate for DOT to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area.

The HCAs may be defined in one of two ways. In the first method an HCA includes:

- current class 3 and 4 locations,
- any area in Class 1 or 2 where the potential impact radius[13] is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle[14], or
- any area in Class 1 or 2 where the potential impact circle includes an identified site.

An identified site is an outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period; a building that is occupied by 20 or more persons on at least 5 days a week for any 10 weeks in any 12-month period; or a facility that is occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate.

In the second method, an HCA includes any area within a potential impact circle which contains:

- 20 or more buildings intended for human occupancy, or
- an identified site.

Once a pipeline operator has determined the HCAs along its pipeline, it must apply the elements of its integrity management program to those segments of the pipeline within HCAs. The DOT regulations specify the requirements for the integrity management plan at section 192.911. There are no HCAs located near the Project.

The DOT prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Each pipeline operator is required to establish an emergency plan that includes procedures to minimize the hazards of a natural gas pipeline emergency. Key elements of the plan include procedures for:

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[13] The potential impact radius is calculated as the product of 0.69 and the square root of: the MAOP of the pipeline in psig multiplied by the square of the pipeline diameter in inches.

[14] The potential impact circle is a circle of radius equal to the potential impact radius.

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- emergency system shutdown and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and
- protecting people first and then property, and making them safe from actual or potential hazards.

The DOT requires that each operator establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency, and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. Northern would provide the appropriate training to local emergency service personnel before the pipeline is placed in service.

On October 1, 2019, the PHMSA issued new regulations modifying and expanding the standard pipeline safety standards under 49 CFR Parts 191 and 192. These regulations, in part, established: new standards for in-line inspections; requirements for newly established moderate consequence areas; explicitly requires consideration of seismicity and geotechnical risks in its integrity management plan for the pipeline; new regulations on pipeline patrol frequency for HCAs, moderate consequence areas and grandfathered pipelines; a policy to reconfirm MAOP for certain pipelines; installation of pressure relief for pig launcher/receivers, and report exceedances of MAOP to PHMSA. Northern would be required to comply with these regulations, which go into effect on July 1, 2020.

7.2 Pipeline Accident Data

The DOT requires all operators of natural gas transmission pipelines to notify the DOT of any significant incident and to submit a report within 30 days. Significant incidents are defined as any leaks that:

- caused a death or personal injury requiring hospitalization; or
- involve property damage of more than $50,000 (1984 dollars)[15].

During the 20 year period from 1996 through 2015, a total of 1,310 significant incidents were reported on the more than 300,000 total miles of natural gas transmission pipelines nationwide.

[15] $50,000 in 1984 dollars is approximately $112,955.73 as of May 2015 (CPI, Bureau of Labor Statistics, 2015)

Additional insight into the nature of service incidents may be found by examining the primary factors that caused the failures. Table 14 provides a distribution of the causal factors as well as the number of each incident by cause. The dominant causes of pipeline incidents are corrosion and pipeline material, weld or equipment failure constituting 49.6 percent of all significant incidents. The pipelines included in the data set in table 14 vary widely in terms of age, diameter, and level of corrosion control. Each variable influences the incident frequency that may be expected for a specific segment of pipeline. The frequency of significant incidents is strongly dependent on pipeline age. Older pipelines have a higher frequency of corrosion incidents and material failure, because corrosion and pipeline stress/strain is a time-dependent process.

Table 14: Natural Gas Transmission Pipeline Significant Incidents by Cause (1996-2015)[a]

Cause	Number of Incidents	Percentage
Pipeline material, weld, or equipment failure	354	27.0
Corrosion	311	23.7
Excavation	210	16.0
All other causes [b]	165	12.6
Natural forces [c]	146	11.1
Outside force [d]	84	6.4
Incorrect operation	40	3.1
Total	**1,310**	**100**

a. All data gathered from PHMSA's Oracle BI Interactive Dashboard website for Significant Transmission Pipeline Incidents, https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Portalpages&NQUser=PDM_WEB_USER&NQPassword=Public_Web_User1&PortalPath=%2Fshared%2FPDM%20Public%20Website%2F_portal%2FSC%20Incident%20Trend&Page=Significant&Action=Navigate&col1=%22PHP%20-%20Geo%20Location%22.%22State%20Name%22&val1=%22%22.

b. All other causes include miscellaneous, unspecified, or unknown causes.

c. Natural force damage includes earth movement, heavy rain, floods, landslides, mudslides, lightning, temperature, high winds, and other natural force damage.

d. Outside force damage includes previous mechanical damage, electrical arcing, static electricity, fire/explosion, fishing/maritime activity, intentional damage, and vehicle damage (not associated with excavation).

The use of both an external protective coating and a cathodic protection system[16], required on all pipelines installed after July 1971, significantly reduces the corrosion rate compared to unprotected or partially protected pipe.

Outside force, excavation, and natural forces are the cause in 34.2 percent of significant pipeline incidents. These result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geologic hazards;

[16] Cathodic protection is a technique to reduce corrosion (rust) of the natural gas pipeline through the use of an induced current or a sacrificial anode (like zinc) that corrodes at faster rate to reduce corrosion.

weather effects such as winds, storms, and thermal strains; and willful damage. Table 15 provides a breakdown of external force incidents by cause.

Older pipelines have a higher frequency of outside forces incidents partly because their location may be less well known and less well marked than newer lines. In addition, the older pipelines contain a disproportionate number of smaller diameter pipelines; which have a greater rate of outside forces incidents. Small diameter pipelines are more easily crushed or broken by mechanical equipment or earth movement.

Since 1982, operators have been required to participate in "One Call" public utility programs in populated areas to minimize unauthorized excavation activities in the vicinity of pipelines. The "One Call" program is a service used by public utilities and some private sector companies (*e.g.*, oil pipelines and cable television) to provide preconstruction information to contractors or other maintenance workers on the underground location of pipes, cables, and culverts.

The available data from PHMSA show that natural gas transmission pipelines continue to be a safe, reliable means of energy transportation. The Project would address a PHMSA corrective action order and would improve the safety of Northern's system. The construction and operation of the new pipeline facilities would represent a minimum increase in risk to the nearby public and we are confident that with implementation of the required design criteria for the design of these facilities, that they would be constructed and operated safely.

Table 15: Excavation, Natural Forces, and Outside Force Incidents by Cause (1996-2015)[a]		
Cause	**Number of Excavation, Natural Forces, and Outside Force Incidents**	**Percentage of All Incidents [b,c]**
Third party excavation damage	172	13.1
Heavy rain, floods, mudslides, landslides	74	5.7
Vehicle (not engaged with excavation)	49	3.7
Earth movement, earthquakes, subsidence	32	2.4
Lightning, temperature, high winds	27	2.1
Operator/contractor excavation damage	25	1.9
Unspecified excavation damage/previous damage	13	1.0
Other or unspecified natural forces	13	1.0
Fire/explosion	9	0.7
Fishing or maritime activity	9	0.7
Other outside force	9	0.7
Previous mechanical damage	6	0.5
Electrical arcing from other equipment/facility	1	0.1
Intentional damage	1	0.1
Total	440	33.5

a. All data gathered from PHMSA's Oracle BI Interactive Dashboard website for Significant Transmission Pipeline Incidents, https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Portalpages&NQUser=PDM_WEB_USER&NQPassword=Public_Web_User1&PortalPath=%2Fshared%2FPDM%20Public%20Website%2F_portal%2FSC%20Incident%20Trend&Page=Significant&Action=Navigate&col1=%22PHP%20-%20Geo%20Location%22.%22State%20Name%22&val1=%22%22 (DOT, 2016a). Accessed on 2/17/2016.
b. Percentage of all incidents was calculated as a percentage of the total number of incidents natural gas transmission pipeline significant incidents (i.e., all causes) presented in table 4.12.3-1.
c. Due to rounding, column does not equal 33.6 percent.

7.3 Polychlorinated Biphenyls

During abandonment activities, Northern would follow appropriate testing and disposal procedures for abandonment. When any existing station piping or pipeline is cut, the contractor would follow the EPA issued Polychlorinated Biphenyls (PCB) rules and regulations contained

in 40 Code of Federal Regulations Part 761. Northern's pipeline system has been historically tested for PCBs. The liquids in Northern's system have been documented as PCB-free.

The pipeline disconnect would require removal of station piping, where the pipe would be cut and capped. Due to age of the pipeline and previous repair methods, the pipeline cannot be cleaned by pigging prior to abandonment. Secondary containment would be installed below all pipe segments to be cut. The sampling for and disposal of PCB contaminated facilities would be in accordance with Northern's approved PCB Disposal Requirements.

The new pipeline loops would not contain PCBs. Based on this, we conclude that PCB's are not expected on any portion of the Project facilities.

8. Cumulative Impacts

In accordance with NEPA and with FERC policy, we identified other actions in the vicinity of the proposed Project facilities and evaluated the potential for a cumulative impact on the environment. As defined by the CEQ, a cumulative effect is the impact on the environment that results from the incremental effects of a proposed action when added to other past, present, or reasonably foreseeable future actions, regardless of the agency or party undertaking such other actions. Cumulative impacts can result from individually minor, but collectively significant actions, taking place over time. The CEQ guidance states that an adequate cumulative effects analysis may be conducted by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions. In this analysis, we consider the impacts of past projects within the defined geographic scope as part of the affected environment (environmental baseline) which were described and evaluated in the preceding environmental analysis. However, present effects of past actions that are relevant and useful are also considered. When evaluating cumulative impacts, we establish a geographic scope for each resource affected by the proposed Project, shown in table 16.

Table 16: Geographic scope of Potential Impact of the Project

Resource	Geographic Scope
Geological Resources and Soils	Limits of Project disturbance
Water Resources	Watershed boundary (Hydrologic Unit Code [HUC]-12)
Vegetation, Wildlife, and Special Status Species	HUC-12
Land Use, Recreation, and Visual Resources	1 mile
Cultural Resources	Area of potential effects
Air Quality	Construction: 0.25 mile Operation: 50 kilometers (31.1 miles)

Table 16: Geographic scope of Potential Impact of the Project	
Resource	**Geographic Scope**
Noise	Construction: 0.25 mile for general construction activities, 0.5 mile for drilling activities Operation: 1 mile

This cumulative effects analysis generally follows a method set forth in relevant CEQ and EPA guidance and focuses on potential impacts from a proposed Project on resource areas or issues where the incremental contribution could result in cumulative impacts when added to the potential impacts of other actions. To avoid unnecessary discussions of insignificant impacts and projects and to adequately address and accomplish the purposes of this analysis, an action must first meet the following three criteria to be included in the cumulative analysis:

- affect a resource potentially affected by the Project;
- cause this impact within all, or part of, the geographic scope of the Project; and
- cause this impact within all, or part of, the time span for the potential impact from the Project.

As described in section B of this is EA, constructing and operating the Project would temporarily and permanently impact the environment. The Project would impact geology, soils, water resources, wetlands, vegetation and wildlife, land uses, recreation, visual resources, air quality, and noise. However, throughout section B of this EA, we determined that the proposed Project would have only minimal or temporary impacts on these resources and nearly all of the Project-related impacts would be contained within or adjacent to the temporary construction right-of-way and ATWS. For example, erosion control measures included in the FERC Plan and Procedures would keep disturbed soils within work areas.

8.1 Projects Identified within the Geographic Scope

Table 1 of appendix B identifies 51 present and reasonably foreseeable projects or actions that occur. These projects were identified by a review of publicly available information; aerial and satellite imagery; and information provided by Northern. These projects include both FERC jurisdictional projects as well as other, non-jurisdictional projects.

As the Project would not result in any perceptible change in operational air or noise emissions, our geographic scope was further limited to consider effects on these resources during construction activity only. Therefore, the geographic scope for cumulative impacts on air quality is 0.25 mile from construction activities and 0.5 mile for noise impacts during construction. For soils, the geographic scope is the limits of Project disturbance. For water resources, vegetation, and wildlife, the geographic scope is the HUC-12 watershed in which the Project is located.

The Project is expected to have no impact or a negligible impact on geologic resources and geologic hazards. All wetlands would be crossed using the HDD methods; therefore, the Project would not have any impacts on wetlands. Only one small (6-foot-wide) ephemeral waterbody would be crossed by the Palmyra North D-Line Loop; all other waterbodies would be crossed using trenchless construction methods. We determined that the Project would have no effect on historic properties. Given the lack of Project impacts on geology, wetlands and surface waters, and cultural resources, cumulative impacts were not evaluated further for these resources. Therefore, we conclude that the impacts from this Project, when considered cumulatively with past, present, and reasonably foreseeable projects, would not contribute to significant cumulative impacts on these resources, and these resources will not be discussed further in this section.

8.2 Potential Cumulative Impact on Specific Resources within the Project Area

Soils

Construction of the Project would result in localized impacts on soils as a result of clearing, grading, and trenching activities; however, Northern would employ best management practices to avoid off-site migration of soils during construction. The geographic scope is defined as the area of Project disturbance for soils. As the Project's impact on soils would be highly localized and limited primarily to the footprint during the period of active construction, cumulative impacts on soils would only occur if other geographically overlapping or abutting projects were constructed at the same time (and place) as the Project (and the exposure of soils to erosion and sedimentation) occurs. Northern's blanket projects and the DKM salvage of Northern's abandoned pipeline segments would overlap or partially overlap the Project workspaces. In addition, the U.S. Highway 30 Schuyler to Fremont Expressway Project would cross the Fremont North D-Line Loop at approximate MP 2.2. Construction of the new Highway 30 corridor would result in the conversion of 0.4 acre of agricultural land within the construction workspace of the Fremont North D-Line Loop to impervious road surface. DKM would install erosion controls and reseed all temporary workspaces for its project. Northern would construct its blanket projects in accordance with the erosion control measures within the FERC Plan which would minimize the potential for impacts on soils. Therefore, we conclude that cumulative impacts on soils would not be significant.

Groundwater

The geographic scope for assessing cumulative impacts on groundwater includes each HUC-12 watershed crossed by the Project. The temporal scope is limited to the duration of construction through revegetation, with the exception of areas of permanent conversion of vegetation. Several actions, including Northern's blanket projects and the DKM Project, share geographic scopes and possibly temporal scopes with Northern's Project for groundwater. Construction of the Project could result in minor, temporary impacts on groundwater infiltration due to vegetation clearing. Most impacts from Northern's Project on groundwater would likely be limited only to HDD activities. There is a chance that HDD construction associated with Northern's Project, in combination with HDD construction associated with other projects

identified in appendix B, table 1, could result in temporary cumulative impacts within the aquifers if the HDD activities occur concurrently or within several days of one another. If temporary impacts occur, it would likely be limited to short-term turbidity visible in groundwater. We also anticipate that Northern's SPCC Plan would prevent or minimize the opportunity for and necessitate immediate control and clean-up of spills of fuels, lubricants, or other hazardous material, and would therefore minimize the opportunity for cumulative impacts that could result if other actions were to also result in spills. For these reasons, we conclude that any contribution to cumulative impacts on groundwater from the proposed projects would be negligible.

Vegetation and Wildlife

We also used the HUC-12 watershed as the geographic scope for impacts on vegetation and wildlife. The construction activities associated with removal of vegetation and the potential for the establishment of invasive plant species occurring during the same timeframe and area can result in cumulative impacts.

Northern's blanket projects, nearby highway projects, the DKM salvage of the abandoned pipeline, and the various commercial and industrial developments listed in table 1 of appendix B would be located within the same HUC-12 watershed as the proposed Project. Although some of the other identified projects may involve tree clearing, which is a longer term impact on vegetation, the proposed Project does not involve any tree clearing. The proposed Project mainly impacts agricultural lands, although some impacts would occur on vegetation from clearing some herbaceous and shrub vegetation. Construction within or adjacent to existing facilities minimizes the effects of vegetation clearing. Most of the proposed Project would be constructed adjacent to existing aboveground facilities and Northern's existing right-of-way. Given the minimal temporary impacts on vegetation and wildlife from the Project, we conclude that the Project would not contribute significant cumulative impacts on vegetation or wildlife.

Land Use and Visual Resources

Construction and operation of the new pipeline loops associated with the Project as well as Northern's blanket projects, nearby highway projects, the DKM salvage of the A-Line, and various commercial and industrial developments listed in Appendix B would be located within one mile of the Project. These projects may also involve the conversion of existing land uses to industrial/developed land and would have temporary and permanent visual impacts. The conversion of land to a developed land use would result in cumulative impacts on land use. However, this impact would be minor as the Project areas are co-located as much as possible with other developed land uses (e.g., aboveground facilities and rights-of-way). Construction of the Project would have minor, temporary visual effects. Additionally, the Project only involves minor new aboveground facilities which would be co-located with Northern's existing aboveground facilities. Therefore, we conclude that the impacts of this Project would not contribute to significant cumulative impacts on land use and visual resources.

Air Quality

Multiple projects were identified within the vicinity of the Project with the potential to contribute to cumulative impacts to air quality during construction. Construction of these projects would involve the use of heavy equipment that would generate emissions of air pollutants and fugitive dust. Fugitive dust emissions would settle quickly and dust suppression measures would be implemented at the Project site as necessary to ensure the Project-related effects from fugitive dust are intermittent and temporary and would occur within or very near the construction area. The potential cumulative impacts from the Project and recently completed, current, and reasonably foreseeable projects in the vicinity would be temporary and minor. Primary factors associated with the Project that would minimize the contribution to cumulative impacts are that most proposed construction activities are either located on existing Northern property, or co-located with existing pipelines, utilities or easements. Due to the timing of construction, minimization of fugitive dust as a result of the dust suppression measures, and the highly localized nature of construction emissions, we conclude there would be no significant cumulative impacts on air quality during construction of the Project.

Noise

Construction activities for the Project could contribute to cumulative noise impacts from construction equipment and HDD drilling activities. However, the impact of noise from the Project would be highly localized and attenuate quickly as the distance from the noise source increases. The effects of Project construction activities would be limited to the period of construction. Cumulative impacts are unlikely unless one or more of the other identified projects occur simultaneously. Based on the limited scope of the Project, we conclude the Project would not result in significant cumulative impacts on noise.

8.3 Cumulative Impact Conclusion

In conclusion, when the impacts of the Project are added to other projects in the vicinity, we conclude that the cumulative impacts would be minimal. We conclude that impacts would be primarily temporary in nature and no significant cumulative impacts would be incurred from the Project.

9. Non-Jurisdictional Future Use

Based on comments that we received related to the DKM Project, we include in this section the best available information regarding the environmental impacts that would result from the DKM Project. The following section describes general impacts from the overall DKM Project, whereas the above cumulative impact analysis only assessed the portions of the DKM Project within the geographic scope of the Project. Although the Commission has not authority to approve or deny the DKM Project and no ability to require any avoidance or minimization of the related impacts, we provide information here to inform stakeholders and decision-makers.

As discussed previously, after assuming ownership of the A-Line, DKM intends to reclaim most of the facilities for salvage. DKM would be required to obtain all applicable permits and approvals from federal, state, and local regulatory agencies prior to initiating activities, and to abide by permit requirements during removal of the pipeline.

Northern has stated that DKM would use a 50-foot-wide corridor centered on the pipeline, and reclamation activities would occur within Northern's easement. Prior to removal of the pipeline, DKM would contact Nebraska811 to locate, identify, and flag existing underground utilities to prevent accidental damage during reclamation activities. DKM would use existing public and private roads and the A-Line right of way to gain access to the work area. Temporary gates would be installed to allow access at fences.

Grading may occur in areas where the existing topography must be modified to create a safe and level working surface. Generally, the pipeline would be removed with trackhoes equipped with low ground-weight construction equipment. As the pipeline is lifted from the trench, it would be placed on cribbing adjacent to the trench. The pipeline would be continuously removed and breaks in the pipeline would be determined by foreign line crossings, road crossings, wetland/waterbody crossings and points of inflection where bends in the pipeline preclude continuous removal. Once placed on cribbing, the pipeline would be cut into sections as needed for transport and storage. Pipe joints would be stacked within the corridor in designated load-out areas. Semi-trucks and trailers equipped with custom pipe stakes would be used to safely haul the pipe joints from the corridor.

Backfill operations would begin immediately following removal of the pipeline. The trench would be backfilled using a dozer equipped with low ground-weight equipment. The backfill operations would keep pace with the pipeline removal to minimize the amount of trench left open overnight. Any area near a trench left open overnight would be secured with safety fencing. Cleanup would be conducted in conjunction with backfill operations and land contours would be restored to pre-removal conditions. In accordance with the terms of the PSA, DKM would be responsible for coordinating reclamation activities with landowners, and would assume all costs, risks, and liabilities for damages to private property.

Northern conducted a desktop review of publicly available data to identify the potential environmental effects of DKM's planned pipeline reclamation. In accordance with DKM's description of its planned reclamation activities, a 50-foot-wide corridor centered on the A-Line was used to estimate environmental effects. DKM Project activities and associated land requirements are summarized in table 17.

Table 17: Summary of Potential Environmental Effects of DKM's Pipeline Reclamation

Facility/Resource	Potential Effects[a]
M581A Mainline	
Length	58.9
Total Impact	356.9
Wetlands	
Forested/Shrub Wetlands	1.1

Table 17: Summary of Potential Environmental Effects of DKM's Pipeline Reclamation	
Facility/Resource	**Potential Effects[a]**
Emergent Wetlands	8.1
Pond	0.1
Riverine	2.3
Waterbodies	
Perennial	4
Intermittent	58
Artificial Path (Ditch)	2
Land Cover/Use	
Agricultural	295.7
Developed	12.2
Forested	4.5
Open Land	43.3
Open Water	1.1
Land Ownership	
Federal	0.0
State	0.0
County/Local	0.0
Private	356.9
Private water wells within 150 feet	0
Public water wells within 150 feet	0
Residences within 50 feet	0
Cultural Resources Sites Crossed	
NRHP-eligible	0
Not NRHP-eligible	0
Unevaluated	0
M570A Mainline	
Length	58.7
Total Impact	355.5
Wetlands	
Forested/Shrub Wetlands	1.1
Emergent Wetlands	2.5
Pond	0.0
Riverine	2.8
Waterbodies	
Perennial	18
Intermittent	46
Artificial Path (Ditch)	3
Land Cover/Use	
Agricultural	280.6
Developed	28.5
Forested	6.5
Open Land	39.2
Open Water	0.7
Land Ownership	
Federal	0.0
State	0.0
County/Local	0.0
Tribal	111.7
Private	243.8
Water wells within 50 feet	1
Residences within 50 feet	0
Cultural Resources Sites Crossed	
NRHP-eligible	1
Not NRHP-eligible	1

Table 17: Summary of Potential Environmental Effects of DKM's Pipeline Reclamation	
Facility/Resource	**Potential Effects[a]**
Unevaluated	10

a Acreages are based on an assumed 50-foot-wide temporary construction right-of-way, centered on the existing A-Line, and no not include ATWS, access roads, or contractor yards.

Sources: U.S. Fish and Wildlife Service National Wetlands Inventory; U.S. Geological Survey National Hydrography Dataset; National Land Cover Database; Protected Areas Database of the United States

The PSA between Northern and DKM outlines certain environmental provisions agreed upon by both parties. Per this PSA, DKM would reclaim the pipeline within two years of the executed purchase and sale agreement and regulated substances in the pipeline (such as naturally occurring radioactive materials, pipeline coatings comprised of asbestos containing material, and PCBs) would be appropriately managed.

To reduce potential impacts on soils, topsoil would be segregated within the ditch and spoil storage areas in agricultural land. To minimize disturbance in agricultural land, topsoil would not be removed in the remaining temporary workspace. In areas where topsoil is segregated, the soils would be replaced in reverse order of removal to ensure the topsoil remains in the upper horizon. Installation of permanent erosion control devices would consist of water bars and terraces where required. Seeding would occur in accordance with the seeding recommendations provided by the local NRCS and/or landowner request. Areas requiring reseeding would be seeded within 20 days of backfill but seeding may be delayed based on the NRCS-recommended seeding window. All temporary fencing would be removed following seeding activities and the permanent fences would be replaced.

Some segments of the pipeline (e.g., pipe at road crossings, wetlands and waterbodies) would not be removed. In accordance with the PSA, DKM would abandon the pipeline in-place for 2.9 miles of beneath ten NRHP-eligible and unevaluated historic properties crossed by the A-Line. At these locations, the pipeline would instead be cut and capped/grouted, as deemed necessary. If DKM elects to remove the pipeline segments under environmentally sensitive areas, DKM would be responsible for obtaining all applicable permits and authorizations for its project.

Visual impacts would be greatest where workspace areas are adjacent to roads and may be seen by passing motorists or from residences if vegetation that provides visual screening is removed. In accordance with the terms of the PSA, DKM would restore land to its present condition after reclamation of the pipeline is complete; however, the duration of visual impacts would depend on the type of vegetation that is cleared or altered and would be shortest in open areas where the re-establishment of vegetation following construction would be relatively rapid.

Air quality and noise associated with salvage of the A-line would be localized. Construction emissions would result from heavy equipment burning fossil fuels and fugitive dust from ground-disturbing activities, and construction noise would result from the use of heavy equipment.

C. ALTERNATIVES

In accordance with NEPA and Commission policy, we identified and evaluated alternatives to the Project to determine whether they would be reasonable and environmentally preferable to the proposed action. These alternatives include the no action alternative, system alternatives, route alternatives, and aboveground facility site alternatives. The criteria used for selecting potentially environmentally preferable alternatives are: the ability to meet the Projects objectives, technical and economic feasibility and practicality, and whether it provides a significant environmental advantage over the proposed Project.

The purpose of this evaluation is to determine whether an alternative would be preferable to the proposed action. We generally consider an alternative to be preferable to a proposed action using three evaluation criteria, as discussed in greater detail below. These criteria include whether the alternative meets the stated purpose of the project, is technically and economically feasible and practical, and offers a significant environmental advantage over a proposed action.

Our evaluation of the identified alternatives is based on project-specific information provided by the applicant; publicly available information; and our expertise and experience regarding the siting, construction, and operation of natural gas transmission facilities and their potential impact on the environment. We did not receive any comments about alternatives from the landowners, stakeholders, or any state or federal resource agencies.

Evaluation Process

Through environmental comparison and application of our professional judgement, each alternative is considered to a point where it becomes clear if the alternative could or could not meet the three evaluation criteria. To ensure a consistent environmental comparison and to normalize the comparison factors, we generally use desktop sources of information (e.g., publicly available data, GIS data, aerial imagery) and assume the same right-of-way widths and general workspace requirements. Where appropriate, we also use site-specific information (e.g., field surveys or detailed designs). As described previously, our environmental analysis and this evaluation only considers quantitative data (e.g., acreage or mileage) and uses common comparative factors such as total length, amount of collocation, and land requirements. Our evaluation also considers impacts on both the natural and human environments. Impacts on the natural environment include wetlands, forested lands, geology, and other common environmental resources. Impacts on the human environment include residences, roads, utilities, and industrial and commercial development near construction workspaces. In recognition of the competing interests and the different nature of impacts resulting from an alternative that sometimes exist (i.e., impacts on the natural environment versus impacts on the human environment), we also consider other factors that are relevant to a particular alternative or discount or eliminate factors that are not relevant or may have less weight or significance.

The purpose of the Project, which is described in greater detail in section A.2, is to ensure safe and efficient operation of Northern's existing pipeline system. Therefore, a preferable alternative must also accomplish the same goal of the proposed action.

Determining if an alternative provides a significant environmental advantage requires a comparison of the impacts on each resource as well as an analysis of impacts on resources that are not common to the alternatives being considered. The determination must then balance the overall impacts and all other relevant considerations. In comparing the impact between resources (factors), we also considered the degree of impact anticipated on each resource. Ultimately, an alternative that results in equal or minor advantages in terms of environmental impact would not compel us to shift the impacts from the current set of landowners to a new set of landowners.

One of the goals of an alternatives analysis is to identify alternatives that avoid significant impacts. In section B, we evaluated each environmental resource potentially affected by the Project and concluded that constructing and operating the Project would not significantly impact these resources. Consistent with our conclusions, the value gained by further reducing the (not significant) impacts of the Project when considered against the cost of relocating the route/facility to a new set of landowners was also factored into our evaluation.

1. No Action Alternative

The no-action alternative would result in not implementing the proposed action and would avoid the potential environmental impacts associated with the Project; however, the Project objectives would not be met. On August 25, 2016, Northern experienced a pipeline rupture in Lincoln County, Kansas, on its M640A mainline, resulting in a PHMSA Corrective Action Order. The Order required Northern to reduce the pressure on a segment of the A-Line and conduct remedial measures such as hydrostatic tests, in-line inspections and close-interval surveys to eliminate the pressure restriction placed on the affected segment. These activities would have environmental impacts associated with ground disturbance which would likely exceed the impacts associated with the Project. Northern identified abandonment of the A-Line as the remediation alternative in the Remedial Work Plan submitted to the DOT, PHMSA, Southwest Region, on April 17, 2017, in response to the Corrective Action Order CPF No. 4-2016-1010H. The no-action alternative is not preferable due to the increased potential environmental impacts and costs associated with the continued operation of the pipeline that is no longer needed to support customer needs.

2. System Alternatives

The purpose of identifying and evaluating system alternatives is to determine whether the environmental impacts associated with the construction and operation of the proposed Project could be avoided or reduced by using existing, modified, or other proposed facilities rather than constructing new facilities. System alternatives are those able to meet the objectives of the Project but use a different facility (existing or proposed) or are able to otherwise use existing

infrastructure to eliminate the need for the proposed facility. However, a viable system alternative must be technically and economically feasible as well as practicable and must satisfy interconnect requirements and the anticipated in-service date to fulfill commitments made to the Project customers.

Northern reviewed FERC's website for recently approved and pending major pipeline projects, and no new natural gas pipeline systems or modifications to existing pipeline systems are proposed for construction in the Project area. A review of existing natural gas pipeline systems did not identify any other natural gas pipelines operating within a reasonable distance of the Project area. Therefore, no other existing pipeline systems provide a viable alternative to the Project.

3. Route Alternative

Route alternatives differ from system alternatives in that they are identified to avoid impacts on sensitive environmental resources, or to address landowner concerns. Route variations tend to be short in length and close to the proposed route. For the Project, route alternatives were considered based on reduced environmental impacts. Northern sought to identify routes that utilize existing easements, fit within their multiple line rights, and maximize co-location. Northern's proposed pipeline loops are co-located almost entirely adjacent to Northern's existing pipeline facilities and primarily in locations where multiple line easement rights exist, thereby minimizing the amount of new permanent right of way that would be required.

Early in Project planning, Northern identified an alternative route for the Palmyra North D-Line Loop that would be co-located along the eastern side of its existing C-Line. The entire 2.5-mile length of the Fremont North D-Line Loop is co-located with Northern's existing pipeline system. Therefore, we did not identify any alternative routes for the Fremont North D-Line Loop.

The Palmyra Loop Alternative begins at the Palmyra Compressor Station, east of where the proposed route originates, travels north for about 243 feet, then turns to the east for another 610 feet and crosses two of Northern's existing pipelines before turning to the north. The alternative route continues north for another 1,835 feet, and crosses two additional existing Northern pipelines before beginning to travel in a northwesterly direction for another 585 feet, then turns north and crosses County Road C. About 275 feet after crossing County Road C, the route turns sharply to the west for a short stretch, then begins to travel northwesterly again for about 3,215 feet and crosses Hooper Creek. About 200 feet after crossing Hooper Creek, the alternative route turns slightly to the north/northwest for another 2,015 feet, crosses County Road B and eventually intersects with Northern's existing C-Line. Table 17 presents a comparison of the potential environmental impacts of the proposed Palmyra North D-Line Loop and the Palmyra Loop Alternative. Figure 2 below depicts the alternative route.

Table 18: Environmental Comparison of the Palmyra Loop Alternative			
Comparative Factor	**Unit**	**Proposed Route**	**Palmyra Loop Alternative**
Length	miles	1.7	1.7
Construction Workspace[a]	acres	19.7	20.7
Co-location	miles/percent	0.6/37	1.7/100
Greenfield	miles/percent	0.6/37	0.0/0
Existing Utility Crossings	number	3	4
Land Use Crossings[a]			
Agricultural	acres	16.1	16.2
Open Land	acres	2.9	3.7
Forest/Woodland	acres	0.2	0.6
Developed	acres	0.5	0.5
Waterbody Crossings	number	3	3
Wetland Crossings	miles	0.01	0.02

[a] Assumes a 100-foot-wide temporary construction right of way along the entire length of both routes; does not account for ATWS, staging areas, or access roads

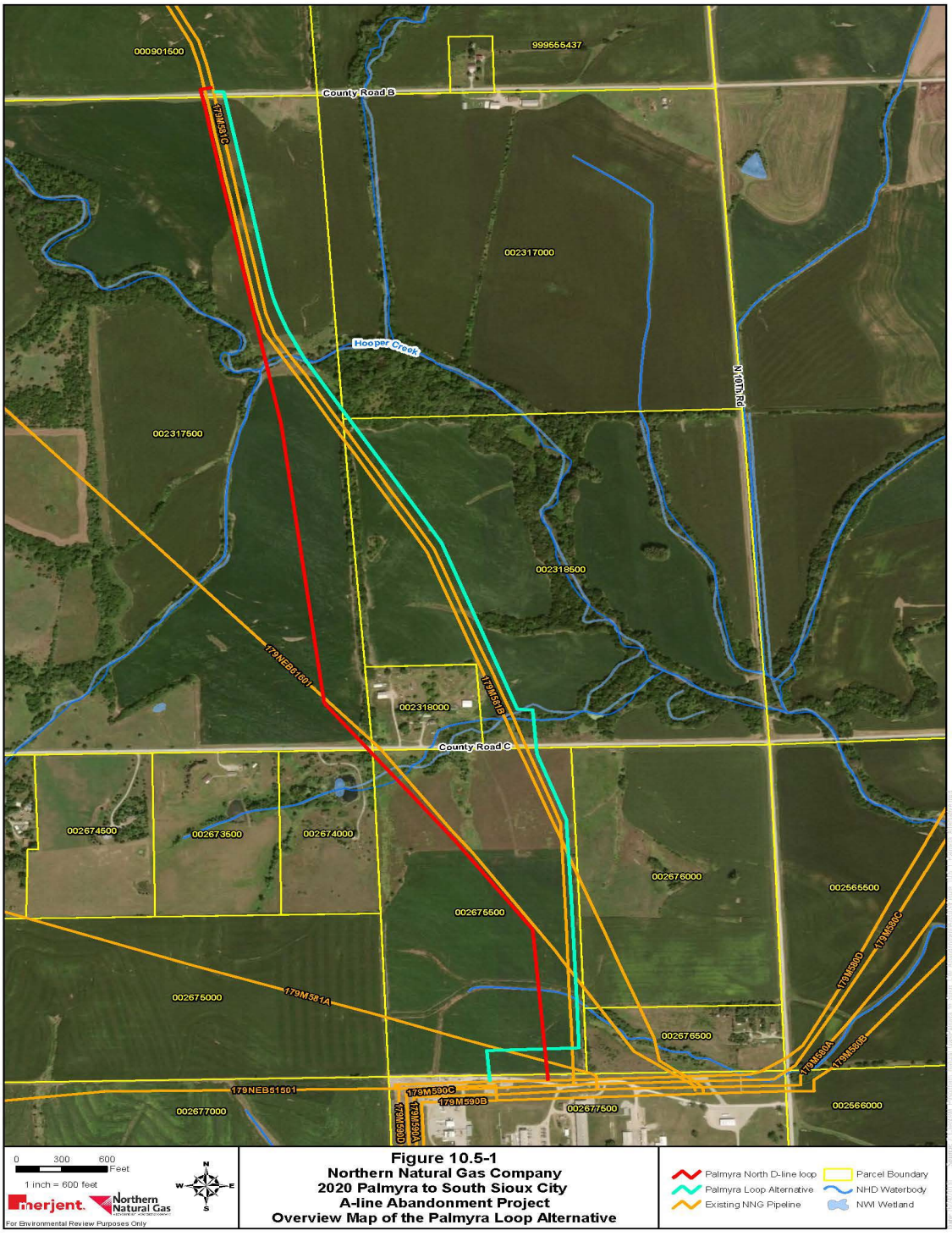

Figure 2: Palmyra Loop Alternative

The proposed Palmyra North D-Line Loop and the Palmyra Loop Alternative are both similar in length, would affect a similar amount of acreage, and would cross County Road C and County Road B. The alternative route is co-located with Northern's existing C-line for the entirety of its length, while the proposed route is co-located for approximately 0.6 mile (37 percent) of its length. Construction of the alternative route would require one additional crossing of Northern's existing lines and would impact slightly more open land and forested land than the proposed route. The alternative route and the proposed route would have similar environmental impacts. However, Northern was not able to acquire property for the alternative route. Typically, routes that involve greater collocation are preferable; however, given that Northern was unable to acquire easements for the alternative and the route alternative does not offer a significant environmental advantage over the proposed action, we are not recommending it.

4. Aboveground Facility Site Alternatives

The Project would require five new valve sites to tie the pipeline loops into the existing system, a launcher at the beginning of each loop, and a receiver at the end of the Palmyra North D-Line Loop. No other aboveground facilities are proposed for the Project.

The placement of the launcher facilities and valves within existing Northern facilities is necessary to tie the new pipeline loops into Northern's existing pipeline system. The receiver facility and valves at the terminus of the pipeline loops were sited to accommodate the guided bore crossing of public roads while minimizing the distance from the road and thereby minimizing impacts on landowners. The current Project design minimizes environmental impacts and landowner impacts to the extent practicable. Therefore, our review of the Project found no significant environmental impacts that would drive an evaluation of alternative sites for the proposed aboveground facilities.

D. CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis in this EA, we have determined that if Northern abandons, constructs, and operates the proposed facilities in accordance with its application and supplements, approval of this proposal would not constitute a major federal action significantly affecting the quality of the human environment. We recommend that the Order contain a finding of no significant impact and include the mitigation measures listed below as conditions to any Certificate/Authorization the Commission may issue.

1. Northern shall follow the construction and abandonment procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the EA, unless modified by the Order. Northern must:

    a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;
    b. justify each modification relative to site-specific conditions;

c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
d. receive approval in writing from the Director of the OEP **before using that modification**.

2. The Director of OEP, or the Director's designee, has delegated authority to address any requests for approvals or authorizations necessary to carry out the conditions of the Order, and take whatever steps are necessary to ensure the protection of environmental resources during abandonment activities and construction and operation of the Project. This authority shall allow:

   a. the modification of conditions of the Order;
   b. stop-work authority; and
   c. the imposition of any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the Order as well as the avoidance or mitigation of unforeseen adverse environmental impact resulting from Project abandonment, construction, and operation.

3. **Prior to any construction or abandonment activities**, Northern shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, EIs, and contractor personnel will be informed of the EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

4. The authorized abandonment activities and facility locations shall be as shown in the EA, as supplemented by filed alignment sheets. **As soon as they are available, and before the start of construction**, Northern shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

   Northern's exercise of eminent domain authority granted under NGA section 7(h) in any condemnation proceedings related to the Order must be consistent with these authorized facilities and locations. Northern's right of eminent domain granted under NGA section 7(h) does not authorize it to increase the size of its natural gas facilities to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. Northern shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings

with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area**.

This requirement does not apply to extra workspace allowed by the Commission's Plan and/or minor field realignments per landowner needs and requirements that do not affect other landowners or sensitive environmental areas such as wetlands.

Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

a. implementation of cultural resources mitigation measures;
b. implementation of endangered, threatened, or special concern species mitigation measures;
c. recommendations by state regulatory authorities; and
d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.

6. **Within 60 days of the acceptance of the Certificate and before construction or abandonment begins,** Northern shall file an Implementation Plan with the Secretary for review and written approval by the Director of OEP. Northern must file revisions to their plan as schedules change. The plan shall identify:

a. how Northern will implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EA, and required by the Order;
b. how Northern will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
c. the number of EIs assigned, and how Northern will ensure that sufficient personnel are available to implement the environmental mitigation;
d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;
e. the location and dates of the environmental compliance training and instructions Northern will give to all personnel involved with construction and restoration (initial and refresher training as the Project progresses and personnel change);
f. Northern personnel (if known) and specific portion of Northern's organization having responsibility for compliance;

g. the procedures (including use of contract penalties) Northern will follow if noncompliance occurs; and
h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:

    i. the completion of all required surveys and reports;
    ii. the environmental compliance training of onsite personnel;
    iii. the start of construction; and
    iv. the start and completion of restoration.

7. Northern shall employ at least one EI per construction spread. The EI shall be:

    a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;
    b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;
    c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;
    d. a full-time position, separate from all other activity inspectors;
    e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
    f. responsible for maintaining status reports.

8. Beginning with the filing of its Implementation Plan, Northern shall file updated status reports with the Secretary on a **biweekly** basis until all abandonment, construction, and restoration activities are complete. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:

    a. an update on Northern's efforts to obtain the necessary federal authorizations;
    b. the construction status of the Project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally-sensitive areas;
    c. a listing of all problems encountered and each instance of noncompliance observed by the EI during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
    d. a description of the corrective actions implemented in response to all instances of noncompliance;
    e. the effectiveness of all corrective actions implemented;

f. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and
g. copies of any correspondence received by Northern from other federal, state, or local permitting agencies concerning instances of noncompliance, and Northern's response.

9. Northern must receive written authorization from the Director of OEP **before commencing abandonment activities or construction of any Project facilities.** To obtain such authorization, Northern must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

10. Northern must receive written authorization from the Director of OEP **before placing the Project into service**. Such authorization will only be granted following a determination that rehabilitation and restoration of the right-of-way and other areas affected by the Project are proceeding satisfactorily.

11. **Within 30 days of placing the authorized facilities in service**, Northern shall file an affirmative statement with the Secretary, certified by a senior company official:

a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
b. identifying which of the conditions of the Order Northern has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

12. **Prior to construction of HDD No. 1 (Palmyra North D-Line Loop MP 0.6) and HDD No. 4 (Fremont North D-Line Loop MP 1.9)**, Northern shall file with the Secretary, for the review and written approval by the Director of OEP, an HDD noise mitigation plan to reduce the projected noise level attributable to the proposed drilling operations at the No. 1 entry site, and No. 4 entry site. During drilling operations, Northern shall implement the approved plan, monitor noise levels, document the noise levels in the biweekly status reports, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than a L_{dn} of 55 dBA at the NSAs.

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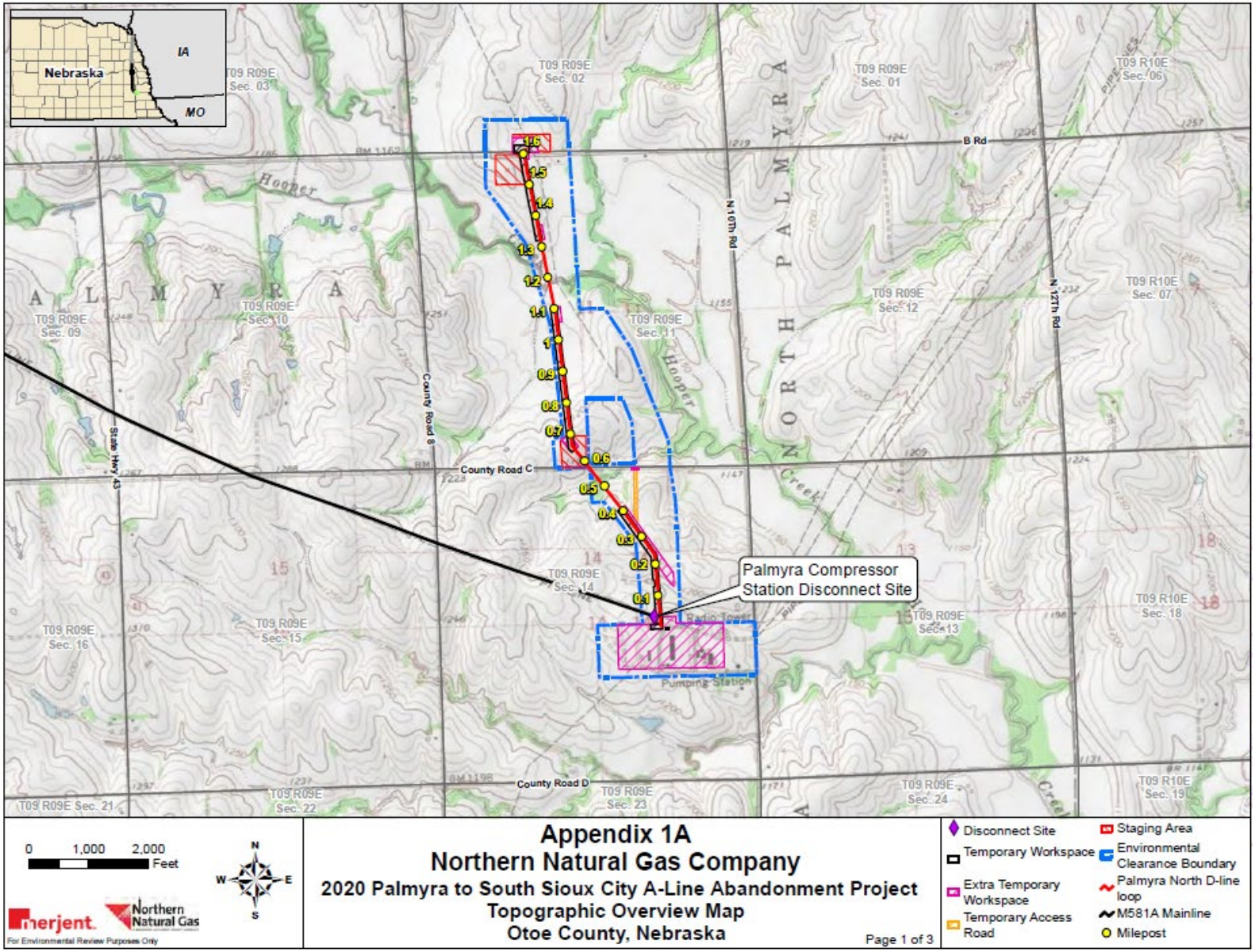
APPENDIX A

PROJECT MAPS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B Rd
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N 12th Rd
County Road 8
State Hwy 43
Hooper
Pumping Station
Radio Tower
T09 R09E Sec. 01
T09 R09E Sec. 02
T09 R09E Sec. 03
T09 R09E Sec. 09
T09 R09E Sec. 10
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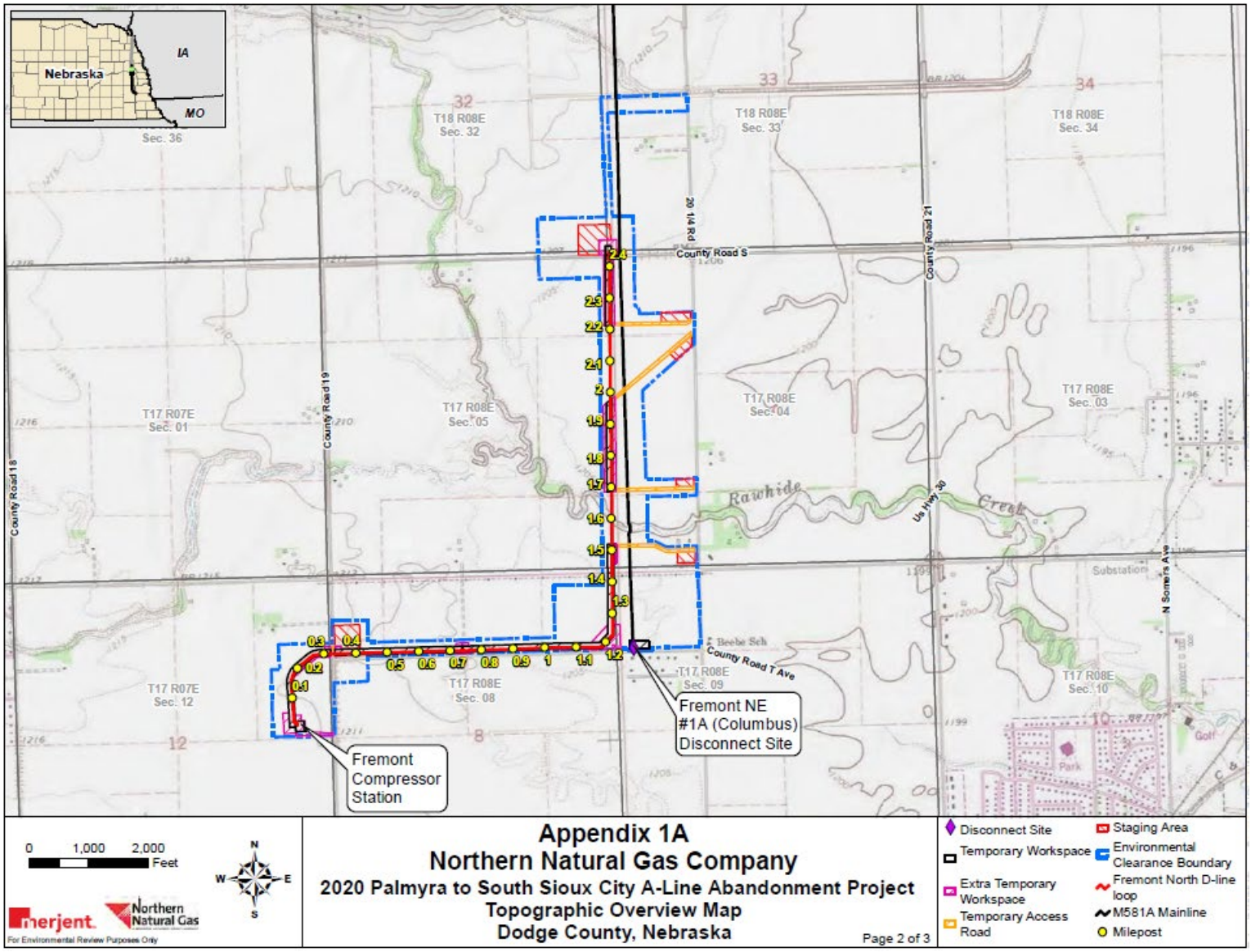
Northern Natural Gas
For Environmental Review Purposes Only
Appendix 1A
Northern Natural Gas Company
2020 Palmyra to South Sioux City A-Line Abandonment Project
Topographic Overview Map
Otoe County, Nebraska
Page 1 of 3
Disconnect Site
Temporary Workspace
Extra Temporary Workspace
Temporary Access Road
Staging Area
Environmental Clearance Boundary
Palmyra North D-line loop
M581A Mainline
Milepost


Nebraska
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Sec. 32
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Sec. 33
T18 R08E
Sec. 34
County Road S
County Road 21
County Road 19
County Road 18
T17 R07E
Sec. 01
T17 R08E
Sec. 05
T17 R08E
Sec. 04
T17 R08E
Sec. 03
Rawhide Creek
Us Hwy 30
N Somers Ave
Substation
Beebe Sch
County Road T Ave
T17 R07E
Sec. 12
T17 R08E
Sec. 08
T17 R08E
Sec. 09
T17 R08E
Sec. 10
Golf
Park
Fremont NE
#1A (Columbus)
Disconnect Site
Fremont
Compressor
Station
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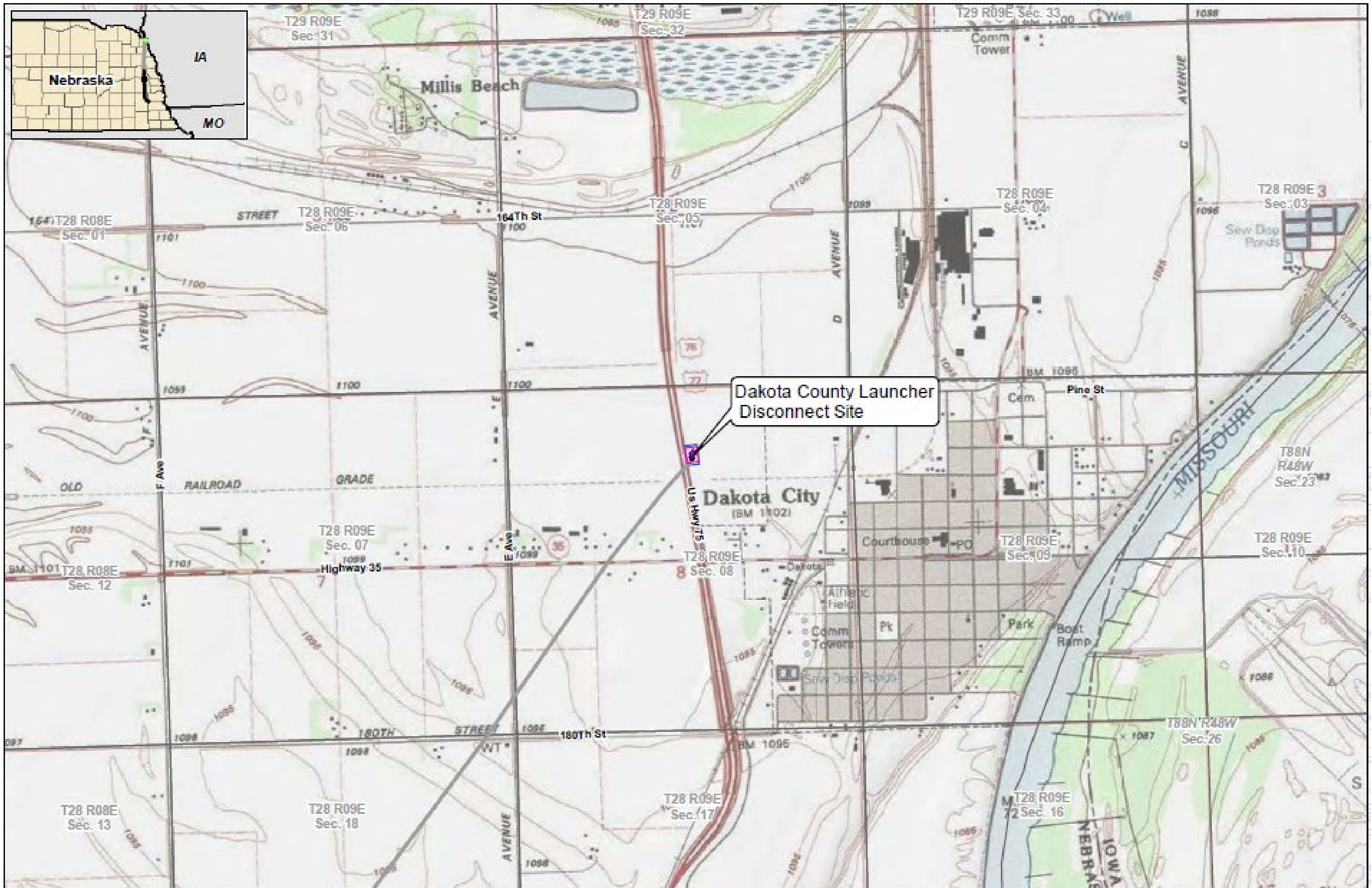
Northern Natural Gas
For Environmental Review Purposes Only
Appendix 1A
Northern Natural Gas Company
2020 Palmyra to South Sioux City A-Line Abandonment Project
Topographic Overview Map
Dodge County, Nebraska
Page 2 of 3
Disconnect Site
Temporary Workspace
Extra Temporary Workspace
Temporary Access Road
Staging Area
Environmental Clearance Boundary
Fremont North D-line loop
M581A Mainline
Milepost



0 1,000 2,000 Feet

Appendix 1A

Northern Natural Gas Company

2020 Palmyra to South Sioux City A-Line Abandonment Project

Topographic Overview Map

Dakota County, Nebraska

Page 3 of 3

- Disconnect Site
- Temporary Workspace
- Extra Temporary Workspace
- Environmental Clearance Boundary
- M570A Mainline
- Milepost

For Environmental Review Purposes Only

APPENDIX B

OVERSIZED TABLE

Table 1: Past, Present, and Reasonably Foreseeable Projects Considered for Cumulative Impacts					
Activity/Project	**Location/Nearest Project Component**	**Approximate Distance from Project (miles)**	**Description**	**Current Status/Schedule**	**Potentially Affected Resources**
Pipeline Projects					
Palmyra to Ogden A-Line Abandonment Project	Palmyra North D-Line Loop	0	Disconnection site within the Palmyra Compressor Station site for the abandonment of a portion of Northern's existing A-Line	Fall 2019	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality, (construction)
Dakota City #3 C-Line Feed and Regulator	Dakota County Launcher	0	Construction or maintenance activity under Northern's Blanket Certificate	In Progress	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality, (construction)
Lincoln C-Line Feed	Palmyra North D-Line Loop	0	Construction or maintenance activity within the Palmyra Compressor Station site under Northern's Blanket Certificate	In Progress	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality, (construction)
Phase III Highway 30 Project	Fremont North D-Line Loop	0	Lowering/concrete coating the existing D-Line to accommodate the future Highway 30 realignment	Unknown	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality, (construction)
Fall 2018 Blanket Projects; Columbus 2nd Regulatory Relief	Fremont North D-Line Loop	<0.1	Construction or maintenance activity under Northern's Blanket Certificate	In Progress	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality, (construction)
2019 Palmyra to Ogden A-Line Cathodic Protection System Modifications	Palmyra North D-Line Loop	0	Construction or maintenance activity within the Palmyra Compressor Station site under	In Progress	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise

Table 1: Past, Present, and Reasonably Foreseeable Projects Considered for Cumulative Impacts					
Activity/Project	**Location/Nearest Project Component**	**Approximate Distance from Project (miles)**	**Description**	**Current Status/Schedule**	**Potentially Affected Resources**
			Northern's Blanket Certificate		(construction), Air Quality, (construction)
Fall 2018 Blanket Projects; Woodland Hills New TBS	Palmyra North D-Line Loop	0.5	Construction or maintenance activity under Northern's Blanket Certificate	In Progress	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Land Use
Fall 2018 Blanket Projects; Woodland hills TBS Removal	Palmyra North D-Line Loop	1.5	Construction or maintenance activity under Northern's Blanket Certificate	In Progress	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife
Fall 2018 Blanket Projects; South Sioux City Yard Mods Regulated Tie-Overs	Dakota County Launcher	1.6	Construction or maintenance activity under Northern's Blanket Certificate	In Progress	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife
C-Line Tie-Over to Sioux Falls A-Line	Dakota County Launcher	1.9	Construction or maintenance activity under Northern's Blanket Certificate	In Progress	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality (construction)
Short-22-M570B- MP 60.54 RR Xing- West Side (shorted casing)	Dakota County Launcher	1.2	Construction or maintenance activity under Northern's Blanket Certificate	Proposed activity in 2020	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality (construction)
Palmyra U23-25 Second Discharge Valves	Palmyra North D-Line Loop	0	Construction or maintenance activity within the Palmyra Compressor Station site under Northern's Blanket Certificate	Proposed activity in 2020	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality (construction)
Palmyra Units 18-20 Pre/Post Lube Pump Replacement	Palmyra North D-Line Loop	0	Construction or maintenance activity within the Palmyra Compressor Station site under Northern's Blanket Certificate	Proposed activity in 2020	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality (construction)
Palmyra Units 18-20 Relief Valves	Palmyra North D-Line Loop	0	Construction or maintenance activity within	Proposed activity in 2020	Geology, Soils, Groundwater, Surface Waters, Wetlands,

Table 1: Past, Present, and Reasonably Foreseeable Projects Considered for Cumulative Impacts					
Activity/Project	**Location/Nearest Project Component**	**Approximate Distance from Project (miles)**	**Description**	**Current Status/Schedule**	**Potentially Affected Resources**
Isolation			the Palmyra Compressor Station site under Northern's Blanket Certificate		Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality (construction)
Palmyra Units 18-20 Valve Operators Replacement	Palmyra North D-Line Loop	0	Construction or maintenance activity within the Palmyra Compressor Station site under Northern's Blanket Certificate	Proposed activity in 2020	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality (construction)
Palmyra Unit 26 Relief Valves Isolation	Palmyra North D-Line Loop	0	Construction or maintenance activity within the Palmyra Compressor Station site under Northern's Blanket Certificate	Proposed activity in 2020	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality (construction)
Palmyra Unit 26 Suction Valve	Palmyra North D-Line Loop	0	Construction or maintenance activity within the Palmyra Compressor Station site under Northern's Blanket Certificate	Proposed activity in 2020	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality (construction)
Palmyra Units 21-25 Relief Valves Isolation	Palmyra North D-Line Loop	0	Construction or maintenance activity within the Palmyra Compressor Station site under Northern's Blanket Certificate	Proposed activity in 2020	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality (construction)
Palmyra Valve DBD07 Operator Replacement	Palmyra North D-Line Loop	0	Construction or maintenance activity within the Palmyra Compressor Station site under Northern's Blanket Certificate	Proposed activity in 2020	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality (construction)
Palmyra 2&3 Building Circuit Panel Upgrade	Palmyra North D-Line Loop	0	Construction or maintenance activity within the Palmyra Compressor Station site under Northern's Blanket Certificate	Proposed activity in 2020	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality (construction)

Table 1: Past, Present, and Reasonably Foreseeable Projects Considered for Cumulative Impacts					
Activity/Project	**Location/Nearest Project Component**	**Approximate Distance from Project (miles)**	**Description**	**Current Status/Schedule**	**Potentially Affected Resources**
Industrial and Commercial Developments					
DKM Salvage of Palmyra to Ogden Pipe	Palmyra North D-Line Loop	0	Removal of existing A-Line for salvage following Northern's abandonment and restoration	Proposed construction in 2020	Geology, Soils, Groundwater, Vegetation, Wildlife, Cultural Resources, Land Use, Air Quality (construction), Noise (construction)
DKM Salvage of Palmyra to South Sioux City Pipe	Disconnect Sites and Pipeline Loops	0	Removal of existing A-Line for salvage following Northern's abandonment and restoration	Proposed construction in 2021	Geology, Soils, Groundwater, Vegetation, Wildlife, Cultural Resources, Land Use, Air Quality (construction), Noise (construction)
U.S. Highway 30 Schuyler to Fremont Expressway Project	Fremont North D-Line Loop	0	Relocation of Highway 30 between North Bend and Fremont	Proposed construction after 2020	Geology, Soils, Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Cultural Resources, Land Use, Noise (construction), Air Quality (construction)
Green Star Energy; Dakota City	Dakota County Launcher	0.2	Bio-mass energy generating facility	Within 3 years	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Land Use, Noise (construction), Air Quality (construction)
Ingredion Facility	Dakota County Launcher	0.9	Plant-based protein production facility	Under construction	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife, Land Use
5-megawatt natural gas-electric production facility	Dakota County Launcher	1.1	Natural gas energy generating facility	Proposed, timing unknown	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife
Green Star Energy; South Sioux City	Dakota County Launcher	1.1	Biomass energy generating facility	Within 3 years	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife
Meat processing facilities	Dakota County Launcher	1.4	Two meat processing facilities	Proposed construction 2020	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife
Nebraska Department of Health building	Dakota County Launcher	2.8	Medical facility	Under construction, completion expected 2019	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife
Joe Morton Insurance Building	Dakota County Launcher	3.0	Office building	Under construction, completion expected 2019	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife
Fountain Springs Apartments	Fremont North D-Line Loop	3.3	50+ Residential development, 250 apartments	Proposed, unknown construction schedule	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife

Table 1: Past, Present, and Reasonably Foreseeable Projects Considered for Cumulative Impacts					
Activity/Project	**Location/Nearest Project Component**	**Approximate Distance from Project (miles)**	**Description**	**Current Status/Schedule**	**Potentially Affected Resources**
Ho Chunk Housing Development	Dakota County Launcher	3.9	200-acre residential development	Under construction, unknown completion date	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife
Surgery Center	Dakota County Launcher	4.7	Medical facility	Under construction, completion scheduled 2019	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife
SunRidge Residential Development	Fremont North D-Line Loop	4.8	160 homes and 50 apartments	Proposed, unknown construction schedule	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife
Morningside Crossing	Fremont North D-Line Loop	5.7	75 apartments	Proposed, unknown construction schedule	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife
Gallery 23 Residential Development	Fremont North D-Line Loop	5.9	250 homes	Proposed, unknown construction schedule	Groundwater, Surface Waters, Wetlands, Vegetation, Wildlife

APPENDIX C

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