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May 10, 2012

Mr. Darrell Nitschke
Executive Director
NORTH DAKOTA
PUBLIC SERVICE COMMISSION
600 East Boulevard, Dept. 408
Bismarck, ND 58505-0480

Dear Mr. Nitschke:

In re: Vantage Pipeline US LP Ten-Year Plan
PSC Case No. PU-11-109
Our File No. 66-446-001

Enclosed is one copy of late filed Exhibit #5, being the United States Department of State Environmental Assessment for the Vantage Pipeline Project.

Please feel free to contact me should you have any questions.

Sincerely yours,

BRIAN R. BJELLA

bw
Enc.

United States Department of State

Environmental Assessment

for the

VANTAGE PIPELINE PROJECT

Applicant for Presidential Permit

Vantage Pipeline US LP

Alexander Yuan, NEPA Contact & Project Manager
United States Department of State
Bureau of Oceans, Environment & Science
Room 2726
Washington, DC 20520
(202) 647-9266

May 3, 2012

DEPARTMENT OF STATE

[Public Notice 7291]

Notice of Receipt of Application for a Presidential Permit To Construct, Operate and Maintain Pipeline Facilities on the Border of the United States

Notice is hereby given that the Department of State has received an application to construct, operate and maintain pipeline facilities on the border of the United States from Vantage Pipeline US LP ("Applicant" or "Vantage"), a limited partnership duly organized under the laws of the State of Delaware. According to the application, Vantage's general partner is Vantage Pipeline US GP LLC, a Delaware limited liability company, and its limited partner is Mistral Energy US Inc., a subsidiary of Mistral Energy Inc., which is a private company based in Calgary, Alberta, Canada with over 25 years experience in the design, construction and operation of energy infrastructure projects in western Canada.

The application also states that Mistral Energy US Inc. intends to transfer its ownership position in Vantage prior to construction of the pipeline facilities to a yet to be formed limited partnership named Riverstone-Mistral US LP ("Riverstone-Mistral"). Riverstone-Mistral US LP will be a Delaware limited partnership located at: 712 Fifth Avenue, 19th Floor, New York, NY 10019. According to information submitted to the Department, the limited partners of Riverstone-Mistral US LP will be Mistral Energy US Inc, an affiliate of Mistral Energy, Inc., and Riverstone/Carlyle Fund IV, which is managed by Riverstone Holdings, LLC. The Department has also been advised that Riverstone Holdings, LLC, a Delaware entity owned by the two founders of Riverstone Holdings LLC, David Leuschen and Pierre Lepeyre, Jr, is an energy and power-focused private equity firm founded in 2000.

In a supplemental submission from the Vantage Pipeline's legal counsel, it was explained that Riverstone/Carlyle Fund IV LP is also a Delaware partnership based at the same address as Riverstone-Mistral US LP and that its General Partner is Riverstone/Carlyle Energy Partners IV, LP. The submission also explained that the Carlyle Group, a Washington DC-based asset management firm, holds an indirect minority interest (less than 20%) in Riverstone/Carlyle Energy Partners IV, LP and, through that ownership, has an indirect ownership interest in Riverstone/Carlyle Fund IV LP. Lastly, the submission explains that Riverstone/Carlyle Fund IV LP is controlled by an investment committee, which is in turn controlled by Riverstone/Carlyle Energy Partners, LP, and that Riverstone Holdings LLC is the General Partner of Riverstone/Carlyle Energy Partners, LP and thus indirectly controls Riverstone/Carlyle Fund IV LP.

The applicant seeks a Presidential Permit authorizing the construction, operation, and maintenance of a 10–12 inch diameter liquid pipeline, known as the Vantage Pipeline, at the U.S.-Canada border near Fortuna, North Dakota. Vantage seeks authorization to construct, operate and maintain this cross-border pipeline between the northern-most valve in the United States and the U.S.-Canada border (*i.e.*, the border crossing facilities).

The planned Vantage Pipeline will be a high vapor pressure ("HVP") pipeline designed to transport liquid ethane from Hess Corporation's natural gas processing plant in Tioga, North Dakota to the Alberta Ethane Gathering System (AEGS) in Alberta, Canada, a distance of approximately 430 miles. Approximately 80 of those miles of pipeline will be located in the United States.

According to the application, the ethane transported in the Vantage Pipeline is a flammable liquid that is non-corrosive, odorless, and colorless It has similar characteristics to natural gas, the fuel that is used in furnaces to heat homes. Ethane is currently used as a feedstock by the Alberta petrochemical industry and is ultimately converted to plastics, anti-freeze, rubber, detergents, solvents and like products.

The Applicant submits that the Vantage Pipeline will serve the national interest by providing the natural gas, oil and ethane-producing Bakken Formation region of North Dakota with access to the existing ethane AEGS infrastructure and market in Alberta. Currently no market exists for petrochemical grade (also known as "specification" or "pure grade") ethane in North Dakota; however, the construction of the Vantage Pipeline will make it feasible to extract the ethane byproduct from North Dakota-produced natural gas and export it for use in the Canadian petrochemical industry. The Applicant contends that the pipeline therefore will enhance exports from the United States, allow U.S. natural gas producers to recognize benefits from an existing resource from which they are not presently recognizing any financial benefit, and will contribute to the national economy in terms of job creation and tax payments.

As required by E.O. 13337, the Department of State is circulating this application to concerned federal agencies for comment. Consistent with Section 102(C) of the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4332(C)) and implementing regulations promulgated by the Council on Environmental Quality (40 CFR Parts 1500–1508) and the Department of State (22 CFR Part 161), including in particular 22 CFR 161.7(c)(1), the Department of State intends to prepare an environmental assessment (EA) to evaluate the potential environmental effects of the proposed project and to determine whether to prepare an environmental impact statement. In that connection, the applicant states that it intends to provide the Department with an environmental report in the coming weeks in support of the application. The Department also intends to conduct consultations on possible impacts to traditional or cultural properties with interested Native American tribes consistent with Section 106 of the National Historical Preservation Act (NHPA).

The purpose of this Notice of Intent is to inform the public about the application and to solicit public comments.

DATES: Interested parties are invited to submit, in duplicate, comments relative to this application on or before [30 days from publication of this notice] to Alexander Yuan, OES/ENV, NEPA Compliance Officer, Room 2627, Office of Environment, Oceans and International Environmental Affairs, Department of State, Washington, DC 20520. Comments can also be e-mailed to *YuanAW@state.gov*. The application and related documents that are part of the record to be considered by the Department of State in connection with this application are available for inspection in the Office of International Energy and Commodities Policy during normal business hours.

FOR FURTHER INFORMATION CONTACT: Alex Yuan at (202) 647–4284; or by e-mail at *YuanAW@State.gov* or Michael P. Stewart, Office of International Energy and Commodity Policy (EB/ESC/IEC/EPC), Department of State, Washington, DC 20520; or by telephone at (202) 647–1291; or by e-mail at *StewartMP@State.gov*.

Dated: January 5, 2011.

Stephen J. Gallogly,

Director, Office of International Energy and Commodity Policy, Department of State.

[FR Doc. 2011–352 Filed 1–10–11; 8:45 am]

BILLING CODE 4710–07–P

Dated: December 6, 2011.

J. Adam Ereli,

Principal Deputy Assistant Secretary, Bureau of Educational and Cultural Affairs, Department of State.

[FR Doc. 2011–31984 Filed 12–12–11; 8:45 am]

BILLING CODE 4710–05–P

DEPARTMENT OF STATE

[Public Notice 7728]

Vantage Pipeline US LP; Notice of Intent To Prepare an Environmental Assessment and Request for Comments on Environmental Issues, and To Initiate Consultation Under Section 106 of the National Historic Preservation Act for the Proposed Vantage Pipeline Project

December 9, 2011.

The staff of the United States Department of State (DOS) will prepare an environmental assessment (EA) that will discuss the environmental impacts of the Vantage Pipeline Project involving construction, operation, and maintenance of facilities at the U.S.-Canada border by Vantage Pipeline US LP (Vantage) in Williams and Divide Counties, North Dakota. This EA will be used by the DOS in its decision-making process to determine whether the project would serve the national interest and be issued a Presidential Permit.

This notice announces the opening of the scoping process the DOS will use to gather input from the public and interested agencies on the project. Your input will help the DOS staff determine what issues need to be evaluated in the EA. Please note that the scoping period will close on January 17, 2011.

This notice is being sent to the DOS' current environmental mailing list for this project. State and local government representatives are asked to notify their constituents of this planned project and encourage them to comment on their areas of concern.

If you are a landowner receiving this notice, you may have already been or may be contacted by a pipeline company representative about the acquisition of an easement to construct, operate, and maintain the proposed facilities. The company would seek to negotiate a mutually acceptable agreement. However, if the project is approved by the DOS, that approval conveys with it the right of eminent domain. Therefore, if easement negotiations fail to produce an agreement, the pipeline company could initiate condemnation proceedings where compensation would be determined in accordance with state law.

Additionally, the DOS has determined that issuance of a Presidential Permit for the Vantage Pipeline Project triggers review under Section 106 of the National Historic Preservation Act and is consequently initiating the required consultation under that statute. Consultation will be conducted with State Historic Preservation Officers, Indian tribes, and the Advisory Council on Historic Preservation, and other consulting parties, as appropriate, to determine the locations (if any) of potential sites for inclusion on the National Register of Historic Places as well as the potential eligibility and findings of effect for cultural resources identified within the Vantage Pipeline Project Area of Potential Effect.

A fact sheet prepared by the Federal Energy Regulatory Commission (FERC) entitled "An Interstate Natural Gas Facility On My Land? What Do I Need To Know?" is available for your review on the DOS' Web site for the project (see the Additional Information section, below). Although the proposed Vantage project involves an ethane pipeline, many of the typically asked questions addressed in the fact sheet also apply to this project. It is also available for viewing on the FERC Web site (*http://www.ferc.gov*).

Summary of the Proposed Project

Vantage proposes to construct and operate 77.4 miles of 10-inch-diameter ethane [1] pipeline in Williams and Divide Counties, North Dakota. The project would also include the installation of mainline valves at seven locations along the pipeline and the use of various ancillary facilities (*e.g.*, access roads, yards). According to Applicant, the Vantage Pipeline Project would serve the national interest by providing the natural gas, oil, and ethane-producing Bakken Formation region of North Dakota with access to the existing ethane infrastructure and market associated with the Alberta Ethane Gathering System in Alberta. Currently no market exists for petrochemical grade (also known as "specification" or "pure grade") ethane in North Dakota; however, the construction of the Vantage Pipeline will make it feasible to extract the ethane byproduct from North Dakota-produced natural gas and export it for use in the Canadian petrochemical industry. The Applicant contends that the pipeline will therefore enhance exports from the United States, allow U.S. natural gas producers to recognize benefits from an existing resource from which they are not presently recognizing any financial benefit, and will contribute to the national economy in terms of job creation and tax payments.

The general location of the project facilities is at *http://www.vantagepipeline.state.gov.*

Land Requirements for Construction

Construction of the proposed facilities would disturb about 700 acres of land for the aboveground facilities and the pipeline. Following construction, about 280 acres would be maintained for permanent operation of the project's facilities; the remaining acreage would be restored and allowed to revert to former uses.

The EA Process

The National Environmental Policy Act (NEPA) requires the DOS take into account the environmental impacts that could result from the approval of a Presidential Permit authorizing construction, operation, and maintenance of pipeline facilities of natural gas liquids to be located at the international border of the United States and Canada. NEPA also requires the DOS to discover and address concerns the public may have about proposals. This process is referred to as "scoping." The main goal of the scoping process is to focus the analysis in the EA on the important environmental issues. By this notice, the DOS requests public comments on the scope of the issues to address in the EA. All comments received will be considered during the preparation of the EA.

In the EA, the DOS will discuss impacts that could occur as a result of the construction and operation of the proposed project under these general headings:

- Geology and soils;
- Water resources and wetlands;
- Vegetation and wildlife (including endangered and threatened species);
- Land use, recreation, and visual resources;
- Socioeconomics;
- Cultural resources;
- Air quality and noise;
- Public safety; and
- Cumulative impacts.

The DOS will also evaluate reasonable alternatives to the proposed project or portions of the project, and make recommendations on how to lessen or avoid impacts on the various resource areas.

[1] According to the application, the ethane transported in the Vantage Pipeline is a flammable liquid that is non-corrosive, odorless, and colorless. It has similar characteristics to natural gas, the fuel that is used in furnaces to heat homes. Ethane is currently used as a feedstock by the Alberta petrochemical industry and is ultimately converted to plastics, anti-freeze, rubber, detergents, solvents, and like products.

The DOS' independent analysis of the issues will be presented in the EA. The EA will be placed in the public record and, depending on the comments received during the scoping process, may be published and distributed to the public. A comment period will be allotted if the EA is published for review. The DOS will consider all comments on the EA before it issues a Presidential Permit. To ensure your comments are considered, please carefully follow the instructions in the Public Participation section.

With this notice, the DOS is asking agencies with jurisdiction and/or special expertise with respect to environmental issues to formally cooperate with DOS in the preparation of the EA. These agencies may choose to participate once they have evaluated the proposal relative to their responsibilities. Agencies that would like to request cooperating agency status should follow the instructions for filing comments provided under the Public Participation section of this notice.

During this scoping period, the DOS also plans to use the scoping process to help identify historic preservation issues for consideration under Section 106 of the National Historic Preservation Act and its implementing regulations (Title 36 Code of Federal Regulations Part 800).

Public Participation

You are encouraged to become involved in this process and provide your specific comments or concerns about the proposed project. By becoming a commenter, your concerns will be considered by the DOS and addressed appropriately in the EA. Your comments should focus on the potential environmental impacts, reasonable alternatives (including alternative facility sites and alternative pipeline routes), and measures to avoid or lessen environmental impacts. Parties interested in being involved in Section 106 consultation should also contact the DOS. The more specific your comments, the more useful they will be. To ensure that your comments are timely and properly recorded, please send your comments so they will be received on or before January 17, 2011.

For your convenience, there are two methods that you can use to submit your comments to the DOS. In all instances please reference the project (*i.e.,* Vantage) with your submission. The DOS encourages electronic filing of comments.

(1) You may file a paper copy of your comments at the following address: Alexander Yuan, OES/ENV, NEPA Compliance Officer, P.O. Box 18500, Minneapolis, MN 55418, REFERENCE: VANTAGE; or

(2) You may email comments to *AlexanderYuan@merjent.com.*

Environmental Mailing List

The environmental mailing list includes Federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; Native American Tribes; other interested parties; and local libraries and newspapers. This list also includes all affected landowners who are potential right-of-way grantors, whose property may be used temporarily for project purposes, and anyone who submits comments on the project. The DOS will update the environmental mailing list as the analysis proceeds to ensure that it sends the information related to this environmental review to all individuals, organizations, and government entities interested in and/or potentially affected by the proposed project.

Additional Information

The application and related documents that are part of the record to be considered by the DOS in connection with this application, including environmental information and associated maps, are downloadable from a Web site that is being established for this purpose: *http://www.vantagepipeline.state.gov.*

A Vantage hosted project Web site is also available at *http://www.vantagepipeline.com.* The Vantage Pipeline Project toll free number is 1–(877) 918–6818 (United States).

Dated: December 7, 2011.

George N. Sibley,

Director, Office of Environmental Policy, Bureau of Oceans and International, Environmental and Scientific Affairs, U.S. Department of State.

[FR Doc. 2011–31964 Filed 12–12–11; 8:45 am]

BILLING CODE 4710–09–P

DEPARTMENT OF STATE

[Public Notice: 7713]

U.S. Department of State Advisory Committee on Private International Law (ACPIL): Public Meeting on Electronic Commerce

The Department of State, Office of Legal Adviser, Office of Private International Law would like to give notice of a public meeting to discuss electronic transferable records. Working Group IV (international electronic commerce) of the United Nations Commission on International Trade Law (UNCITRAL) met October 10–14, 2011, to discuss matters relating to electronic transferable records. A report from that meeting, once it is published, should be available at *http://www.uncitral.org/uncitral/en/commission/working_groups/4Electronic_Commerce.html.*

The ACPIL public meeting will discuss relevant rules applicable to electronic transferable records, current practice involving the use of electronic transferable records, and potential areas in which work by UNCITRAL could be beneficial.

Time and Place: The public meeting will take place on Friday, January 6, 2012, from 10 a.m. to 2 p.m. EST in Room 1207 in the Department of State's Harry S. Truman Building, 2201 C Street NW., Washington, DC 20520. If you are unable to attend the public meeting and would like to participate from a remote location, teleconferencing will be available.

Public Participation: This meeting is open to the public, subject to the capacity of the meeting room. Access to the meeting building is controlled. Persons wishing to attend in person or telephonically should contact both Tricia Smeltzer (*SmeltzerTK@state.gov*) and Niesha Toms (*TomsNN@state.gov*) of the Office of the Assistant Legal Adviser for Private International Law, and provide your name, affiliation, email address, and mailing address. If you would like to participate in person, please also provide your date of birth, citizenship, and driver's license or passport number for entry in the building. Members of the public who are not pre-cleared might encounter delays with security procedures. Personal data from the public is requested pursuant to Public Law 99–399 (Omnibus Diplomatic Security and Antiterrorism Act of 1986), as amended; Public Law 107–56 (USA PATRIOT Act); and Executive Order 13356. The purpose of the collection is to validate the identity of individuals who enter Department facilities. The data will be entered into the Visitor Access Control System (VACS–D) database. Please see the Privacy Impact Assessment for VACS–D at *http://www.state.gov/documents/organization/100305.pdf* for additional information. A member of the public needing reasonable accommodation should advise either of the aforementioned contacts not later than December 27, 2011.

United States Department of State

Environmental Assessment

for the

VANTAGE PIPELINE PROJECT

Applicant for Presidential Permit

Vantage Pipeline US LP

Alexander Yuan, NEPA Contact & Project Manager
United States Department of State
Bureau of Oceans, Environment & Science
Room 2726
Washington, DC 20520
(202) 647-9266

May 3, 2012

COVER SHEET
ENVIRONMENTAL ASSESSMENT
for the
VANTAGE PIPELINE PROJECT

May 3, 2012
Subject: Environmental Assessment for the Vantage Pipeline Project

The U.S. Department of State (DOS) has issued an environmental assessment (EA) for the Vantage Pipeline Project (Project) for public review. The DOS is the lead federal agency and is acting consistent with the National Environmental Policy Act.

The proposed Project is to construct and operate an ethane pipeline and related facilities at the international border of the United States and Canada, originating from a source near Tioga, North Dakota, United States, extending northwest through Saskatchewan, Canada, and terminating near Empress, Alberta, Canada. The proposed Project would traverse Williams and Divide Counties, North Dakota. The DOS receives and considers applications for Presidential Permits for such pipeline border crossings and associated facilities consistent with Executive Order 13337, as amended (69 Federal Register [FR] 25299).

On November 15, 2010, Vantage Pipeline US LP (Vantage) applied to the DOS for a Presidential Permit for the construction, operation, and maintenance of pipeline facilities on the United States-Canada border for the transportation of ethane. On January 11, 2011, the DOS issued a *Notice of Receipt of Application for a Presidential Permit to Construct, Operate and Maintain Pipeline Facilities on the Border of the United States* in the FR (Volume 76, No. 7, page 1659). On August 19, 2011, the DOS issued to the public and parties listed on the environmental mailing list the *Notice of Intent to Prepare an Environmental Assessment and Request for Comments on Environmental Issues, and to Initiate Consultation Under Section 106 of the National Historic Preservation Act for the Proposed Vantage Pipeline Project* (NOI). On December 13, 2011, the DOS also issued the NOI (dated December 9, 2011) in the FR (Volume 76, No. 239, page 77583). The NOI provided the public and agencies with a description of the proposed action, invited public participation in the scoping process, and solicited public comments for consideration in establishing the scope and content of the Project's EA.

The EA describes the proposed Project, including its anticipated impacts and alternatives, and addresses comments received during the public scoping period and additional information received from Vantage.

The EA has been issued to the public and parties listed on the environmental mailing list, and is available for download from the DOS Project-related website (http://www.vantagepipeline.state.gov/).

For further information on the Project EA, contact Alexander Yuan using the contact information provided below.

Alexander Yuan
NEPA Coordinator, Vantage EA Project Manager
U.S. Department of State, OES/ENV
2201 C St. NW, Room 2726
Washington, DC 20520
Telephone: 202-647-4284
Email: YuanAW@state.gov

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
ACHP	Advisory Council on Historic Preservation
ADC	Animal Damage Control
AEGS	Alberta Ethane Gathering System
Agreement	Conservation Agreement
APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act
ATWS	additional temporary workspace
BA	Biological Assessment
BEGPA	Bald and Golden Eagle Protection Act
BMP	best management practice
bpd	barrels per day
Bcf	billion cubic feet
CAA	Clean Air Act
CCF	central control facility
CEQ	Council on Environmental Quality
CH_4	Methane
CO	carbon monoxide
CO_2	carbon dioxide
USACE	U.S. Army Corps of Engineers
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CWA	Clean Water Act
dBA	decibels on the A-weighted scale
DOS	U.S. Department of State
DOT	U.S. Department of Transportation
dS/m	deci-siemens per meter
EA	Environmental Assessment
EC	electrical conductivity
EI	environmental inspector
EO	Executive Order
EPA	Environmental Protection Agency
EPP	Environmental Protection Plan
ESA	Endangered Species Act
FR	Federal Register
FSA	Farm Service Agency
FWS	U.S. Fish and Wildlife Service
GHG	greenhouse gas
GRP	Grasslands Reserve Program
GWP	Global-warming potential
HAP	hazardous air pollutant
HCA	high consequence area
Hess	Hess Corporation
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
L_n	nighttime noise
MBTA	Migratory Bird Treaty Act
MCL	drinking water standard
mg/L	miligrams per liter

MLBV	mainline block valve
MLRA	Major Land Resource Area
Mmcfd	million cubic feet per day
MP	Milepost
N_2O	nitrous oxide
Na^+	Sodium
NAAQS	National Ambient Air Quality Standards
NDCWCS	North Dakota Comprehensive Wildlife Conservation Strategy
NDDAQ	North Dakota Department of Health, Air Quality Division
NDDOT	North Dakota Department of Transportation
NDGF	North Dakota Game and Fish Department
NDHD	North Dakota Health Department
NDPA	North Dakota Pipeline Authority
NDPSC	North Dakota Public Service Commission
NDSWC	North Dakota State Water Commission
NEB	National Energy Board
NGL	natural gas liquid
NHPA	National Historic Preservation Act
NID	National Interest Determination
NO_2	nitrogen dioxide
NOI	Notice of Intent to Prepare an Environmental Assessment and Request for Comments on Environmental Issues, and to Initiate Consultation Under Section 106 of the National Historic Preservation Act for the Proposed Vantage Pipeline Project
NOVA	NOVA Chemicals Corporation
Nox	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	noise-sensitive area
NWP	Nationwide Permit
O_3	Ozone
OPS	Office of Pipeline Safety
Pb	Lead
PEM	palustrine emergent
PEMA	palustrine emergent temporarily flooded
PEMB	palustrine emergent saturated wetlands
PEMC	palustrine emergent seasonally flooded wetlands
PEMF	palustrine emergent deep marshes
PFYC	Probable Fossil Yield Class
PHMSA	Pipelines and Hazardous Materials Safety Administration
PLOTS	Private Land Open to Sportsman
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	Vantage Pipeline Project
PUB	palustrine unconsolidated bottom
RCRA	Resource Conservation and Recovery Act
RV	recreational vehicle
SAR	Sodium Adsorption Ratio
SCADA	supervisory control and data acquisition
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide

SPCC Plan	Spill Prevention, Control and Countermeasure
SSURGO2	Soil Survey Geographic
SWPPP	Stormwater Pollution Prevention Plan
TCPs	Traditional Cultural Properties
TDS	total dissolved solids
THPO	Tribal Historic Preservation Officer
TMDL	Total Maximum Daily Load
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
Vantage	Vantage Pipeline US LP
VOC	volatile organic compound
WHPA	wellhead protection area
WPA	Waterfowl Production Area
WRP	Wetlands Reserve Program

ES.0 EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The proposed Vantage Pipeline is a high vapor pressure pipeline that would carry ethane from a source near Tioga, North Dakota, United States, northwest through Saskatchewan, Canada, to a site near Empress, Alberta, Canada. The pipeline would link a growing supply of ethane from North Dakota to markets in Alberta, Canada. More specifically, the Vantage Pipeline would have the capacity to deliver an initial rate of 40,000 barrels per day (bpd), expandable to 60,000 bpd, of liquid ethane from existing natural gas facilities in North Dakota to the Alberta Ethane Gathering System (AEGS) in Alberta, Canada. The entire proposed Vantage Pipeline in the United States would be approximately 79.8 miles long.

In the United States, Vantage Pipeline US LP (Vantage) has applied for a Presidential Permit for the construction, operation, and maintenance of a pipeline facility at the United States border to export liquid ethane to Canada. The U.S. Department of State (DOS) receives and considers applications for Presidential Permits for such pipeline border crossings and associated facilities pursuant to the President's constitutional authority over foreign relations, and as Commander-in-Chief, which authority the President delegated to DOS in Executive Order (EO) 13337, as amended (Federal Register, Volume 69, No. 87, page 25299). For liquid hydrocarbon pipelines, such as the proposed ethane pipeline, the President, through EO 13337, directs the Secretary of State to decide whether a project is in the national interest before a Presidential Permit is granted.

The determination of national interest involves consideration of many factors, including: energy security; environmental, cultural, and economic impacts; foreign policy; and compliance with relevant federal regulations. Before making a decision, the DOS will consult with the eight federal agencies identified in EO 13337: the Departments of Energy, Defense, Transportation, Homeland Security, Justice, Interior, and Commerce, and the Environmental Protection Agency (EPA). The DOS will also solicit public input on the national interest determination by accepting written comments.

In the United States, Vantage proposes to construct and operate 79.8 miles of 10-inch-diameter ethane pipeline in Williams and Divide Counties, North Dakota. Vantage's project would also include the installation of mainline block valves (MLBVs) at eight locations along the pipeline and the use of various ancillary facilities (e.g., access roads, yards). The pipeline and collective facilities are referred to as the Vantage Pipeline Project (Project). Vantage proposes to begin construction in the summer of 2012 and anticipates that the Project would go into service on or before April 1, 2013. The DOS, as the lead federal agency, has prepared this Environmental Assessment (EA) to determine whether to prepare a further Environmental Impact Statement or make a Finding of No Significant Impacts consistent with the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.) and its implementing regulations.[1]

This EA is specific to the U.S. portion of the Project, and provides an assessment of the existing environment along the proposed pipeline route, an analysis of human and environmental impacts that could potentially result from pipeline right-of-way preparation, construction, operation, and maintenance of the proposed pipeline facilities, and a summary of the protection and restoration measures to be implemented to avoid and/or minimize environmental impacts.

In addition to the proposed facilities, the DOS has determined that the operation of a heater at the existing Tioga Gas Plant and electric transmission lines and interconnects for the MLBVs would be

[1] For more information on NEPA see "A Citizen's Guide to NEPA" Council on Environmental Quality (CEQ) (December 2007), which can be downloaded at http://www.ceq.hss.doe.gov.

connected actions for the purposes of this review consistent with the NEPA and 40 Code of Federal Regulations (CFR) 1508.25(a)1. The EA describes the connected actions and the associated impacts.

In addition to approval from the U.S., the proposed Vantage Pipeline requires approval from the Canadian National Energy Board. In Canada, the proposed system would include the construction of approximately 350 miles of pipeline in Saskatchewan, Canada and approximately 2 miles of pipeline in Alberta, Canada, one pump station located at the midpoint of the pipeline between Lafleche and Assiniboia, Saskatchewan, one pump station located at the terminus near Empress, Alberta, and other associated facilities. The Canadian National Energy Board approved the Canadian portion of the pipeline project on January 19, 2012.

ES.2 ALTERNATIVES

The DOS considered the No Action Alternative; System Alternatives; two potential Alternative Routes; two potential Route Variations; and Alternative MLBV Locations based on information provided in Vantage's Presidential Permit application and supplemental submittals related to the application, comments received in the scoping process, and information obtained from research of relevant available information conducted by the DOS and its third-party contractor.

As gas production in North Dakota increases, much of it is being burned into the atmosphere (i.e., flared) because there is insufficient infrastructure to accommodate natural gas gathering, compression, and processing. While hard data are lacking, one estimate suggests that flared gas in North Dakota produced two million tons of CO_2 last year, which is equivalent to the emissions created by over 350,000 extra cars on the road, and that flared gas cost the State of North Dakota about $110 million in revenue in 2011 (Reuters, 2012). By processing the natural gas to separate out the ethane and installing infrastructure such as a pipeline to transport the ethane extracted, more of the product can be utilized, lowering the incentive to continue flaring.

ES.3 PURPOSE AND NEED FOR THE PROPOSED PROJECT

Vantage's stated purpose of the Project is to transport ethane from the existing Tioga Gas Plant in the Williston Basin of North Dakota to Alberta, Canada. Vantage believes that increasing ethane supplies in the Williston Basin and demonstrated interest from the petrochemical industry in Alberta to purchase these increased supplies, as well as existing and forecasted supply and demand, would make the Project economically viable. The Project would also provide the natural gas, oil, and ethane-producing Bakken Formation region of North Dakota with access to an existing ethane infrastructure and market associated with the AEGS in Alberta. Vantage believes exports of ethane from the United States would increase, which it contends is consistent with the EO for the National Export Initiative (March 11, 2010). Vantage also states that the Project would allow U.S. natural gas producers to recognize additional revenue from an existing resource and would thus is anticipated to contribute to the national economy through the creation of jobs and additional tax revenue.

ES.4 POTENTIAL IMPACTS AND MITIGATION

The environmental impact of constructing and operating the proposed Project would vary in duration and significance. Using criteria recognized by other federal and state agencies such as the Federal Energy Regulatory Commission and Bureau of Land Management, the DOS considered four levels of impact duration: temporary, short-term, long-term, and permanent. An impact is considered significant if it would result in a substantial adverse change in the physical environment. Additionally, the Project's effects were classified as either direct or indirect consistent with the CEQ's guidelines on NEPA (Section 1508.8), depending on the activity and the resource.

As part of its Presidential Permit application, Vantage provided information regarding the existing environment in which the Project would operate and the Project's impacts on environmental resources. Additionally, Vantage, as part of its proposal, agreed to implement certain measures to reduce impacts. The DOS and its third-party contractor have independently analyzed the information provided by Vantage, assessed the Project's impacts on environmental resources, and evaluated the proposed mitigation measures for their applicability using historical pipeline project data, information obtained during agency consultations, and subject matter expert knowledge. Project impacts were based on the DOS's analysis of the environmental impact of the Project and the following assumptions:

- Vantage would comply with all applicable laws and regulations;
- the facilities would be constructed as described in the EA; and
- Vantage would implement the mitigation measures identified in its application materials and supplemental information submittals to the DOS, which include the Environmental Protection Plan (EPP).[2] The DOS and its third-party contractor have reviewed Vantage's EPP.

ES.4.1 Geology

The Project would cross deposits of petroleum, coal, lignite, trace metal, clay, sand, gravel, scoria, and salt bearing formations. Geologic hazards in the Project area potentially include mass movement, flooding, and seismic events. Construction activities are likely to have temporary and direct impacts on the shallow subsurface geologic environment. During operation, direct impacts on subsurface geologic resources may also occur to the extent erosion is caused by Vantage's vehicles. To reduce potential impacts on the geologic environment and resulting from geologic hazards, Vantage would grade as necessary across slope areas; install temporary sediment barriers such as silt fence and straw bales at environmentally sensitive areas; install temporary slope breakers across the right-of-way during grading; and install permanent slope breakers during restoration. Based on a review of Natural Resources Conservation Service and U.S. Geological Service data, the resources identified in the Project area, and the pipeline construction methods proposed by Vantage, the potential for geologic hazards to significantly affect construction or operation of the proposed Project is anticipated to be low. Further, mineral resources (oil and gas, salts, etc.) associated with the underlying bedrock are found at a depth far below the proposed pipeline trench and installation depth and are anticipated to be unaffected during Project construction and operation.

The Project may encounter paleontological resources during construction and fossil resources in the underlying glacial deposits may be exposed. To reduce the potential impacts associated with the loss of fossil resources, Vantage would instruct construction personnel about the types of fossils that might be encountered and the steps to take (e.g., agency notification) if fossils are uncovered and to determine if additional mitigation is required.

ES.4.2 Soils

Construction activities may impact soil resources, exposing the soil to the effects of wind, rain, and runoff, which increases the potential for soil erosion and sedimentation in sensitive areas. Trenching may bring stones or rock fragments to the surface that could interfere with agricultural practices and

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[2] The EPP has not been included as an attachment to this EA. However, a draft copy provided by Vantage is available for review on the DOS's website for the Project at: http://www.vantagepipeline.state.gov/. See Vantage Documents and "Environmental Data Provided by Vantage in Support of an Application for a Presidential Permit (March 2011)."

hinder restoration of the right-of-way. Construction activities may also affect soil fertility and facilitate the dispersal and establishment of weeds. Contamination from spills or leaks of fuels, lubricants, and coolant from construction and operation equipment could adversely affect soils.

To reduce the potential for construction- and operation-related impacts on soils, Vantage would implement various project-specific plans, including its EPP; Soil Conditions Contingency Plan; stormwater best management practices (BMPs) as stipulated in a Project-specific Stormwater Pollution Prevention Plan (SWPPP); Soil Erosion Contingency Plan; and Spill Prevention, Control and Countermeasure (SPCC) Plan; and would comply with all conditions of the Construction Stormwater Permit required by the North Dakota Health Department (NDHD). In addition, Vantage would develop and require contractor compliance with a Project-specific Fuels and Hazardous Materials Spill Contingency Plan to handle initial spill response and reporting, spill clean-up procedures, and special situations such as spills next to waterbodies. Vantage would implement topsoil handling protocols, and all soils would be returned to their original locations.

During operation, direct impacts on soils may also occur as a result of vehicles used to periodically conduct inspection and vegetation maintenance activities along the right-of-way. However, based on recent pipeline projects and the inspection requirements set forth by the U.S. Department of Transportation (DOT) in 49 CFR 195, these activities would be limited in scale and time, and are anticipated to result only in temporary, minor, and localized impacts on soils.

ES.4.3 Groundwater

Impacts on groundwater resources during construction would be temporary and limited to that portion of a groundwater system(s) that is near the land surface and near or within the Project construction work area. There are no designated federal or state sole-source aquifers in North Dakota and the Project area. Also, no wells or springs were identified within 150 feet of the Project. During construction, if the groundwater table is found to be less than 5 feet below the land surface, dewatering may be necessary, which would temporarily appropriate groundwater resources creating a short-term fluctuation in groundwater levels, and a change in shallow groundwater flow direction. These impacts would be minor, temporary, and localized to the construction area.

Project construction, including fueling activities and accidental spills of hazardous substances, could potentially impact the water quality and capacity of nearby private water supply wells. Vantage would implement its SPCC Plan to mitigate for potential spills. Further, while it is not anticipated that previously existing contamination would be encountered, Vantage would dispose of or mitigate any hazardous materials uncovered during construction consistent with applicable federal, state, and local requirements. Water appropriation for hydrostatic testing would be from an existing well at the Tioga Gas Plant and is not expected to have a long-term or adverse impact on the source aquifers groundwater quantity or quality.

Operation of the pipeline is not anticipated to significantly impact groundwater resources.

ES.4.4 Surface Water and Wetlands

The Project is located in the Northwestern Glaciated Plains ecoregion and would cross the prairie pothole region of the Missouri Coteau. Waterbodies crossed by the Project include intermittent and ephemeral drainages that are more characteristic of wetlands. The wetland type and area affected by construction and operation of the Project would be about 1.0 acre of palustrine emergent based on National Wetlands Inventory data. Vantage would minimize direct impacts on wetlands by installing the pipeline using the horizontal bore method under the feature with the entrance and exit points located

outside the wetland boundaries. Wetlands would not be filled or permanently lost as a result of operation of the Project. Therefore, surface disturbance to wetland areas would not occur, and it is expected that the value and function of wetland areas would not be affected by construction or operation of the Project.

Stormwater runoff from the construction area could indirectly introduce contaminants and sediment into waterways and negatively impact aquatic resources. Vantage would be required, as part of its permitting process with the NDHD, to develop and implement the BMPs outlined in a Project-specific SWPPP. Vantage has also committed to developing with the construction contractor a Project-specific SPCC Plan that would be implemented during construction to mitigate for accidental spills during construction, including: response, containment, reporting, and cleanup measures.

Because Vantage would hydrostatically test the pipeline using water obtained from a high capacity well at the Tioga Gas Plant, as opposed to appropriating it from a nearby lake or river, significant impacts on surface waters or wetlands are not anticipated as a result of hydrostatic testing activities. No waterbodies or wetlands are anticipated to be affected by construction and operation of the MLBVs, access roads, and contractor/pipe storage yards proposed for the Project.

ES.4.5 Fisheries

No game or recreational fisheries are present in the waterbodies crossed by the Project, and no known fisheries considered significant by the North Dakota Game and Fish Department are anticipated to be affected by construction and operation of the Project. Further, no essential fish habitat under the jurisdiction of the U.S. Fish and Wildlife Service (FWS) and no naturally reproducing or stocked trout streams are located in the Project area. To minimize potential impacts on downstream and aquatic resources, Vantage would cross waterbodies/wetlands using the horizontal bore method. Potential impacts from sedimentation, turbidity, and potential contaminants encountered during and after construction would be minimized by Vantage's implementation of the measures included in its EPP. Further, Vantage would be required to develop and implement a Project-specific SWPPP as part of the NDHD permitting process.

Vantage would hydrostatically test the pipeline to find leaks and verify the integrity of the pipeline using water obtained from a high capacity well at the Tioga Gas Plant. Impacts on fishery resources are not anticipated because these hydrostatic testing activities would ensure the pipeline is sealed. No fisheries are anticipated to be affected by construction and operation of the MLBVs, access roads, and contractor/pipe storage yards proposed for the Project.

ES.4.6 Vegetation

Agriculture is the most extensive land use in the Project area. The primary impact of construction and operation of the Project on vegetation would be the short- to long-term alteration of cover on managed hay land, grassland, and rangeland. Potential impacts from construction would be minimized by the implementation of BMPs outlined in the Vantage's EPP. Further, Vantage would be required to develop and implement a Project-specific SWPPP as part of the NDHD permitting process. The temporary construction right-of-way and additional temporary workspace (ATWS) would be allowed to return to pre-construction conditions shortly after construction, although that may require more than one full growing season to reestablish a protective vegetative cover. Agricultural lands would be available for planting immediately following restoration of the pipeline right-of-way. No woodlots or forested areas would be affected by construction; however, some tree lines (i.e., shelter belts) would be crossed by the pipeline route.

Following construction, the majority of disturbed areas would be allowed to revert to preconstruction conditions. Vantage would revegetate disturbed areas consistent with the EPP, other permit requirements, and site-specific landowner requests. Further, Vantage would conduct routine monitoring of the right-of-way throughout the life of the pipeline, as required by the DOT. Permanent impacts would include the conversion of approximately 0.6 acre of native and mixed native vegetation to commercial uses by the installation of MLBVs and gravel roads providing access to the MLBV sites.

To address impacts on Conservation Reserve Program (CRP) land, Vantage would contact landowners enrolled in the CRP and determine the seed mix that must be planted to satisfy the conditions of the agreement and the acceptable seeding window. The Project would also cross about 62 feet of FWS Grassland Easement Program land. To mitigate impacts on the easement, Vantage would install the pipeline under the easement using the horizontal bore method.

Field surveys indicated that no federally listed noxious weed species were present in the Project area in noticeable concentrations. Two North Dakota-listed noxious weed species were identified in the Project area and, to mitigate the spread of any noxious weeds, Vantage would implement the BMPs and weed control practices discussed in its EPP.

Based on Vantage's proposed construction, operation, and mitigation measures, the Project is not anticipated to significantly impact vegetative resources.

ES.4.7 Wildlife

The primary effect on wildlife would be the temporary loss of habitats and displacement of wildlife during construction. Large expanses of available habitat lie adjacent to the construction work areas and mobile species would disperse to those areas. Only temporary displacement is anticipated to occur. Smaller, less mobile wildlife species such as voles and mice may experience some direct mortality during clearing and grading activities depending on local population densities. The most common vole species in the Project area is the meadow vole. This species' population fluctuates in cycles every 2 to 5 years with peak densities of 60 to 250 individuals per acre recorded. The common deer mouse has widespread distribution throughout the Project area and population densities vary widely in different habitats and from season to season, but the species is considered generally abundant. Based on past and recent pipeline projects and the species' densities, the losses are anticipated to be minor and insignificant on the local populations.

Wetland areas and waterbodies that provide preferred habitat for frogs, turtles, and some snakes would not be affected by construction because Vantage would cross these areas using the horizontal bore method, thereby preventing impacts on aquatic habitats and minimizing impacts on individuals. Reptiles that prefer upland habitats (e.g., western hog-nose snake, prairie rattlesnake) are expected to be infrequently encountered during construction of the Project as population densities are low in the area. It is probable that construction could affect a small number of individuals; however, the effect of construction on the total population is expected to be minimal.

The possibility that construction could cause permanent displacement of wildlife or result in a decrease in wildlife population densities due to long-term changes in habitat is highly unlikely. The majority of the Project route (approximately 60 percent) is located in actively managed agricultural land that is periodically plowed, planted, sprayed, and/or harvested. The remaining areas consist of native grassland and many of these parcels support grazing livestock. Wildlife species occupying grassland may disperse into nearby habitats during construction, including marginal habitats, resulting in lowered reproductive success and survival due to increased competition or other effects of being forced into sub-optimal habitats; however, the affected habitat is minimal in relation to the adjacent habitat available.

Additionally, grassland would be restored and returned to a pre-construction condition following construction, with the exception of about 0.6 acre of land converted to commercial/industrial use for the MLBVs and access roads. Based on past and recent pipeline projects, wildlife populations are expected to return to levels comparable to adjacent, undistributed areas within a short time period, and it is anticipated that no long-term habitat alteration or detrimental affects to local wildlife populations are likely to occur as a result of construction and operation the Project.

Migratory Bird Treaty Act

Migratory bird species, including raptor species, could be disturbed during nesting depending on site-specific conditions, including vegetation types, terrain, presence of trees, line of sight, and adaption of the species to development. To avoid potential impacts on migratory birds, Vantage would adopt the FWS's recommended mitigation measures and prepare a Conservation Agreement for the conservation of migratory bird species in furtherance of the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and Executive Order 13186 in consultation with the FWS. Following construction, Vantage would reclaim disturbed areas to pre-construction habitat conditions consistent with the EPP.

Bald and Golden Eagle Protection Act

Vantage would comply with the provisions of the Bald and Golden Eagle Protection Act (BGEPA). Vantage conducted bald and golden eagle nest location and nest occupancy surveys of a 1-mile-wide corridor based on the proposed pipeline centerline in May and June 2011 and no bald or golden eagle nests were identified within the survey corridor. To ensure compliance with the BGEPA, Vantage would comply with the provisions of the BGEPA and would continue coordination with the FWS.

ES.4.8 Threatened and Endangered Species

Threatened and endangered species that may be present in the Project area would be subject to the same types of short-term impacts as general wildlife and vegetation. Of the federally listed species identified, the gray wolf, pallid sturgeon, and interior least tern are not anticipated to be present in the Project area. The federally endangered whooping crane and federally designated critical habitat associated with the piping plover are known to exist in the Project area. Further, the federal candidate species Sprague's pipit may also occur in the Project area. Vantage would adhere to FWS-identified recommendations to avoid impacts on the whooping crane, piping plover, and Sprague's pipit, and would develop a Conservation Agreement in consultation with the FWS. Additionally, a Biological Assessment (BA) discussing these species has been prepared for the Project and is currently being reviewed by the FWS. The BA is attached to this EA as appendix B.

The FWS expressed concern about the risk of a leak during pipeline operation impacting piping plover nesting areas that could potentially result in a potential incidental take of the species. Consistent with federal requirements, Vantage would develop an emergency response plan that discusses emergency contingencies in the event of a pipeline accident such as a pipeline leak, rupture, or failure. Contingencies would include pressure and leak detection monitoring, emergency valve closure procedures, aerial and foot surveillance, and hazardous materials response protocols.

In addition to federally designated threatened and endangered species, the North Dakota Game and Fish Department has identified Level 1 species, which are defined as species of a high level of conservation priority because of declining status either in North Dakota or across their range; or are at a high rate of occurrence in North Dakota constituting the core of the species' breeding range, but are at-risk range wide. Vantage would mitigate impacts on North Dakota Level 1 avian species by constructing the facilities after the nesting season has concluded or by removing nesting habitat prior to the nesting

season. Other Level 1 species may be present in the Project area, however, Vantage would implement the mitigation measures identified in its EPP and would use the horizontal bore method to avoid impacts on wetlands and the species that inhabit wetland areas. The primary impact that could occur as a result of a horizontal bore is an inadvertent release of drilling mud (frac-out) directly or indirectly into a waterbody or wetland. Although drilling mud is a mix of naturally occurring nontoxic materials, such as bentonite clay and water, in larger quantities the release of drilling mud into a waterbody or wetland could affect aquatic organisms by settling in and temporarily inundating the habitats used by these species. Vantage would implement the measures discussed in its EPP that describe how each horizontal bore would be conducted to minimize the potential for an inadvertent release of drilling mud to occur, and the procedures to follow and the NDHD personnel to contact in the event of a drilling fluid release.

Based on the construction plans and mitigation measures proposed by Vantage, construction and operation of the Project is not anticipated to result in adverse impacts on Level 1 species of concern.

ES.4.9 Land Use, Recreation, Special Interest Areas, and Visual Resources

Land use impacts associated with the proposed pipeline would include the disturbance of existing land uses during construction and retention of an expanded permanent right-of-way during operation of the facilities. Vantage proposes to generally use a 70-foot-wide construction right-of-way, of which 6.3 miles (8 percent) would be adjacent to and within 100 feet of existing rights-of-way. Vantage's permanent right-of-way would typically be 30 feet wide, consisting of 25 feet and 5 feet on either side of the pipeline centerline.

The effects of pipeline construction on land uses are expected to be minor and short term. To reduce Project-related impacts, Vantage would adhere to the measures outlined in its EPP. Following construction, Vantage would implement the restoration practices outlined in its EPP and agricultural, open, and wetland land uses would continue as before construction. Post-construction monitoring measures would include a post-construction soil assessment and visual inspections of the right-of-way to identify locations of invasive weed infestations, poor vegetation establishment, and reduced crop growth. The land retained as permanent right-of-way would generally be allowed to revert to former use; however, certain activities such as the construction of aboveground structures would be prohibited.

In general, Project impacts on recreational and special interest areas, which consist of Private Land Open to Sportsman, would be temporary and limited to the period of active construction, which typically would last only several days to several weeks in any one area. These impacts would be minimized by implementing Vantage's EPP, which includes commitments by Vantage to restore and revegetate disturbed areas and coordinate with agency personnel.

MLBVs and pipeline signs and markers would be the most visible features and would result in a permanent impact on visual resources. While permanent, the impact of these features is not anticipated to have an adverse impact on the visual landscape of the area because these features are not out of character with the landscape of Divide and Williams Counties.

ES.4.10 Socioeconomics

Project-area impacts on population, economy, employment, and public services are expected to be temporary, minor, and largely beneficial. Based on the county populations within the Project area, the additional people that might temporarily relocate to the area as a result of the Project would not result in a significant change. A brief decrease in the unemployment rate could occur as a result of hiring local workers for construction and increased demands on the local economy, including purchases by Vantage, its construction contractors, and workers employed on the Project. The anticipated demand for police,

fire, and medical services is not expected to exceed the existing capability of the infrastructure in the Project area to provide them, as the Project would result in a temporary addition of 60 to 70 workers in the area and these services are expected to be used only in emergencies. The Project would not be expected to result in adverse impacts that would fall disproportionately on minority or low-income populations located along the Project route. Construction and operation of the Project would have beneficial impacts on local sales tax revenue. During operation of the Project, Divide and Williams Counties, local school districts, townships, and other local taxing jurisdictions are anticipated to realize ad valorem property tax revenues assessed on the pipeline.

Construction of the proposed Project could result in minor, short-term impacts along some roads and highways due to the movement and delivery of equipment, materials, and workers. To reduce impacts on the flow of traffic, Vantage would coordinate and limit the hours of construction, including scheduling the transportation of construction materials and the daily arrival and departure of workers to occur generally outside peak commuting hours. Traffic impacts at pipeline crossings would further be minimized by using a horizontal bore at all gravel and paved road crossings, where possible. Vantage would also prepare detours in locations requiring open cuts. Where crossings are open cut, temporary measures would be available to allow for emergency crossings. Following construction, Vantage would repair any damage to road quality caused by the transport of heavy construction equipment or other procedures related to pipeline construction to pre-existing conditions. Based on Vantage's proposed construction measures and the temporary time period associated with road crossings, the Project is not anticipated to significantly impact transportation in the Project area.

ES.4.11 Cultural Resources

The Project is a federal "undertaking" and is reviewed consistent with the provisions of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and its implementing regulations at 36 CFR 800. Section 106 requires that prior to issuing a "license," such as a Presidential Permit for a federal undertaking, the lead federal reviewing agency (for this Project, the DOS) must take into account the effect that such undertaking would have on historic properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP). Section 106 also provides that the DOS afford the Advisory Council on Historic Preservation the opportunity to comment on the undertaking. The Section 106 process is assisted at the state level by the State Historic Preservation Officer (SHPO) of North Dakota.

Pursuant to 36 CFR 800.2(a)(3), the DOS requested the services of the applicant (i.e., Vantage) and its consultant (i.e., Ethnoscience) to prepare information, analyses, and recommendations specific to cultural resources for the Project. Vantage completed cultural resources investigations along the proposed pipeline route and ancillary facilities, and identified 79 archaeological sites and 19 isolated finds. Based on the DOS's third-party contractor's independent review of the cultural resources investigations to date and coordination with the North Dakota SHPO, the 19 isolated finds are not considered eligible for listing on the NRHP; 17 of the 79 archaeological sites are not recommended as eligible for listing on the NRHP and no further work is recommended; and two sites are recommended as eligible for listing on the NRHP. The eligibility of the remaining 60 sites was left undetermined because Vantage has committed to avoiding these sites. During Vantage's cultural resources surveys, representatives from two tribes accompanied Vantage's survey crews in their respective historic territory, and provided cultural and historic information for 14 of the recorded archaeological sites. Vantage would prepare an avoidance treatment plan for the two NRHP-recommended eligible sites. To avoid adverse impacts on 60 NRHP-unevaluated archaeological sites, Vantage would provide a minimum 45-foot buffer and/or has realigned the construction centerline, narrowed the construction workspace, and/or rerouted the construction corridor.

Vantage submitted the Class III cultural resources inventory report to the North Dakota SHPO on December 29, 2011. On January 11, 2012, the North Dakota SHPO submitted a letter to the DOS stating that it concurred with the Class III cultural resources inventory report's "no historic properties affected" and "no significant sites affected" determinations.

Additional cultural resource surveys for the proposed MLBVs, access roads, and contractor/pipe yards are forthcoming, as well as treatment plans for sites that would be avoided. These reports would be reviewed by the DOS and then forwarded to the applicable consulting parties consistent with 36 CFR 800.

Twenty tribes have been contacted by Vantage and/or the DOS. To date, two tribes have indicated that they are not interested in consulting, and 10 tribes have asked to consult on the Project. Interested tribes have been provided a copy of Vantage's cultural resources investigations report for review. The DOS has conducted a conference call with several tribes and hosted a meeting in New Town, North Dakota with interested tribes in early 2012. The primary objective of the call and meeting was to exchange information and to listen to tribal concerns; learn of any properties important to tribes and specific resources that should be considered in the environmental review and as part of the NHPA process; and provide an opportunity for tribes to request a study of possible historic properties of religious and cultural significance to an Indian tribe in the Project area. As a result of the meeting, Vantage has agreed to sponsor tribal completion of surveys for historic properties of religious and cultural significance to an Indian tribe, which are pending. Upon completion of the surveys, the DOS will conduct an independent review of the survey results with the assistance of the North Dakota SHPO. The DOS will continue to consult government-to-government with the Indian tribes who have responded to date. In addition, the DOS will continue to conduct follow-up consultations with those tribes who have not yet responded to solicit comments on the Project.

ES.4.12 Air Quality

Emissions associated with construction and installation of the pipeline would include fossil-fuel combustion emissions and fugitive dust. Emissions may result from small propane heaters used to warm personnel during construction activities. Emissions from construction would be controlled to the extent required by state and local agencies (e.g., any special conditions of the North Dakota Public Service Commission listed in the Certificate of Corridor Compatibility and Route Permit applicable to air quality), while tailpipe emission from gasoline and diesel powered construction equipment would be subject to federal mobile source regulations listed in 40 CFR 85. Based on past and recent pipeline projects and Vantage's commitment to adhere to the regulation measures, emissions from construction-related activities are not anticipated to significantly affect local or regional air quality. Further, based on the proposed mitigation and the local and intermittent nature of the construction, these emissions are not expected to impact local air quality attainment status.

Emissions from pipeline operation and maintenance would occur, and greenhouse gases would also be produced, but would be subject to federal emissions standards. The emissions associated with the Project would be below major source permitting thresholds and are generally insignificant. As such, operation of the Project is not expected to impact the local area attainment status.

Regarding the connected action, the total incremental emissions from the Tioga Gas Plant would equate to 29,280 tons per year (26,570 megagrams per year) of greenhouse gas (GHG) emissions (in carbon dioxide (CO_2) equivalent units). This equates to a 26 percent increase in GHG emissions from the Tioga Gas Plant over 2010 emissions. The total incremental CO_2 emissions increase from the Tioga Gas Plant and Project would equate to 29,717 tons per year (26,966 megagrams per year), which is a 0.055 percent of the CO_2 emissions generated in North Dakota. The total incremental emissions increase for the

Tioga Gas Plant and Project would be well below major source permitting thresholds (75,000 tons per year or 68,039 megagrams per year for modifications to existing sources).

ES.4.13 Noise

The construction activities associated with the Project would be temporary, intermittent, and vary over time. Construction noise would be limited to daylight hours and any horizontal bores for the Project would be completed within one day between 7 AM and 10 PM. As such, the construction activities would not exceed a nighttime noise level of 55 decibels on the A-weighted scale (dBA) because the equipment would not operate between 10 PM and 7 AM. Operational noise attributable to MLBV sites at the closest noise-sensitive area would be about 0 dBA, which is below the EPA's noise guideline day-night sound level of 55 dBA applied to operational noise sources.

ES.4.14 Reliability and Safety

The pipeline and aboveground facilities associated with the Project would be designed, constructed, operated, and maintained consistent with or to exceed the DOT's Minimum Federal Safety Standards in 49 CFR 190 through 199. These regulations, which are intended to protect the public and to prevent pipeline facility accidents and failures, include specifications for material selection and qualification; minimum design requirements; and protection of the pipeline from internal, external, and atmospheric corrosion.

ES.4.15 Cumulative Impacts

Existing conditions in the vicinity of the proposed Project reflect the extensive past changes brought about by long-term human occupancy and use of the Project area. For example, agricultural impacts and oil and gas development activities have altered the native landscape in the Project area. When the impacts of the Project are considered additively with the impacts of other past, present, or reasonably foreseeable future projects, there is some potential for cumulative effect on resources such as soils, surface waters, wetlands, fish and fish habitat, vegetation, wildlife and wildlife habitat, and socioeconomics. However, for the proposed Project, mitigation has been or would be developed in the form of several Project-specific documents such as the EPP and BA that, when implemented, are anticipated to avoid, minimize, or compensate for adverse impacts on these resources. Therefore, construction and operation of the Project, in addition to other proposed and planned projects in the Project area, is not anticipated to result in significant cumulative effects on the region's environment.

ES.5 SUMMARY OF ASSUMPTIONS

Our preliminary analyses of potential impacts associated with construction and normal operation of the proposed Project on most resources along the proposed Project corridor assume the following:

- Vantage would comply with all applicable laws and regulations;
- Vantage would incorporate the mitigation measures required in permits issued by environmental permitting agencies listed in table 1.10-1 of the EA into the construction, operation, and maintenance of the proposed Project;
- Vantage would adopt the timing restrictions and/or adopt the mitigation measures recommended by the FWS to avoid adversely affecting federally listed species or their habitat;

- Vantage would adopt the timing restrictions and/or adopt the mitigation measures recommended by the FWS to avoid adversely affecting species protected by the Migratory Bird Treaty Act and BGEPA, and develop a Conservation Agreement in consultation with the FWS;

- Vantage would complete cultural resources surveys and assist the DOS in review consistent with Section 106 of the NHPA;

- Vantage would construct, operate, and maintain the proposed Project as described in the EA; and

- Vantage would implement the measures designed to avoid or reduce impacts described in its application for a Presidential Permit and supplemental filings with DOS and the EPP and its attachments.

1.0 INTRODUCTION

The proposed Vantage Pipeline is a high vapor pressure pipeline that would carry ethane from a source near Tioga, North Dakota, United States, extend northwest through Saskatchewan, Canada, and terminate near Empress, Alberta, Canada. The pipeline would link a growing supply of ethane from North Dakota to markets in Alberta. More specifically, the Project would have the capacity to deliver an initial rate of 40,000 barrels per day (bpd), expandable to 60,000 bpd, of liquid ethane from natural gas facilities in North Dakota to the Alberta Ethane Gathering System (AEGS) in Alberta, Canada. The entire proposed Vantage Pipeline in the United States and Canada would be approximately 430 miles long.

In Canada, the proposed system would include the construction of approximately 350 miles of pipeline in Saskatchewan, Canada and approximately 2 miles of pipeline in Alberta, Canada, one pump station located at the midpoint of the pipeline between Lafleche and Assiniboia, Saskatchewan, one pump station located at the terminus near Empress, Alberta, and other associated facilities. Canadian National Energy Board (NEB) approval for the Canadian portion of the Project was granted on January 19, 2012, as discussed in section 1.9.

On November 15, 2010, Vantage Pipeline US LP (Vantage) applied to the U.S. Department of State (DOS) for a Presidential Permit for the construction, operation, and maintenance of pipeline facilities on the United States-Canada border for transportation of ethane from Tioga, North Dakota to the Alberta Ethane Gathering System (AEGS) in Alberta, Canada. The portion of the project in the United States would consist of 79.8 miles of 10-inch-diameter ethane pipeline in Williams and Divide Counties, North Dakota, as well as related aboveground and ancillary facilities, as described in section 1.4. The pipeline and collective facilities are referred to as the Vantage Pipeline Project (Project).

The DOS served as the lead federal agency for the environmental review of the proposed Project consistent with the National Environmental Policy Act (NEPA). The DOS receives and considers applications for Presidential Permits for such pipeline border crossings and associated facilities pursuant to the President's constitutional authority over foreign relations and as Commander-in-Chief, which authority the President delegated to DOS in Executive Order (EO) 13337, as amended (Federal Register [FR], Volume 69, No. 87, page 25299). For liquid hydrocarbon pipelines, such as the proposed ethane pipeline, the President, through EO 13337, directs the Secretary of State to decide whether a project is in the national interest before a Presidential Permit is granted.

The determination of national interest involves consideration of many factors, including energy security; environmental, cultural, and economic impacts; foreign policy; and compliance with relevant federal regulations. Before making a decision, the DOS will consult with the eight federal agencies identified in EO 13337: the Departments of Energy, Defense, Transportation, Homeland Security, Justice, Interior, and Commerce, and the Environmental Protection Agency. The DOS will also solicit public input on the national interest determination by accepting written comments.

DOS authority over the border crossing does not include the legal authority to regulate pipelines within the United States. The U.S. Department of Transportation's (DOT's) Pipelines and Hazardous Materials Safety Administration (PHMSA) is responsible for promulgating regulations regarding issues of pipeline construction, operation, and maintenance. Individual states have the legal authority to approve pipeline construction in their states, including selecting the routes for such pipelines. Different states have made different choices in how or whether to exercise that authority. In preparation of this document, the DOS has consulted with those federal and state agencies that possess regulatory authority over ethane pipelines, as well as federal, state, local, and tribal agencies that have jurisdiction with particular expertise regarding evaluating potential impacts of the proposed Project. In North Dakota, the

agency responsible for issuing a Certificate of Corridor Compatibility and Route Permit is the North Dakota Public Service Commission (NDPSC).

The DOS, as the lead federal agency, has prepared this Environmental Assessment (EA) providing sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impacts (FONSI) consistent with the National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] 4321 et seq.) and its implementing regulations.[3]

This document provides an assessment of the latest available information of the U.S. portion of the proposed Project on the existing environment along the proposed pipeline route; an analysis of human and environmental impacts that could potentially result from pipeline right-of-way preparation, construction, operation, and maintenance of the proposed pipeline facilities; and a summary of the protection and restoration measures to be implemented to avoid and/or minimize environmental impacts.

1.1 PROJECT PURPOSE AND NEED

Vantage's stated purpose of the Project is to transport ethane from the existing Tioga Gas Plant in the Williston Basin of North Dakota to meet the market created by the petrochemical industry in Alberta, Canada. Vantage's stated need for the Project is dictated by the increasing ethane supplies in the Williston Basin and demonstrated interest from the petrochemical industry in Alberta, Canada to purchase these increased supplies.

The need for the Project is supported by existing ethane supply and demand, as well as forecasted supply and demand, in Canada and the United States. Ethane is a colorless, odorless, flammable gas whose vapors are heavier than air. Ethane is a natural gas liquid (NGL). Nearly all NGLs are derived from rich natural gas and include, in addition to ethane, propane, isobutane, and butane, among others. Natural gas is generally discovered along with crude oil supplies. Therefore, ethane supply is directly related to natural gas and crude oil exploration and production activities.

A market for the sale of ethane as a feedstock does not exist in North Dakota; however, ethane is currently used as a feedstock by the petrochemical industry in Alberta, Canada. These petrochemical facilities convert ethane to ethylene, which is the building block for a wide range of consumer and industrial products, such as plastics, antifreeze, rubber, detergents, and solvents. Because of its use as a feedstock, a market and demand for ethane exists in Alberta. Ethane is currently transported to/distributed amongst the Alberta petrochemical industry by way of the existing AEGS ethane pipeline infrastructure, which has been in operation since 1978. Construction of the Vantage pipeline would provide North Dakota natural gas producers with access to the AEGS, thereby making it economically feasible to begin extracting ethane from processed natural gas.

Canada's ethane market in recent years has been constrained due to declining oil and gas production. All economically available ethane is already being produced from existing gas supplies and some supply (e.g., Alliance) is exported to the United States, thus reducing the availability of ethane to Canada. Between 2007 and 2009, ethane consumption was at approximately 250,000 barrels per day (bpd); however, the ethane supply was at approximately 232,400 bpd, resulting in a 17,600 bpd shortfall (Purvin and Gertz, Inc., 2011). Projections of ethane consumption and supply through 2024 indicate that the shortfall would continue to increase, with a 102,800 bpd shortfall projected for 2024 (Purvin and

[3] For more information on NEPA see "A Citizen's Guide to NEPA" Council on Environmental Quality (December 2007), which can be downloaded at http://www.ceq.hss.doe.gov.

Gertz, Inc., 2011). The proposed Project is expected to initially supply up to 40,000 bpd of ethane, significantly reducing the shortfall gap.

Despite incentives associated with Alberta's Incremental Ethane Extraction Policy, no large-scale projects have been developed to address the ethane supply shortfall. Potential smaller-scale projects to address the ethane shortfall in Alberta include projects by Williams Energy (Canada) Inc. and AuxSable Canada LP (Purvin and Gertz, Inc., 2011). However, forecasts of ethane supply from these projects are anticipated to be relatively small and would not fill the projected ethane consumption needs in Canada.

The Williston Basin in western North Dakota and eastern Montana has been a hotbed of oil and natural gas production in recent years due to economic factors and technological advances such as multi-step fracturing. Oil and natural gas production is anticipated to peak between 2015 and 2025, resulting in an associated supply of NGLs, including ethane (Purvin and Gertz, Inc., 2011). While NGLs are produced at 14 processing plants in North Dakota, nearly all of the ethane produced with the natural gas is left in the gas stream and must be eventually extracted.

As discussed in section 1.5, Hess Corporation (Hess) is expanding its existing Tioga Gas Plant in Tioga, North Dakota to accommodate ethane production. It is estimated that Hess' Tioga Gas Plant would produce 25,000 to 30,000 bpd of ethane. Vantage has signed a contract with Hess and NOVA Chemicals Corporation (NOVA) to purchase and transport ethane from Hess' Tioga Gas Plant to NOVA's Joffre Petrochemical Complex in Alberta under a long-term agreement.

Vantage also states that the Project would provide the oil and gas producing Bakken Formation region of North Dakota with access to the existing ethane AEGS infrastructure and market in Alberta. Currently no market exists for petrochemical grade (also known as "specification" or "pure grade") ethane in North Dakota; however, construction of the Project would make it feasible to extract the ethane byproduct from North Dakota-produced natural gas and export it for use in the Canadian petrochemical industry. Therefore, exports from the United States would be increased, which Vantage contends is consistent with the EO for the National Export Initiative (March 11, 2010). The Project would also allow U.S. natural gas producers to recognize additional revenue from an existing resource and is anticipated to contribute to the national economy in terms of jobs and tax payments.

1.2 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT

The topics addressed in this EA include alternatives; geology; soils; groundwater; surface waters; wetlands; vegetation; wildlife and aquatic resources; threatened and endangered species; land use, recreation, special interest areas, and visual resources; socioeconomics (including transportation and traffic); cultural resources; air quality and noise; reliability and safety; and cumulative impacts. The EA describes the affected environment as it currently exists, discusses the environmental consequences of the proposed Project, and compares the Project's potential impact with that of various alternatives.

The environmental consequences of constructing and operating the proposed Project would vary in duration and significance. Using criteria recognized by other federal and state agencies such as the Federal Energy Regulatory Commission and Bureau of Land Management, four levels of impact duration were considered: temporary, short-term, long-term, and permanent. Temporary impact generally occurs during construction with the resource returning to preconstruction condition immediately after restoration or within a few months. Short-term impact could continue for up to 3 years following construction. Impact was considered long-term if the resource would require more than 3 years to recover. A permanent impact could occur as a result of any activity that modifies a resource to the extent that it would not return to preconstruction conditions during the life of the Project, such as the construction of aboveground facilities. An impact would be considered significant if it would result in a substantial adverse change in the physical environment.

1.3 PUBLIC REVIEW AND COMMENT

Vantage initiated consultation with federal and state agencies in June 2010 regarding the proposed Project. Consultations have been ongoing during the course of environmental review for the Project. Additionally, Vantage initiated preliminary outreach with landowners and local, county, state, and federal elected officials along the proposed pipeline route beginning in August 2010.

In November 2010, Vantage met with the DOS to begin discussions regarding a potential pipeline project and subsequently applied to the DOS for a Presidential Permit for the construction, operation, and maintenance of pipeline facilities on the United States-Canada border for the transportation of ethane. In March 2011, Vantage submitted to the DOS an environmental report in support of its application for a Presidential Permit for the United States-Canada international border crossing associated with the Project's pipeline.

The DOS has issued several documents announcing and providing a description of the Project, as well as solicited public comments for consideration in establishing the scope and content of the Project EA. For this Project, these documents included the *Notice of Receipt of Application for a Presidential Permit to Construct, Operate and Maintain Pipeline Facilities on the Border of the United States*, which was issued in the FR (Volume 76, No. 7, page 1659), and the *Notice of Intent to Prepare an Environmental Assessment and Request for Comments on Environmental Issues, and to Initiate Consultation Under Section 106 of the National Historic Preservation Act for the Proposed Vantage Pipeline Project* (NOI), which was issued to all parties on the environmental mailing list and issued in the FR (Volume 76, No. 239, page 77583).

Written and electronic comments in response to the NOI were received in letters and emails submitted to DOS. A summary of the public comments received by the DOS and related to the scope of the EA is presented in table 1.3-1 along with the EA section that addresses the concern. Figure 1.3-1 provides an overview of the DOS's environmental review process for the Project.

TABLE 1.3-1

Comments Received on Environmental Issues during the Public Scoping Process for the Vantage Pipeline Project

Issue	Comment	Section Where Comment/ Issue Addressed in EA
Project Description	Project sponsor's responsibility to contact approvals, permits, and easements from federal, state, and local agencies.	1.10
	Dispose of waste properly (not in floodway areas).	1.6.1.1
	Pipeline construction methods.	1.6.1.1, 1.6.1.2
	Permanent easement.	1.4.1, 1.12
	Collocation with existing rights-of-way.	1.4.1
Soils	Soil conditions affected during construction.	2.2.1, 2.2.2
Groundwater	There are no designated sole-source aquifers in North Dakota.	2.3.1.1
Wetlands and Waterbodies	Project should not affect floodplain areas.	2.4.2
	Avoid or mitigate impacts on wetlands.	2.4.2
Wildlife	Identify protective measures and/or plans to avoid impacts on migratory birds and bald and/or golden eagles.	2.7.2.2
Threatened and Endangered Species	Avoid impacts on or minimize adverse effects on federally listed species and/or critical habitat.	2.8.1.2
Land Use	Easement negotiations and compensation.	2.9.2
Alternatives	Avoid disturbance on grassland easements.	3.3.3
	Avoid current or future development of School Trust lands.	3.3.3
Reliability and Safety	Safety of pipeline and depth of cover.	1.6.1.1, 2.14.2

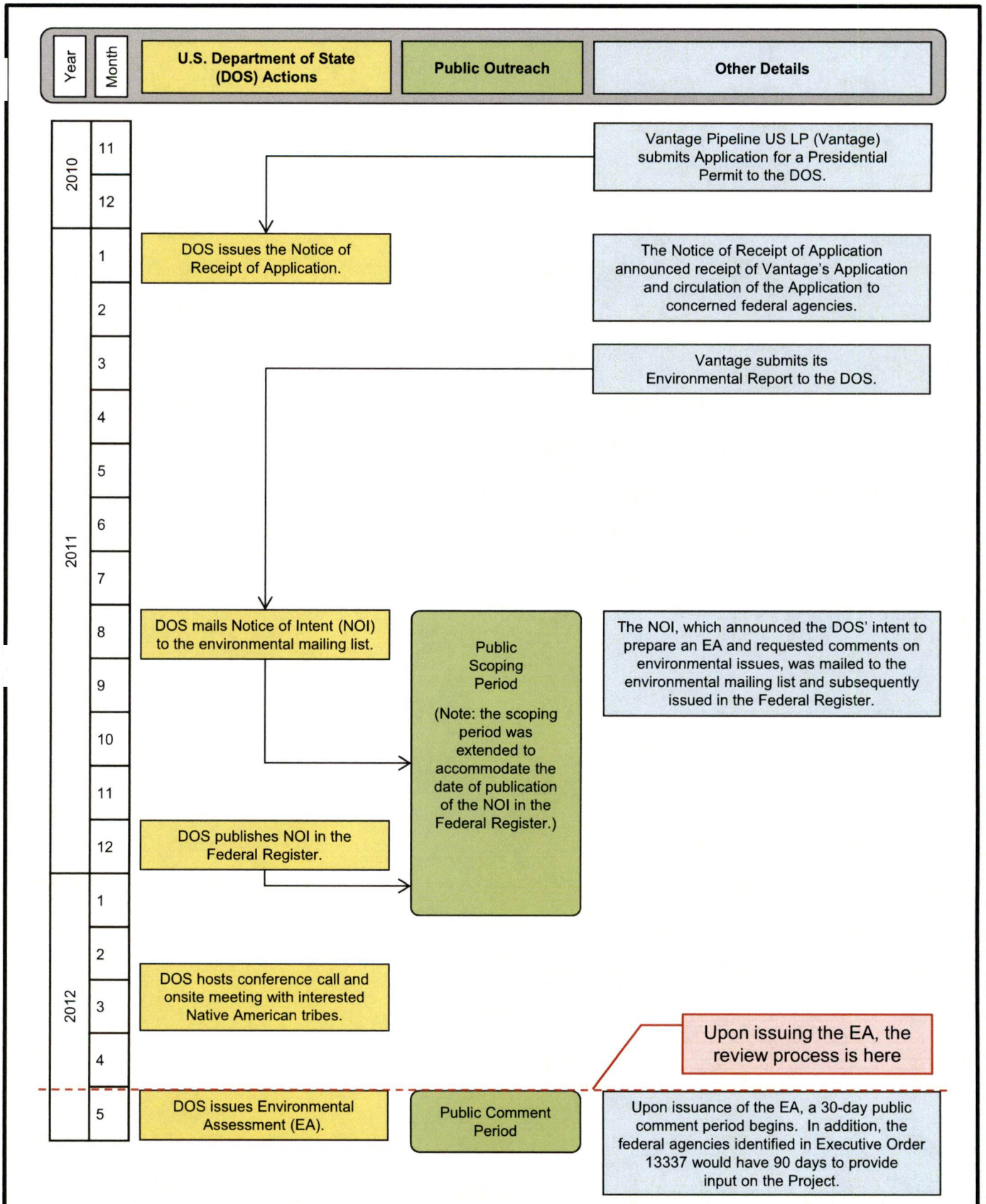

Figure 1.3-1
Vantage Pipeline Project
U.S. Department of State Environmental Review Process

After publication of the EA, the federal agencies identified in EO 13337 (see section 1.8.1) would have 90 days to provide their input on whether or not approving the proposed Project would be in the national interest. Additionally, the DOS will solicit public comments on determination of national interest during a public comment period after publication of this EA.

1.4 PROPOSED FACILITIES

This document analyzes the impacts associated with the U.S. portion of the Project. In the United States, Vantage proposes to construct and operate an ethane pipeline and related facilities from near Tioga, North Dakota in the United States to an international border crossing near Beaubier, Saskatchewan, Canada.

The Project would consist of the following facilities:

- installation of approximately 79.8 miles of new 10-inch-diameter pipeline in Williams and Divide Counties, North Dakota;
- installation of associated aboveground mainline block valves (MLBVs); and
- use of access roads and pipe storage and contractor yards.

All of the proposed facilities would be owned and operated by Vantage. Figure 1.4-1 shows the general location of the proposed facilities. U.S. Geological Survey (USGS) maps depicting the proposed Project are included in appendix A.

1.4.1 Pipeline Facilities

The proposed pipeline locations by county are listed in table 1.4.1-1. The pipeline would be collocated with existing rights-of-way for 6.3 miles (8 percent) of the proposed 79.8-mile-long total. The remaining 92 percent would be installed outside of existing rights-of-way.

TABLE 1.4.1-1

Pipeline Facilities for the Vantage Pipeline Project

County, State	Milepost		Length (miles) [a]
	Begin	End	
Williams County, North Dakota	0.0	37.5	37.5
Divide County, North Dakota	37.5	79.8	42.3
PROJECT TOTAL			**79.8**

[a] Due to rounding, lengths shown may not total distance obtained by subtracting end milepost from begin milepost.

Vantage proposes to generally use a 70-foot-wide construction right-of-way, consisting of a 25-foot-wide spoil side and 45-foot-wide working side. The permanent right-of-way would typically be 30 feet wide.

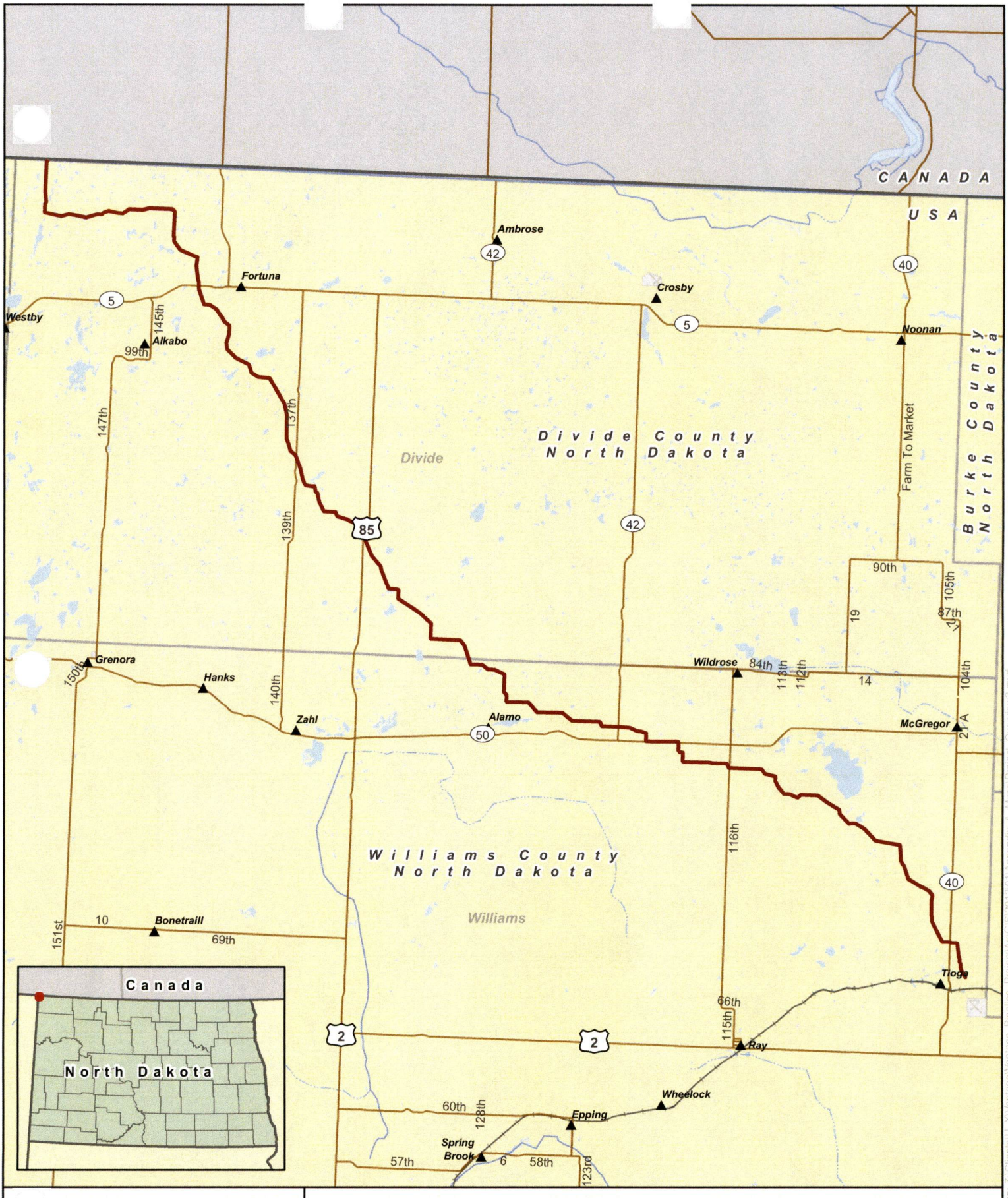

Figure 1.4-1

Vantage Pipeline Project

General Location Map

Divide and Williams Counties, North Dakota

Source: Z:\Clients\U_X\Vantage\Vantage_Pipeline_Project\ArcGIS\2012\01\Appendix_A_Maps\Project_Overview2.mxd
Date: 4/3/2012

1.4.2 Aboveground Facilities

Vantage would install new MLBVs along the pipeline at locations listed in table 1.4.2-1. USGS maps depicting the locations of the appurtenant aboveground facilities are included in appendix A.

TABLE 1.4.2-1

Aboveground Facilities Associated with the Vantage Pipeline Project

County, State	Facility	Approximate Milepost
Williams County, North Dakota	Mainline Block Valve 0	0.0
Williams County, North Dakota	Mainline Block Valve 1	7.8
Williams County, North Dakota	Mainline Block Valve 2	19.8
Williams County, North Dakota	Mainline Block Valve 3	37.5
Divide County, North Dakota	Mainline Block Valve 4	52.7
Divide County, North Dakota	Mainline Block Valve 5	59.9
Divide County, North Dakota	Mainline Block Valve 6	65.2
Divide County, North Dakota	Mainline Block Valve 7	71.9

1.4.3 Access Roads

In general, Vantage would use existing public and private roadways to temporarily access the construction right-of-way. New permanent access roads to seven of the MLBVs would be constructed and permanently maintained following construction (see table 1.4.3-1). Access roads to the MLBVs would follow the 30-foot-wide permanent right-of-way. The locations of permanent access roads required for the Project are shown on the USGS maps in appendix A.

TABLE 1.4.3-1

Access Roads Associated with the Vantage Pipeline Project

Access Road ID	Approx. Milepost [a]	County	Need	Road Type	Existing Land Use	Length (feet)	Affected Area (acres) [b]
BV-1	7.8	Williams	Access to MLBV site	Gravel; Permanent	Grassland	148	0.1
BV-2	19.8	Williams	Access to MLBV site	Gravel; Permanent	Cultivated Crops	66	<0.1
BV-3	37.5	Divide	Access to MLBV site	Gravel; Permanent	Cultivated Crops	37	<0.1
BV-4	52.7	Divide	Access to MLBV site	Gravel; Permanent	Grassland	125	0.1
BV-5	59.9	Divide	Access to MLBV site	Gravel; Permanent	Cultivated Crops	42	<0.1
BV-6	65.2	Divide	Access to MLBV site	Gravel; Permanent	Cultivated Crops	40	<0.1
BV-7	71.9	Divide	Access to MLBV site	Gravel; Permanent	Cultivated Crops	20	<0.1

[a] Milepost is nearest point where access road connects to the pipeline right-of-way.

[b] Reflects the estimated disturbance that could occur if the access road were modified to a width of 20 feet.

No other new or existing access roads requiring improvements have been identified by Vantage. If any private access roads, modifications to existing non-private roads, and construction of any new access roads would be needed, Vantage would be required to obtain landowner permission, conduct environmental surveys, and, if necessary, obtain the appropriate permits prior to use.

1.4.4 Contractor and Pipe Yards

In addition to the construction right-of-way, Vantage would require four areas for equipment parking, construction staging, and pipe and material storage. Each of these contractor/pipe yards would

be located outside of the pipeline construction right-of-way. Two yards would be required in Williams County, North Dakota and two yards would be required in Divide County, North Dakota. The locations of proposed contractor and pipe yards are shown on the USGS maps in appendix A.

1.5 CONNECTED ACTIONS

1.5.1 Heater

Hess is expanding its existing Tioga Gas Plant in Tioga, North Dakota by installing a new, 21-acre gas processing plant adjacent to the existing gas processing plant on land owned by Hess. As described in Hess' permit application materials to the North Dakota Public Service Commission (NDPSC) (discussed further below), the existing Tioga Gas Plant has been operational since the 1950s and primarily serves to separate out NGLs and other impurities from methane collected from production wells in the Tioga, North Dakota area before it can be used as a fuel. Once all of the impurities are removed, the resulting purified methane is transported via existing pipelines to markets in the east and south.

The current gas processing technique conducted at Hess' Tioga Gas Plant is called a refrigerated lean oil fractionation. Hess has proposed to change the processing technique from lean oil fractionation to a cryogenic turboexpander process. To accommodate the conversion, Hess would expand the existing gas plant footprint and construct new underground piping and above-ground gas processing facilities. The proposed gas plant expansion would produce the same products as it currently does, including pipeline grade natural gas, propane, butane, natural gasoline, and molten sulfur. Ethane would be an additional product that is either separated during ethane recovery or would be combined with the natural gas during ethane rejection. In addition to the processing plant expansion, approximately 4 miles of four pipelines (one 8-inch-diameter and three 6-inch-diameter) would also be constructed by Hess from the plant to a rail terminal currently in construction. The rail terminal is located on the west side of Tioga, North Dakota. The rail terminal would be designed to load 1.3 million gallons of liquefied product per day.

Activities at the Tioga Gas Plant are under the jurisdiction of the NDPSC. On April 13, 2010, Hess filed with the NDPSC a letter of intent to construct an addition to the existing Tioga Gas Plant and, on June 25, 2010, Hess filed its application for a Certificate of Site Compatibility for the Tioga Gas Plant Expansion Project. The application included a summary of biological field surveys (e.g., wetlands, wildlife), threatened and endangered species review, and consultations with state and federal agencies. As committed to in its Certificate of Site Compatibility, Hess would obtain the necessary licenses and permits. On September 8, 2010, the NDPSC released its Finding of Facts, Conclusions of Law, and Order, which approved of the plant expansion and ordered issuance of a Certificate of Site Compatibility. Expansion of the existing plant has been on-going since October 2010 and the new expanded facilities are expected to be in service by the end of 2012.

The DOS has determined that the Tioga Gas Plant modifications would be an independent action and the only component of the Hess facility modification that is specifically related to allowing for ethane recovery required for Vantage's Project is the operation of a heater. Therefore, the impacts resulting from operation of the heater are a connected action for the purposes of this review consistent with NEPA and 40 CFR 1508.25(a)1. Section 2.12 of the EA describes the connected action (i.e., heater) and the associated additional air and carbon dioxide (CO_2) emissions. Any other significant impact resulting from the proposed Project in addition to the ongoing Hess activities has been summarized in the cumulative impacts discussion (see section 2.15).

1.5.2 Electric Transmission Lines and Interconnections

Electrical service requirements for the proposed Project include utilizing existing electric transmission lines and constructing new electric transmission interconnections to the MLBVs. Because local electrical power providers, not Vantage, would be constructing and operating the electric transmission lines, the local utilities (Mountrail Williams and Burke Divide Electric) would be responsible for obtaining any necessary approvals or authorizations from federal, state, and local governments. While the permitting for the electrical facilities is independent from the Presidential Permit process, the construction and operation of these electric transmission lines are considered connected actions consistent with NEPA and, therefore, are evaluated within this EA for the proposed Project.

Vantage anticipates that the new interconnections would be constructed below ground, and that electric power requirements for eight MLBVs would be approximately 10 kilowatts per MLBV site and may be supplied from distribution service interconnects from proximate existing distribution lines (i.e., distribution lines with voltage ranging between 12.5 kilovolts to 25 kilovolts). Vantage has attempted to locate the proposed MLBVs near existing electric power lines. Accordingly, the length of these proposed new below-ground interconnections would range in length between approximately 25 feet to 1 mile. Each of these new interconnecting lines would require the installation of new underground transmission cable. The new electric transmission interconnection lines would be located entirely on private land.

In the event power cannot be provided to an individual MLBV by the local power companies or is uneconomic, Vantage would use solar photo-voltaic panel technology at the MLBVs that would eliminate the need for electric transmission interconnections at these MLBV sites.

The transmission interconnection facilities would be installed below ground and, thus, the construction process would be broadly similar to that of pipeline construction: right-of-way acquisition; right-of-way clearing; construction, including excavating a narrow trench, installing the electric transmission line, and backfilling; and site restoration and cleanup. Utilities installing the transmission lines would be expected to restore the work area as required on completion of the new interconnect consistent with local standards. The soil in the disturbed areas would be reshaped and contoured to its original condition. Reseeding would follow landowner requirements. All construction debris and other remaining materials would be removed from the construction areas and properly disposed. The construction right-of-way width for these facilities is currently unknown and actual electrical line construction procedures would be developed by each local electric utility to address site-specific conditions. The electric utilities would obtain any necessary easements and permits required to install the facilities.

Construction and operation impacts on soils, vegetation, and land uses associated with the interconnects are expected to be temporary, minor, and comparable to those associated with supplying electricity to the average home or farm. Although the construction right-of-way width for these facilities is currently unknown, it is anticipated that the construction and operation impacts on soils, vegetation, and land uses associated with these facilities would be lesser than those associated with pipeline construction described in this EA because the interconnects would have a narrow diameter, can be installed with minor disturbance to the land, and would affect a smaller area than that required for pipeline installation. Construction of the interconnects would have a temporary and relatively minor impact on agricultural land or grassland, and these land uses would be allowed to revert to previous conditions following construction. Based on the proximity of the proposed MLBV sites to existing electric power lines, it is anticipated that no wetlands or waterbodies would be affected by new electric transmission line construction and operation. Further, because the electrical lines would be installed underground, there would be no potential flight collision risks to birds and other wildlife (e.g., bats). While the new electric transmission interconnections would overlap in space and time with the Project,

and could act cumulatively with the other activities in the area, the amount of surface disturbance caused by powerline construction is anticipated to be negligible compared to other development projects discussed in section 2.15. Further, it is anticipated that the electric utilities would use best management practices (BMPs) to install the facilities and be subject to permits requirements that would, if necessary, mitigate for potential impacts on environmental resources.

1.6 CONSTRUCTION PROCEDURES

Standard pipeline construction is composed of specific activities that make up a linear construction sequence. This section describes the general procedures proposed by Vantage for the construction of the pipeline facilities. Vantage would construct, restore, and maintain the Project consistent with its *Environmental Protection Plan* (EPP).[4] Vantage's EPP includes measures that would avoid or minimize environmental impacts resulting from construction and operation of the Project, for example:

- installation of erosion control devices;
- topsoil segregation;
- wetlands and waterbody crossing methods;
- revegetation and restoration specifications;
- spill prevention and control; and
- post-construction maintenance requirements.

As part of the EPP, Vantage would implement several contingency plans, including:

- Spill Contingency Plan Guidelines;
- Fire Contingency Plan;
- Soil Conditions Contingency Plan;
- Soil Erosion Contingency Plan;
- Instream Boring Fluids Mud Release Contingency Plan;
- Water Crossing Sediment Contingency Plan;
- Winter or Frozen Conditions Contingency Plan;
- Sensitive Plants Contingency Plan;
- Wildlife Contingency Plan; and
- Cultural Resources Contingency Plan.

Vantage proposes to begin construction in the summer of 2012 and anticipates that the Project would go into service on or before April 1, 2013.

1.6.1 Pipeline Facilities

1.6.1.1 General Pipeline Sequence

Vantage would construct the ethane pipeline using typical construction techniques as described below. Figure 1.6.1-1 shows the typical steps of cross-country pipeline construction. Before construction, Vantage crews would survey and stake the centerline and exterior boundaries of the construction right-of-way. The exterior boundary stakes would mark the limit of approved disturbance areas that would be maintained throughout the construction period. Clearing crews would then cut shrubs

[4] The EPP has not been included as an attachment to this EA. However, a draft copy provided by Vantage is available for review on the DOS's website for the Project at: http://www.vantagepipeline.state.gov/. See Vantage Documents and "Environmental Data Provided by Vantage in Support of an Application for a Presidential Permit (March 2011)."

and trees from the construction right-of-way and additional temporary workspace (ATWS). Clearing crews would typically mow, chip, mulch, and/or haul off all non-merchantable timber, and burning of non-merchantable wood may be allowed if the necessary permits and approvals are obtained. After clearing, grading crews would grade the ground surface as necessary to provide a smooth working surface and a safe working area. Environmental crews would install temporary erosion controls, where necessary, to minimize erosion and would maintain these controls throughout construction. Next, topsoil would be stripped and segregated along the pipeline route consistent with the EPP. Before excavating the pipeline trench, individual joints of pipe would be strung along the construction right-of-way by small portable cranes and/or side-boom tractors. Individual joints of pipe would be bent by a mechanical pipe-bending machine to accommodate natural ground contours or pipeline alignment. After stringing and bending, the pipe sections would be aligned, welded together, and placed on temporary supports along the edge of the trench. The welds would be inspected, both visually and radiographically, and coating sleeves would be applied at the welded joints and then the coating would be electronically inspected before the pipe is lowered into the trench.

Trenching crews would use backhoes and/or ditching machines to excavate the pipeline trench consistent with DOT regulations, which stipulates a minimum 4 feet of cover for normal excavations and 18 to 30 inches of cover in rocky areas. The trench walls would generally be kept vertical to the extent practicable and the trenches would typically be 2 feet wide at the base of the trench. In unstable and saturated soils, trenches may be wider. Next, crews would dewater the trench as necessary consistent with the requirements of applicable permits. After welding and coating are completed and the trench is excavated, construction crews would lower the pipe into the trench using side-boom tractors. Bladed equipment or a specially designed backfilling machine would be used to backfill the trench to the approximate ground surface elevation. In areas where topsoil has been segregated, subsoil would be replaced first, and topsoil would be spread uniformly on top. Directly above the pipeline, an excess of soil or "crown" would be placed to allow for future settling. Construction debris, including wooden supports, welding rods, containers, brush, trees, or refuse of any kind, would not be permitted in the backfill. If an excessive amount of rocks are present in the backfill, the pipeline would be protected with rock shielding or similar protective coating and/or backfilled with clean padding prior to backfilling with the rocky material.

All construction garbage and debris would be collected and disposed of weekly at an approved facility. Waste containers would accompany each working unit. All construction personnel would be required to follow guidelines established in a Project waste management plan.

After backfilling and before placing the Project in service, Vantage would hydrostatically test[5] the pipeline consistent with the regulations of the Office of Pipeline Safety (OPS) within the DOT's PHMSA to ensure that there are no leaks in the pipeline and that the system is capable of operating at the design pressure. The testing process would involve filling a segment of the pipeline with water and maintaining a prescribed pressure for a specified amount of time. Vantage would then grade and restore work areas as nearly as practicable to their original contours. Permanent erosion controls would be installed and disturbed areas would be revegetated consistent with the EPP, other permit requirements, and site-specific landowner requests.

[5] Hydrostatic testing is a process used to test pipelines for leaks by pressurizing them inside with a liquid, typically consisting of water.

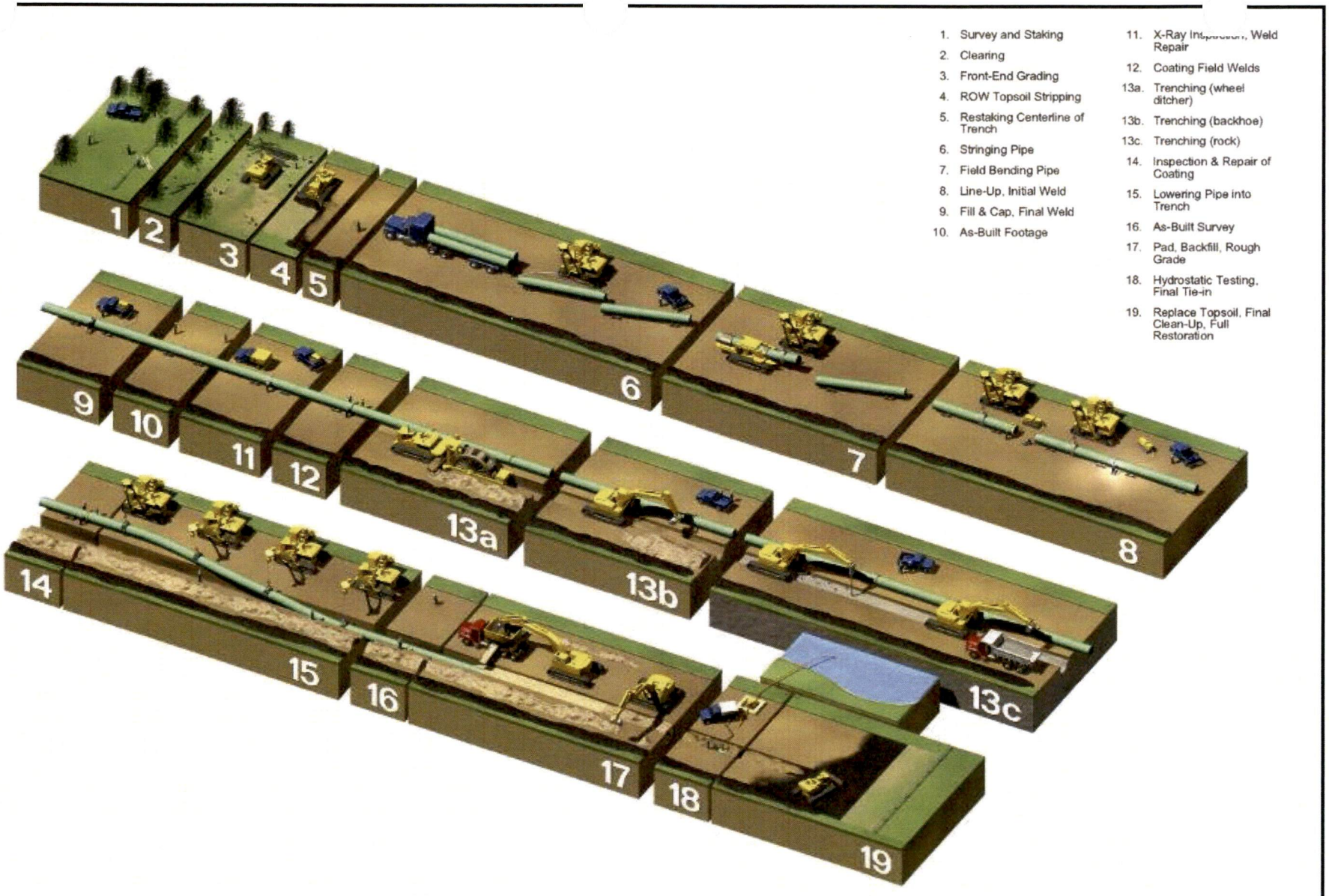

Figure 1.6.1-1

Vantage Pipeline Project

Typical Pipeline Construction Sequence

1.6.1.2 Special Construction Procedures

Waterbody and Wetland Crossings

Although the Project avoids crossing perennial waterbodies, it would cross ephemeral or intermittent streams that are more closely associated with wetlands. Vantage would construct the proposed pipeline across waterbodies/wetlands consistent with the methods described in its EPP and state and federal permit requirements. If the drainages are dry at the time of construction, Vantage would use conventional upland construction methods to cross the waterbody/wetland feature. However, for the majority of waterbody/wetland features where water is present, Vantage would use the directional boring method to cross waterbodies/wetlands.

During the directional boring method, a directional bore machine would push a bore head, connected to hollow drill pipe, into the ground at an angle to excavate the pilot borehole. As each joint of drill pipe is pushed into the ground, a new one would be added behind. Non-hazardous drilling fluid, composed of a mixture of bentonite clay and water, may used for drilling lubrication. Once the bit reaches the exit point, it would be replaced with a reamer and the hole would be enlarged by operating the drill in the reverse direction. After enlarging the bore, the product pipe would be pulled from the exit point back to the boring machine. Once the pipe is installed, the exit and entry points would be excavated with connections, or tie-ins, made as needed.

The primary impact that could occur as a result of a horizontal bore is an inadvertent release of drilling mud (frac-out) directly or indirectly into a waterbody or wetland. Although drilling mud is a mix of naturally occurring nontoxic materials, such as bentonite clay and water, in larger quantities the release of drilling mud into a waterbody or wetland could affect aquatic organisms by settling in and temporarily inundating the habitats used by these species. Vantage would implement the measures discussed in its EPP that describe how each horizontal bore would be conducted to minimize the potential for an inadvertent release of drilling mud to occur, and the procedures to follow and the North Dakota Health Department (NDHD) personnel to contact in the event of a drilling fluid release.

If necessary, Vantage would clear existing vegetation from the construction right-of-way at the crossings and would maintain a 10-foot buffer of undisturbed non-woody and woody vegetation less than 4 inches in diameter at breast height on the streambanks. Grading would be directed away from the waterbody to reduce the potential for material to enter the waterbody. Temporary erosion control measures (e.g., silt fences, straw bales) would be installed consistent with Vantage's EPP. ATWS at waterbody/wetland crossings would typically be set back 50 feet from the water's edge where topographic and other site conditions permit.

Figures depicting the typical boring under a waterbody and wetland are included in Vantage's EPP. Additional information regarding waterbodies and wetlands affected by the Project is discussed in section 2.4.

Road, Highway, and Railroad Crossings

Vantage would cross paved roadways and railroads using the bore method, which involves installing the pipeline beneath the transportation corridor, thereby avoiding disruptions to vehicular or railcar movement and physical impacts on road/railroad beds.

Vantage would cross unpaved roadways using the bore method (described above) or the open-cut method. The open-cut method could temporarily disrupt road traffic as the pipe trench is excavated across the roadway. Therefore, to minimize traffic delays, Vantage would establish traffic detours before

excavating the roadbed. If no reasonable detours are feasible, Vantage would maintain at least one traffic lane, except for brief periods when road closure is essential to install the pipeline. Vantage would minimize the duration of open-cut crossings and in most cases would complete these road crossings in one day or less.

Vantage would obtain road and railroad crossing permits from the North Dakota Department of Transportation (NDDOT) for state road crossings and the applicable county for county road crossings, and would be subject to compliance with the permit stipulations associated with these road crossings. For private roads, Vantage would request landowner permission to cross or use the road. Railroad crossings would be subject to authorization from the private railroad company. Vantage would notify local authorities prior to open-cut road closures. Vantage's EPP also notes that it would develop a landowner notification and coordination approach, and that its land agents would be available at all times during construction for landowner coordination. Vantage would attempt to avoid closing roads during peak traffic hours.

Steep Terrain

Steep slopes may require additional grading to create a working surface that allows for safe operation of construction equipment and to accommodate pipe-bending limitations. In such areas, the slopes would be excavated prior to pipeline installation and reconstructed to their original contours during restoration.

In areas where the proposed pipeline route would cross laterally along the side of a slope, cut-and-fill grading may be required to obtain a safe, flat work terrace. Temporary sediment barriers such as silt fence and straw bales would be installed during clearing to prevent the movement of disturbed soil into wetlands, waterbodies, or other environmentally sensitive areas in steep terrain. Temporary slope breakers consisting of mounded and compacted soil would be installed across the right-of-way during grading. Topsoil would be stripped from the entire right-of-way and stockpiled prior to cut-and-fill grading on steep terrain. Generally, on steep side-slopes, soil from the high side of the right-of-way would be excavated and moved to the low side of the right-of-way to create the level work terrace. After the pipeline is installed, the soil from the low side of the right-of-way would be returned to the high side and the slope's original contours would be restored. Following construction, seed would be applied to steep slopes. Seed would consist of diverse, local genotyped, and weed free certified native prairie seed mixes in grasslands, and other mixes as listed in the EPP. Certification is provided by the seed supplier and transferred through a chain of custody to the grower. Weed free certification is regulated by the U.S. Department of Agriculture (USDA) and State of North Dakota. The right-of-way would be mulched with hay or non-brittle straw or covered with erosion control fabric. Sediment barriers would be maintained across the right-of-way until permanent vegetation is established.

Fences and Grazing

Prior to cutting fences for pipeline construction, Vantage would brace and secure each fence to prevent slacking. To prevent the passage of livestock, each fence line opening would be temporarily closed when construction crews leave the area. If gaps in natural barriers used for livestock control are created by pipeline construction, the gaps would be fenced according to the landowner's requirements. Vantage would maintain all existing improvements, such as fences, gates, irrigation ditches, cattle guards, and reservoirs during construction and would repair the features to pre-construction conditions or better following construction.

1.6.2 Additional Temporary Workspace, Access Roads, and Contractor and Pipe Yards

Vantage would require the use of ATWS along the pipeline rights-of-way for various road, railroad, wetland, and waterbody crossings and for specialized construction technique areas (e.g., steep side slopes). Use of ATWS would involve the same general steps as pipeline construction (e.g., clearing, grading as necessary).

Vantage would use existing public and private roads to the greatest extent practical, thereby reducing environmental impacts associated with new road construction or improvements to existing roads. Vantage would require construction and operation of seven new permanent roads as part of the Project. Construction of new roads would generally include clearing of existing vegetation, grading, and placement of gravel. A list of access roads associated with the Project is included in table 1.4.3-1.

Four areas are proposed for use as pipe storage/contractor yards (as discussed in section 1.4.4). Vantage intends to use pipe storage/contractor yards located on previously disturbed land cover that would not require grading or other land disturbance.

1.6.3 Aboveground Facilities

MLBV construction would include excavating topsoil; grading; installing concrete or steel pipe supports and building supports; positioning above ground piping and welding to underground piping; installing a valve assembly; building housing communications equipment; installing electrical and instrumentation; cleanup, painting, and final grading; and installing a security fence, gate, and signage.

1.7 LAND REQUIREMENTS

Construction of the Project would impact a total of approximately 734.8 acres of land, including the pipeline construction right-of-way, ATWS, aboveground facility sites, access roads, and pipe storage/contractor yards. Following construction, Vantage would allow a total of about 443.6 acres of land to revert to previous conditions. Vantage would retain the remaining 291.2 acres of land for aboveground facilities, permanent access roads, and the maintained pipeline right-of-way. Table 1.7-1 identifies the land requirements for each Project facility.

TABLE 1.7-1

Summary of Land Requirements Associated with the Vantage Pipeline Project

Facility	Land Affected During Construction (acres)	Land Affected During Operation (acres)
Pipeline Right-of-Way	674.6	290.6
Additional Temporary Workspace	51.6	0.0
Aboveground Facilities	0.4	0.4
Access Roads	0.2	0.2
Pipe Storage/Contractor	8.0	0.0
PROJECT TOTAL	**734.8**	**291.2**

Note: The totals shown in this table may not equal the sum of addends due to rounding.

1.8 AGENCY PARTICIPATION

The DOS, as the lead federal agency, has determined that issuance of a Presidential Permit for the proposed Project would necessitate the preparation of an EA and, as such, is acting consistent with the requirements of NEPA. A number of other federal agencies have permitting, environmental review, and

regulatory roles with respect to the Project, and are summarized below. State and local agencies were also consulted to identify issues arising during their permitting reviews. These issues are addressed in this EA.

1.8.1 Federal Lead Agency – U.S. Department of State

Vantage seeks a Presidential Permit for that portion of the Vantage pipeline from the northern-most MLBV to the U.S.-Canada border. Therefore, the DOS is the lead agency for review consistent with the NEPA and Section 106 of the National Historic Preservation Act (NHPA) process for the proposed Project. As the lead agency, the DOS directed the preparation of the EA for the proposed Project consistent with NEPA and also directed the Section 106 process consistent with the NHPA (16 U.S.C. 470 et seq.). As the lead federal agency, the DOS initiated informal consultation with the U.S. Fish and Wildlife Service (FWS) under Section 7 of the Endangered Species Act (ESA; 16 U.S.C. 1536 et seq.) to determine the likelihood of effects on listed species. The DOS in consultation with its third-party contractor also confirmed that the Project would be located outside of areas under the jurisdiction of the Coastal Zone Management Act of 1972 (National Oceanic and Atmospheric Administration, 2012; North Dakota RUS Bulletin, 2007).

The DOS coordinated with the assisting agencies to ensure compliance with laws and regulations within their authority as well as to ensure compliance with the following executive orders:

- EO 11988 – Floodplain Management;
- EO 11990 – Protection of Wetlands;
- EO 12114 – Environmental Effects Abroad of Major Federal Actions;
- EO 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations;
- EO 13007 – Indian Sacred Sites;
- EO 13112 – Invasive Species;
- EO 13175 – Consultation and Coordination with Indian Tribal Governments;
- EO 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds;
- EO 13212 – Actions to Expedite Energy-Related Projects; and
- EO 13337, as amended (FR, Volume 69, No. 87, page 25299) – governs the DOS issuance of Presidential Permits that authorize construction of pipelines carrying petroleum, petroleum products, and other liquids across U.S. international borders. Upon receipt of a Presidential Permit application for a cross-border pipeline, the DOS is required to request the views of the Secretary of Defense, the Attorney General, the Secretary of the Interior, the Secretary of Commerce, the Secretary of Transportation, the Secretary of Energy, the Secretary of Homeland Security, the Administrator of the U.S. Environmental Protection Agency (EPA), and other government department and agency heads as the Secretary of State deems appropriate. If in the Secretary of State's judgment it is in the national interest to do so, the DOS shall prepare a permit for the Project, in such form and with such terms and conditions as the national interest may require.

1.8.2 Other Federal and State Agencies

1.8.2.1 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) has jurisdictional authority pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344), which governs the discharge of dredged or fill material into waters of the United States (Section 404), and Section 10 of the Rivers and Harbors Act (33 U.S.C. 403), which regulates any work or structures that potentially affect the navigable capacity of a waterbody. The Project would be under the jurisdiction of the Omaha District of the USACE.

As an element of its review, the USACE must consider whether a proposed project avoids, minimizes, and compensates for impacts on existing aquatic resources, including wetlands, to achieve a goal of no net loss of values and functions. This EA addresses environmental impacts associated with the proposed Project as it relates to Section 404 of the CWA and Section 10 of the Rivers and Harbors Act.

The USACE authorizes several classes of construction projects through a Nationwide Permit (NWP) program if the project has minimal environmental impact and if the project can meet certain environmental compliance objectives. The USACE NWP 12 is specially geared to the construction of utility lines, such as pipelines, which do not result in the permanent loss of greater than 0.5 acre of waters (wetlands and waterbodies) of the United States, and would apply to the Project. Construction and operation of the Project would result in no loss of waters of the United States.

Waterbody and wetland impacts, including NWP 12, associated with the Project are discussed in section 2.4 of this EA.

1.8.2.2 U.S. Environmental Protection Agency

Under Section 402 of the CWA, the EPA has jurisdiction over the discharge of pollutants from a point source into waters of the United States. Administration of permit programs for point-source discharges that require a National Pollutant Discharge Elimination System (NPDES) permit has been delegated to the State of North Dakota; however, the EPA maintains oversight of the delegated authority. Regulated discharges include, but are not limited to, sanitary and domestic wastewater, gravel pit and construction dewatering, hydrostatic test water, and storm water (40 CFR 122).

Under Section 404 of the CWA, the EPA reviews and comments on USACE Section 404 permit applications for compliance with the Section 404(b)(1) guidelines and other statutes and authorities within its jurisdiction (40 CFR 230). Specific to the Project area, the EPA has delegated its NPDES program to the State of North Dakota.

Under Section 309 of the Clean Air Act (CAA; 42 U.S.C. 7401 et seq.), the EPA has the responsibility to review and comment in writing on the EA consist with the Council on Environmental Quality's (CEQ's) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500 to 1508).

Under Sections 3001 through 3019 of the Resource Conservation and Recovery Act (RCRA; 42 U.S.C. 3251 et seq.), the EPA establishes criteria governing the management of hazardous waste. Consistent with 40 CFR 261.4(b)(5), any hazardous waste generated in conjunction with construction or operation of the proposed Project would be subject to the hazardous waste regulations.

The proposed Project would be located within EPA Region 8. Prior to issuance of the EA, the DOS solicited comments on the EA from Region 8 of the EPA. The EPA's comments have been

incorporated into this EA. Issues related to the CWA, CAA, and RCRA are addressed in sections 2.4, 2.12, and 2.9.6, respectively, of this EA.

1.8.2.3 U.S. Fish and Wildlife Service

The FWS is responsible for ensuring compliance with the ESA. Section 7 of the ESA, as amended, states that any project authorized, funded, or conducted by any federal agencies should not "...jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined...to be critical..." (16 U.S.C. 1536[a][2]). The FWS also reviews project plans and provides comments regarding protection of fish and wildlife resources under the provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). The FWS is responsible for the implementation of the provisions of the Migratory Bird Treaty Act (MBTA; 16 U.S.C. 703) and the Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. 688). Easements are protected under the National Wildlife Refuge Systems Administration Act (16 U.S.C. 668dd[c]). The FWS of North Dakota has purchased many wetland and grassland easements in the Project area.

Section 7 of the ESA, as amended, 16 U.S.C. 1531 et seq., requires identification of and consultation on aspects of any federal action that may have effects on federally listed species, species proposed for federal listing, and their habitat. The ultimate responsibility for compliance with Section 7 remains with the lead federal agency (i.e., DOS for this Project). However, to expedite the review and approval process, and consistent with 50 CFR 402.08, which states that "a Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment by giving written notice to the Director of such designation," in a letter to the FWS dated December 16, 2011, the DOS designated Vantage and its consultant as its delegated non-federal agent to consult with the FWS to determine whether any federally listed or proposed endangered or threatened species or their designated critical habitat occur in the vicinity of the proposed Project.

A Biological Assessment (BA), assessing this information, has been prepared by the DOS and its independent third-party contractor for the Project. The BA was prepared with DOS guidance and supervision, and the DOS and its independent third-party contractor reviewed and evaluated the scope and contents of the BA. The BA has been submitted to the FWS for comment on the findings and is included as appendix B. Further discussion regarding threatened and endangered species potentially affected by the Project is included in section 2.8 of this EA. Project impacts on species protected by MBTA and BGEPA are discussed in section 2.7 of this EA.

The proposed Project would be located within the FWS Mountain-Prairie Region. Prior to issuance of the EA, the DOS solicited comments on the EA from the FWS North Dakota Field Office in the FWS Mountain-Prairie Region. The FWS's comments have been incorporated into this EA.

1.8.2.4 Advisory Council on Historic Preservation

Section 106 of the NHPA, as amended, requires the lead federal agency to take into account the effects of its undertakings on historic properties or historic resources that are listed in, or eligible for listing in, the National Register of Historic Places (NRHP), and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment if there would be adverse effects on NRHP-eligible properties. Historic properties are defined as prehistoric or historic districts, sites, buildings, structures, objects, or properties of traditional religious or cultural importance, which are listed or eligible for listing in the NRHP, including artifacts, records, and material remains related to such a property or resource.

The DOS, as the lead federal agency, is responsible for the review consistent with Section 106 of the NHPA as it relates to both public and private lands affected by the Project. Consistent with 36 CFR 800.2(a)(3), the DOS requested the services of Vantage and its consultant to prepare information, analyses, and recommendations specific to cultural resources for the Project. In a letter dated December 16, 2011, the DOS authorized Vantage as its delegated non-federal agent to initiate consultation with the North Dakota State Historic Preservation Office (SHPO) to determine site eligibility for the NRHP and the Project's effects on historic properties within the Area of Potential Effect (APE). Section 101(b)(3) of the NHPA provides each SHPO a prominent role in advising the responsible federal agencies and ACHP. A Class III cultural resources inventory report has been submitted to and commented on by the North Dakota SHPO, who concurred with the Class III cultural resources inventory report's "no historic properties affected" and "no significant sites affected" determinations.

The DOS, as the lead federal agency, is also responsible for reviewing compliance with Section 101(d) of the NHPA and the American Indian Religious Freedom Act. Compliance involves contacting Native American groups with an interest in the lands affected by the Project and ensuring that the requirements of the Native American Graves Protection and Repatriation Act are met. As discussed in section 2.11.3, the DOS has initiated contact and would continue to consult with several Native American groups with historic ties to the Project area. Regarding Native American Graves Protection and Repatriation Act, the excavation and inadvertent discovery provisions of the act apply only to federal and tribal lands (i.e., lands (including private lands) within the exterior boundaries of an Indian reservation) (National Park Service, 2012). Specific to the Project, no federally owned or federally designated tribal lands are anticipated to be affected.

Further discussions regarding cultural resources and tribal consultations are included in sections 2.11.2 and 2.11.3, respectively, of this EA.

1.8.2.5 Pipeline and Hazardous Materials Safety Administration

The PHMSA is responsible for protecting the American public and the environment by ensuring the safe and secure movement of hazardous materials to industry and consumers by all transportation modes, including the nation's pipelines. Through PHMSA, the DOT develops and enforces regulations for the safe, reliable, and environmentally sound operation of the nation's 2.3-million-mile pipeline transportation system and the nearly 1 million daily shipments of hazardous materials by land, sea, and air. Within PHMSA, the OPS has the safety authority for the nation's natural gas and hazardous liquid pipelines. For those pipelines, PHMSA identifies and evaluates risks; develops and enforces standards for design, construction, operations, and maintenance of pipelines; responds to accidents/incidents; educates operators and the public; conducts research on promising technologies; provides grants to states in support of their pipeline safety programs; and reviews oil spill response plans, with a special focus on protecting unusually sensitive areas. The regulations for Transportation of Hazardous Liquids by Pipeline are presented in 49 CFR 195.

Reliability and safety issues related to the Project are discussed in section 2.14 of this EA.

1.8.2.6 Natural Resources Conservation Services

The Natural Resources Conservation Service (NRCS) administers the Wetlands Reserve Program (WRP) (16 U.S.C. 3837 et seq.), under which it purchases conservation easements and provides cost share to landowners for the purposes of restoring and protecting wetlands. Under the WRP, the United States may purchase 30-year or permanent easements. Land eligibility for the WRP is based on NRCS's determination that the land is farmed or converted wetland, that enrollment maximizes wildlife benefits and wetland values, and that the likelihood of successful restoration merits inclusion into the program.

Lands under WRP easement are subject to development and other use restrictions to ensure protection of wetland and wildlife conservation values. NRCS also administers the Emergency Watershed Protection Program (Floodplain Easements) and the Healthy Forests Reserve Program, and shares management of the Grasslands Reserve Program (GRP) with the Farm Service Agency (FSA). NRCS is also responsible for the Farmland Protection Policy Act (7 CFR 658), including protection of prime and unique agricultural lands.

As proposed, the Project would not cross land currently enrolled in the WRP, Emergency Watershed Protection Program, Healthy Forests Reserve Program, or GRP.

1.8.2.7 Farm Service Agency

The FSA is a unit of the USDA and administers several land conservation programs, including the Conservation Reserve Program (CRP), the Conservation Reserve Enhancement Program (CREP), the Farmable Wetlands Program, and the GRP. These programs provide annual rental payments and cost-share assistance to establish long-term resource conservation measures on eligible farmland. The terms of rental agreements are from 10 to 30 years, during which most agricultural uses of the affected lands are prohibited. The GRP is managed jointly with NRCS and includes provisions for rental agreements up to 30 years, 30-year-easements, and permanent easements.

As proposed, the Project would not cross land currently enrolled in the CREP or Farmable Wetlands Program but would cross lands currently enrolled in the CRP (see section 2.6.1).

1.8.2.8 North Dakota Public Service Commission

The NDPSC has statutory responsibilities concerning pipelines in North Dakota that include establishment and enforcement of rates or charges and regulations by common pipeline carriers for receiving, gathering, transporting, loading, delivering, and incident storing of crude petroleum, coal, or gas purchased or sold in North Dakota; and enforcement of safety requirements for intrastate distribution and transmission of natural gas (NDPSC, 2012). North Dakota Rules, Article 69-06, Chapter 69-06-02.1 require that a utility planning to construct an energy conversion or transmission facility request a jurisdictional determination from the NDPSC. As such, the Project requires a Certificate of Corridor Compatibility and Route Permit from the NDPSC.

While the DOS could issue a Presidential Permit that would apply from the northern-most MLBV (i.e., MP 71.9) to the U.S.-Canada border (MP 79.8), NDPSC authorization is required for the entire Project in North Dakota.

Vantage submitted its application for a Certificate of Corridor Compatibility and Route Permit to the NDPSC in January 2012. On March 21, 2012, the NDPSC deemed the permit application complete and public hearings are pending.

1.8.2.9 Other State Agencies

During Project planning and preparation of this EA, other state agencies were consulted with by Vantage and/or the DOS. As listed in table 1.10-1 below, these other state agencies have responsibilities for state and local permits and authorizations. These include the NDHD, North Dakota Department of Game and Fish (NDGF), and the North Dakota SHPO. The NDHD would review and issue permits related to the hydrostatic testing, water quality, and construction stormwater activities associated with the Project. The NDGF was consulted to identify state-listed species of concern. The North Dakota SHPO was consulted to assist the DOS during the Section 106 process.

1.8.3 Indian Tribe Consultation

In its NOI to prepare an EA for the proposed Project, the DOS also presented its intent to conduct a parallel Section 106 consultation consistent with the NHPA. The DOS's NOI was issued on August 19, 2011 to known potentially affected Indian tribes to determine whether the tribes were interested in reviewing the proposed Project consistent with Section 106. Subsequently, the DOS issued government-to-government consultation letters to known potentially affected Indian tribes on December 16, 2011 to solicit comments on the Project and to request assistance in identifying properties or resources of traditional, religious, or cultural importance. In March 2012, the DOS hosted a conference call with interested tribes and hosted a meeting in North Dakota with interested tribes. As the lead federal agency for the proposed Project, the DOS is continuing to engage in consultation with identified consulting parties, including federal agencies, state agencies, North Dakota SHPO, the ACHP, and interested federally recognized Indian tribes (FR Volume 70, No. 226, page 71194) in the vicinity of the proposed Project.

Further discussion regarding tribal consultations is included in section 2.11.3.

1.9 ENVIRONMENTAL REVIEW OF CANADIAN PORTION OF THE PROJECT

The Canadian government has conducted its own environmental review of the portion of the Project in Canada. Consistent with EO 12114, the DOS is not preparing any environmental assessment of the impacts of the pipeline in Canada. Nevertheless, as a matter of policy, in addition to its environmental assessment of the Project in the United States, the DOS endeavors to monitor and obtain information, as appropriate, regarding the Project in Canada.

The Canadian process began on September 23, 2010 when Vantage submitted a Project Description to Canada's NEB. On February 8, 2011, Vantage submitted an application to the NEB for a Certificate of Public Convenience and Necessity for the proposed Project pursuant to Section 52 of the National Energy Board Act. On January 19, 2012, the NEB issued its Reasons for Decision for the Project and approved the Project.

1.10 PERMITS, APPROVALS, AND REGULATORY REQUIREMENTS

Table 1.10-1 lists the major permits, licenses, approvals, authorizations, and consultation requirements for the Project that would be required by federal, state, and local agencies prior to implementation of the Project.

1.11 ENVIRONMENTAL COMPLIANCE AND MITIGATION MONITORING

Vantage would be required to comply with the mitigation measures identified in its permit applications, as well as additional requirements of federal, state, and local agencies. Vantage would have two environmental inspectors (EIs) working during construction of the Project. It is anticipated that one EI would monitor general environmental issues and another EI would monitor for cultural resources, particularly during initial right-of-way stripping and trenching activities when the potential to encounter unanticipated cultural resources is possible. The EIs would be trained with respect to applicable guidelines such as wetland and waterbody construction and mitigation procedures.

Vantage would also provide for a Native American monitor during the excavation phases of pipeline construction and a wildlife biologist that would be onsite during critical time periods to address potential impacts on ground nesting birds and during whooping crane migration.

TABLE 1.10-1

Permits, Licenses, Approvals, and Consultation Requirements for the Vantage Pipeline Project

Agency	Permit or Consultation/Authority	Agency Action
FEDERAL		
U.S. Department of State	Presidential Permit, Executive Order 13337 of April 30, 2004 (69 Federal Register. 25299, et seq.)	Considers approval of cross-border facilities.
	National Environmental Policy Act	Lead federal agency for the environmental review of major projects considered for Presidential Permits.
	Section 106 of the National Historic Preservation Act (NHPA)	Supervises and coordinates compliance with Section 106 of NHPA and consultation with interested Tribal agencies.
U.S. Army Corps of Engineers	Section 404, Clean Water Act (CWA) - Nationwide Permit 12	Considers issuance of permits for the placement of dredge or fill material in Waters of the U.S., including wetlands.
U.S. Fish and Wildlife Service	Endangered Species Act, Section 7 Consultation	Considers lead agency findings of an impact of federally listed or proposed species; reviews Biological Assessment and, if the proposed Project is likely to adversely affect federally listed or proposed species or their habitats, Biological Opinion.
U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety	49 Code of Federal Regulations 195 – Transportation of Hazardous Liquids by Pipeline	Reviews design, construction, operations, maintenance, and emergency operations plan, inspection of pipeline projects, including Integrity Management Programs and identifying high consequence areas prior to installation.
U.S. Environmental Protection Agency, Region 8	Section 402, CWA, National Pollutant Discharge Elimination System (NPDES)	Has delegated its NPDES Program to the State of North Dakota.
Advisory Council on Historic Preservation	Consultation	Advises federal agencies during the Section 106 consultation process.
STATE OF NORTH DAKOTA		
Public Service Commission	Certificate of Corridor Compatibility and Route Permit	Considers the construction, operation, and maintenance impacts of a project.
Department of Health-Division of Water Quality	Pollution Discharge Elimination System General Permit for Temporary Dewatering, Hydrotest Water Discharge	Reviews and issues NPDES permit for the discharge of hydrostatic test water. Considers the potential for contribution to a violation of a water quality standard or potential for significant contribution of pollutants to Waters of the State.
	Pollution Discharge Elimination System General Permit for Temporary Dewatering, Trench and Well Point Dewatering Discharge	Considers the potential for contribution to a violation of a water quality standard or potential for significant contribution of pollutants to Waters of the State.
	General Permit for Construction Stormwater Discharge	Reviews and issues permit for the discharge of construction stormwater. Considers the potential for contribution to a violation of a water quality standard or potential for significant contribution of pollutants to Waters of the State.
North Dakota Department of Transportation	State Highway Crossing Permit	Reviews and authorizes the crossing of state highways.
BNSF Railway, Canadian Pacific Railroad	Railroad Crossing Permit	Reviews and authorizes the crossing of a railroad.
Department of Game and Fish	Endangered and threatened species consultation	Maintains list of Species of Conservation Priority, or those in greatest need of conservation in the state.
State Historical Preservation Office	Section 106 NHPA Consultation	Assists federal agencies during the Section 106 consultation process through identification, evaluation, protection, preservation, and development and/or mitigation efforts.
COUNTIES – NORTH DAKOTA		
Divide County	County Road Crossings	Reviews and authorizes the crossing of county roads.
Williams County	County Road Crossings	Reviews and authorizes the crossing of county roads.

Vantage would provide the EIs with copies of its final approved EPP and detailed alignment sheets. As discussed in section 1.6, the EPP includes mitigation plans for spill contingency, fire contingency, soil conditions, soil erosion, in-stream boring mud release, frozen conditions, sensitive plants, wildlife, wetland and water crossings, and cultural resources. The alignment sheets would identify locations of areas requiring specific mitigation measures and avoidance areas such as wetlands or cultural sites. The EIs would be provided copies of the Project-specific Stormwater Pollution Prevention Plan (SWPPP), Spill Prevention, Control and Countermeasure (SPCC) Plan, Emergency Response Plan, Cultural Resources Contingency Plan, stipulations resulting from Section 7 consultation, and other permitting requirements.

Vantage would also provide copies of its final approved EPP to its pipeline representatives and selected contractors, of whom the primary construction contractor would be responsible for implementing and following the requirements of the EPP, including all associated plans (see section 1.6). Vantage would also provide a construction line list to the contractor. The line list describes special pipeline construction requirements (e.g., soil salvage, seeding, road crossings, restoration measures, fencing requirements) and permit requirements and landowner stipulations.

The EI would have the authority to stop work to address issues related to environmental compliance. The EIs role and responsibilities would include environmental compliance inspection and reporting. The EI would be responsible to ensure that the requirements of the EPP are implemented. The EI would identify site-specific locations where implementation of mitigation measures identified in the EPP is required. In addition, the construction contractor would be required to comply with the EPP, permit stipulations, and requirements included in the line list, or take all appropriate precautions to protect livestock and crops affected by construction. It would be the contractor's role to implement any required corrective actions identified by the EI. Additionally, the contractor would not be provided the authority to make agreements with a landowner without approval from Vantage.

After construction, Vantage would conduct follow-up inspections of disturbed areas. For example, Vantage would conduct a post-construction soils assessment to visually inspect for vegetation issues such as invasive weed infestations, poor vegetation establishment, and reduced crop growth along the right-of-way. Vantage would also inspect waterbody crossings during post-construction reclamation soil and vegetation assessments to monitor for stability, erosion, invasive weed infestations, and vegetation cover.

Vantage's land reclamation and environmental impact monitoring would continue through 2013.

1.12 OPERATION, MAINTENANCE, AND SAFETY CONTROLS

Vantage's pipeline facilities would be operated and maintained consistent with minimum federal safety standards, 49 CFR 195. Operation and maintenance of the Project facilities would be performed by or at the direction of Vantage. Vantage anticipates that operation of the pipeline would require two to three new permanent employees.

The pipeline would be inspected periodically from the air and on foot as operating conditions permit, but no less frequently than as required by applicable regulatory requirements. These surveillance activities would provide information on possible encroachments and nearby construction activities, erosion, exposed pipe, and other potential concerns that may affect the safety and operation of the pipeline.

Vantage employees would undergo safety training and access to aboveground facilities would be maintained to prevent unauthorized access. Accessibility to the right-of-way to accommodate pipeline

integrity surveys would be accomplished by periodically clearing woody vegetation along the pipeline right-of-way. Cultivated croplands (such as wheat, peas, and sunflowers) would be allowed to grow in the permanent right-of-way; however, large trees would be removed from the permanent right-of-way.

As required by PHMSA and federal regulations (49 CFR 195), Vantage would develop an Emergency Response Plan detailing the actions to be taken in an emergency response in order to minimize health and safety risks in the event a rupture were to occur.

1.13 FUTURE PLANS AND ABANDONMENT

Vantage has not announced any plans for future facilities or facility abandonment. If Vantage were to construct new or additional facilities, or abandon the Project, these facilities would be subject to applicable federal, state, and local regulations.

2.0 ENVIRONMENTAL ANALYSIS

In this section, the environmental setting, general construction and operational impacts, and proposed mitigation for each resource are discussed. As part of its Presidential Permit application, Vantage provided information regarding the existing environment in which the Project is located and the Project's impacts on environmental resources. Vantage relied on information identified during its public and agency outreach efforts and its field analysis of the Project area, and information obtained from publically available resources (e.g., publications, electronic databases). Additionally, Vantage, as part of its proposal, agreed to implement certain measures to reduce impacts.

The DOS and its independent third-party contractor have assessed the Project's impacts on environmental resources and independently evaluated the proposed mitigation measures for their applicability using information provided by Vantage in its application, issues identified during the public scoping process, information provided during agency consultations, information obtained from publically available resources (e.g., publications, electronic databases), experience from recent pipeline projects and other federal agency documents, and subject matter expert knowledge. Conclusion statements of Project impacts are based on the DOS and its independent third-party contractor's analysis of the environmental impact of the Project and the following assumptions:

- Vantage would comply with all applicable laws and regulations;
- the facilities would be constructed as described in sections 1.4 and 1.6; and
- Vantage would implement the mitigation measures identified in its application materials and supplemental information submittals to the DOS, which include the EPP.[6] The DOS and its third-party contractor have reviewed Vantage's EPP.

The environmental consequences of constructing and operating the proposed Project would vary in duration and significance. Using criteria recognized by other federal and state agencies such as the Federal Energy Regulatory Commission and Bureau of Land Management, the DOS considered four levels of impact duration: temporary, short-term, long-term, and permanent. Temporary impact generally occurs during construction with the resource returning to preconstruction condition immediately after restoration or within a few months. Short-term impact could continue for up to 3 years following construction. An impact was considered long-term if the resource would require more than 3 years to recover. A permanent impact could occur as a result of any activity that modifies a resource to the extent that it would not return to preconstruction conditions during the life of the Project, such as the construction of aboveground facilities. Further, an impact would be considered significant if it would result in a substantial adverse change in the physical environment.

Additionally, consist with CEQ guidelines from Section 1508.8, the Project's effects were considered either direct or indirect. Direct effects are caused by the action and occur at the same time and place. Indirect effects are also caused by the action but are later in time or farther removed in distance, yet are still reasonably foreseeable.

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[6] The EPP has not been included as an attachment to this EA. However, a draft copy provided by Vantage is available for review on the DOS's website for the Project at: http://www.vantagepipeline.state.gov/. See Vantage Documents and "Environmental Data Provided by Vantage in Support of an Application for a Presidential Permit (March 2011)."

2.1 GEOLOGY

2.1.1 Environmental Setting

Physiographically, the Project is located within the glaciated section of the Great Plains Province classified as the Missouri Coteau. The Missouri Coteau extends from South Dakota to Saskatchewan in a band 30 to 40 miles wide, and forms the continental divide between the Gulf of Mexico and Hudson Bay. Regionally, it lies between the Missouri escarpment on the northeast and the well-drained ground moraine adjacent to the Missouri River on the southwest. To the north of the Missouri Coteau are the plains of the Central Lowland Province (Bluemle and Biek, 2007; Freers, 1970; Hansen, 1967).

The Missouri Coteau is comprised of glacial moraine[7] that forms a hummocky topography comprised of low hills, unintegrated[8] surface drainages, and potholes. In this area, the preglacial terrain sloped downwards to the northeast from the more elevated southwestern part of the state. As glaciers advanced along this slope during the Quaternary age (0.01 to 1.6 million years ago), glacial erosion and deposition had the effect of subduing the preglacial topography by filling existing lows and planing off the highs (Sloan, 1972).

Geologically in the Project area, the Missouri Coteau is comprised of Quaternary-age glacial drift overlying bedrock that formed in the Williston Basin (North Dakota, 2011). Glacial drift is a general term used to denote all deposits of glacial origin. Drift includes unsorted ice-laid rock debris called till, sorted meltwater-laid sand and gravel called outwash, and fine-grained sediments laid down in lakes. Usually associated with these drift deposits are windblown deposits of silt and sand referred to as loess. These unconsolidated glacial deposits, with a thickness of more than 500 feet, underlie the entire Project.

The Williston Basin is a large, oval-shaped structural and sedimentary basin formed during the Precambrian Period (about 1.8 to 1.9 billion years ago) that covers approximately 300,000 square miles in eastern Montana, western North and South Dakota, and southern Saskatchewan, Canada. The basin contains more than 14,800 feet of Paleozoic-age (245 to 570 million years ago) through Cenozoic-age (0.01 to 144 million years ago) sedimentary deposits. Directly underlying the glacial drift deposits in the Project area are the Paleocene to Cretaceous-age (57.8 to 144 million years ago) formations of the Bullion Creek Formation, Cannonball Formation, and Sentinel Butte Formation that together reach about 900 feet in thickness. The Bullion Creek Formation consists of yellow-brown silt, sand, clay, sandstone, and lignite. The Sentinel Butte Formation consists of gray-brown silt, sand, clay, sandstone, and lignite. The Cannonball Formation is comprised predominantly of sandstones and mudstone. These formations have limited exposure as small, isolated, bedrock outcrops found chiefly along the Missouri River escarpment in the northeastern part of Divide County, which is approximately 8 miles east and 16 miles south of the Project at the Tioga Gas Plant. Due to the overlying thickness of the glacial deposits, bedrock is not anticipated to be encountered by Project construction.

Mineral Resources

Geological resources that occur or are being exploited in the general vicinity of the Project include petroleum; coal and lignite (and associated potential shallow coal bed methane); trace metals including uranium, molybdenum, and germanium; construction materials including clay, sand, gravel, and scoria; and salts, including sodium sulfate, sodium chloride, and potassium chloride.

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[7] Glacial moraine is comprised of glacial drift that is deposited chiefly by direct glacial action. Its deposition provides constructional topography independent of control of the landscape on which the drift lies.

[8] "Unintegrated" means that ponds and sloughs are not connected to one another and no streams flow through the area.

With the exception of small sand and gravel borrow sites, there is little active industrial mineral production within the Project area. Based on information provided by Vantage, no sand and gravel pits were identified within 500 feet of the Project. Vantage would obtain sand and gravel as necessary for construction from existing commercial borrow sites; no new sand and gravel borrow sites would be opened by Vantage.

There is potential subsurface petroleum and geothermal resources in the Project area, but no active mining operations exploit these resources within the area to be disturbed by construction and operation. Oil and gas wells identified by Vantage within 500 feet of the Project are listed in table 2.1.1-1.

TABLE 2.1.1-1

Oil and Gas Wells within 500 feet of the Vantage Pipeline Project

Milepost	Well American Petroleum Institute Number	Well Owner	Well Name	Well Type [a]
0.7	33-105-00457-00-00	Hess Corporation	Tioga-Madison Unit E-115	WI
0.9	33-105-01394-00-00	Landtech Enterprises, LLC	Rehak 1 Swd	SWD
1.5	33-105-00251-00-00	Amerada Hess Corporation	Tioga-Madison Unit D-118	OG
1.7	33-105-01340-00-00	Hess Corporation	Astrid Ongstad 14-22	GASC
2.0	33-105-00413-00-00	Amerada Hess Corporation	Tioga-Madison Unit D-120	OG
2.6	33-105-01584-00-00	Xto Energy Inc.	Ongstad 41x-15	OG
4.4	33-105-00784-00-00	Texakota, Inc.	M. Borstad 4-4	OG
4.9	33-105-00772-00-00	Texakota, Inc.	H. Borstad 4-3	OG
4.9	33-105-01738-00-00	Texakota, Inc.	H. Borstad 4-5	Confidential
4.9	33-105-90044-00-00	Texakota, Inc.	H. Borstad Swdw 1	SWD
7.7	33-105-01729-00-00	Xto Energy Inc.	Eide 31x-29	OG
13.0	33-105-00808-00-00	Rio Petro Ltd	Sundhagen 1	WS
17.0	33-105-00996-00-00	Diamond Shamrock Exploration Company	Smith 24-31	OG
36.4	33-105-00953-00-00	Terra Resources, Inc.	Thoring 1-4	OG
46.7	33-023-00289-00-00	Atlantic Richfield Company	Wrolson 1	OG
63.2	33-023-00294-00-00	Louisiana Land & Exploration Company	Hagen 21-4 1	OG
67.0	33-023-00220-00-00	Colt Resources Corporation	Laverne Haugen 32-19	OG
68.6	33-023-00317-00-00	Sun Exploration & Production Company	Wehrman 1	OG

[a] WI = water injection
SWD = salt water disposal
OG = oil and gas
GASC = gas condensate
WS = water source

Source: North Dakota Industrial Commission (2011), Department of Mineral Resources, Oil and Gas Division

Because petroleum and geothermal resources are generally produced from depths typically greater than the pipeline (i.e., 4 to 5 feet from the ground surface), it is anticipated that construction and operation of the pipeline would not be expected to affect future petroleum and geothermal production. In areas where Vantage may impede development of subsurface minerals, Vantage would negotiate access rights and easements with existing permitted mineral claim owners to minimize any restrictions to the development of future mineral resources.

Geologic Hazards

Geologic hazards are natural, physical conditions that can result in damage to land and structures or injury to people. In the Project area these hazards potentially include mass movement, flooding, and seismic events. Based on a review of NRCS and USGS data, the resources identified in the Project area, and the pipeline construction methods proposed by Vantage, the potential for geologic hazards to significantly affect construction or operation of the proposed Project is anticipated to be low. The potential geohazards of concern are described in more detail below.

Mass Movement

Mass movement (landslide) is the down slope movement of earth materials under the influence of gravity. Detachment and mass movement of earth materials occurs when the stress imposed on materials is greater than the strength of the material holding it in place. Slopes fail for various reasons including the steepness or angle of the slope, rock type, bedding, and moisture content of the rocks. Most landslides in western North Dakota are rotational slumps. Typically, the part of the slope that breaks apart slides down the slope as a single unit and the beds tilt back in the direction of the slope. Successive landslides may occur at the same location. Over time, the accumulated material from multiple, adjacent landslides can cover an area that is several thousand feet wide and several miles long (Murphy, 2004)

The Project lies on glacial drift left by glaciers that advanced southward into North Dakota. Glacial drift is poorly consolidated and easily erodible and would be subject to erosion and mass movement on steep slopes (slopes greater than 20 percent). Table 2.1.1-2 summarizes locations crossed by or within 500 feet of the Project that, based on NRCS data, have greater than 20 percent slopes (USDA NRCS, 2008).

While approximately 3 miles of steep slopes are within 500 feet of the Project, there is little topographic relief along the entire length of the pipeline right-of-way and slopes are generally gentle (less than 4 percent) Project-wide, making the potential for mass movement to be considered low. There are no known or mapped areas of slope failure within the Project's construction workspace.

Flooding

Based on a review of USGS topographic maps and NRCS slope data, there is little topographic relief and slopes are low in the Project area. Flooding may become more of a nuisance than a hazard when rapid snowmelt occurs prior to the underlying ground having thawed, or in areas where the glacial till has a low permeability reducing infiltration. However, construction would occur in late summer through late fall after snowmelt has occurred. Todhunter and Rundquist (2008) described localized flooding within the North American Prairie Pothole Region of eastern North Dakota, an area physiographically and geologically similar to the Project area. This pothole topography is characterized by a multitude of shallow depressions that have formed in low-permeability glacial till overlying generally low permeability bedrock. The shallow depression potholes are usually filled with standing water, creating numerous prairie wetlands that may be temporary or permanent. Extended wet spells can significantly increase the number, size, and depth of the prairie wetlands (Murphy et al., 2002; LaBaugh et al., 1998; Johnson et al., 2004), leading to flooding that is generally localized to these isolated (unintegrated) topographic depressions.

TABLE 2.1.1-2

Slopes Greater than 20 Percent Crossed by or within 500 feet of the Vantage Pipeline Project

Begin Milepost	End Milepost	Length (feet)	Begin Milepost	End Milepost	Length (feet)
0.6	0.7	378.3	47.0	47.0	44.2
0.8	0.8	136.9	47.4	47.5	542.7
3.2	3.2	122.7	47.8	47.8	57.6
5.6	5.6	295.2	47.9	47.9	63.9
6.0	6.0	201.0	51.1	51.1	133.5
6.6	6.7	640.2	51.2	51.6	1,994.2
10.5	10.5	323.1	51.6	51.6	225.2
15.0	15.1	601.1	52.8	52.8	133.2
29.8	29.9	549.8	59.3	59.3	89.4
29.9	30.2	1,624.4	64.9	64.9	33.8
30.3	30.6	1,715.6	65.8	65.8	95.7
31.5	31.6	380.1	66.0	66.0	192.0
31.8	31.8	112.1	66.7	66.7	57.7
31.8	31.9	72.1	67.6	67.6	104.8
33.7	33.8	119.2	67.6	67.6	39.2
34.9	35.0	222.5	73.4	73.4	134.7
36.0	36.1	387.3	73.9	73.9	187.2
37.8	38.0	633.8	74.1	74.1	46.7
38.0	38.1	674.6	76.6	76.6	58.9
38.2	38.4	1,019.2	77.3	77.3	45.7
38.4	38.6	564.3	77.3	77.4	191.2
41.4	41.5	118.5	77.5	77.5	<0.1
46.8	46.8	78.7	77.6	77.6	92.3
Total					2.9 miles

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2008.

Based on information provided by Vantage, three areas with frequent flooding are known to occur within 500 feet of the Project at mileposts (MPs) 2.5, 16.0, and 30.8. Additionally, occasional flooding is known to occur within 500 feet of MP 16.5. However, because these tend to be associated with intermittent or ephemeral waterbodies/wetlands, these flooding events are not considered to have the same significance as regional flooding or flash events along major river ways or coastal flood processes. Because these flooding events are unintegrated and low energy, it is anticipated that flood-based scour in the Project area is unlikely.

Seismic Events (Faults and Earthquakes)

There are no known Quaternary faults in North Dakota (USGS, 2011b). Older, deeper faults do underlie North Dakota but they are generally considered dormant. Based on the state's record of seismic events, Bluemle (2002) concluded "North Dakota is located in an area of low earthquake probability" (and that) "...infrequent, small earthquakes may occur near or within the state, but it is unlikely they would cause any serious damage." The USGS (2012) noted that the first instrumentally located earthquake in the history of North Dakota occurred on July 8, 1968 near Huff. Its intensity did not exceed IV[9] (Modified Mercalli Scale). Bluemle (2002) noted the "1968 Huff earthquake remains the only tremor

[9] A Modified Mercalli Scale value of IV is defined by the U.S. Geological Survey (2009) as "Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably."

with an instrumentally verified epicenter in North Dakota, although it is likely that other small reported tremors have had epicenters within the state." Northwestern North Dakota is located in a seismicity zone where probabilistic ground motion maps for Peak Ground Acceleration show effective peak accelerations as having only a 2 percent chance of exceedance in 50 years (USGS, 2008).

Blasting

Based information provided by Vantage, and DOS's review of Project mapping and depth-to-bedrock soils information (see table 2.2.1-1), it is unlikely that bedrock would be encountered during Project construction and, therefore, blasting is not anticipated.

Paleontological Resources

Geologic deposits underlying the Project are potentially fossil-bearing. The shallowest bedrock formations (Sentinel Butte Formation, Bullion Creek Formation, and Cannonball Formation) are known to contain vertebrate, invertebrate, and/or plant fossil remains (Hoganson, 2006a and 2006b). However, these rock formations do not crop out in the Project area, nor would Project construction likely encounter buried rock.

Regarding shallower unconsolidated glacial deposits that directly underlie the Project, there have been citations to Quaternary-age mammal fossil remains found in North Dakota glacial deposits (Kihm, 1987; Harrington and Ashworth, 1986; Hoganson, 2003, 2006c, and 2010; Hoganson and McDonald, 2007; Clayton, 1980). Newbrey and Ashworth (2004) report Quaternary-age fossil fishes from the Missouri Coteau area, and beetle assemblages preserved over a 10,000 year period are reported in Missouri Coteau deposits by Ashworth and Brophy (1972). Though fossils are present, they are not necessarily ubiquitous within the underlying glacial deposits.

Consistent with the fossil classification developed by the Bureau of Land Management (USDA, 2007) and based on the potential presence of Quaternary-age fossils, these glacial deposits are considered to have a Probable Fossil Yield Class (PFYC) of 2 or 3. Table 2.1.1-3 lists where Vantage has identified it would cross Quaternary-age geologic deposits with a potential to contain fossils with a PFYC of 2 to 3.

All geologic deposits cited in the table are glacial in origin and a component of the Coleharbor Formation. The Coleharbor Formation is described as a sandy, silty clay with pebbles of limestone, dolomite, granite, gneiss, and basalt; nonorganic, bedded clay, silt, sand, and gravel; and as thick as 600 feet (Clayton, 1980; USGS, 2012a). The pipeline would be installed at a depth of between 4 to 5 feet. Based on the geological setting and classification, it is anticipated that Project activities could disturb Quaternary-age deposits that have a potential to contain fossils.

2.1.2 Construction and Operation Impacts and Mitigation

Because of the anticipated depth of glacial drift underlying the Project, mineral resources associated with the underlying bedrock (oil and gas, salts, etc.) are found at a depth far below the pipeline trench and installation depth. It is anticipated that these resources would be unaffected during Project construction and operation. Further, as discussed in section 2.1.1, impacts associated with natural geologic hazards such as flooding and/or seismic events are not anticipated.

TABLE 2.1.1-3

Geologic Deposits Crossed by the Vantage Pipeline Project with Potential to Contain Significant Fossils

Begin Milepost	End Milepost	Depositional Environment Description	Length (miles)
0.0	0.4	Draped On Older Surf Glacial Deposits	0.4
0.4	5.5	Collapsed Glacial Deposit	5.1
5.5	6.5	Collapsed Glacial Deposit	1.0
6.5	6.9	Ice walled Lake Offshore Deposit	0.4
6.9	7.8	Collapsed Glacial Deposit	0.9
7.8	10.0	Collapsed Glacial Deposit	2.2
10.0	11.9	Draped On Older Surf Glacial Deposits	1.9
11.9	26.0	Transition Sediment Glacial	14.2
26.0	28.9	Collapsed Glacial Deposit	2.9
28.9	31.0	Collapsed Glacial Deposit	2.1
31.0	31.9	Collapsed River Sediment	0.9
31.9	38.9	Collapsed Glacial Deposit	7.0
38.9	41.6	Thrust Masses Glacial Deposit	2.7
41.6	43.5	Collapsed Glacial Deposit	1.9
43.5	44.3	Collapsed River Sediment	0.8
44.3	50.3	Collapsed Glacial Deposit	6.0
50.3	51.6	Collapsed River Sediment	1.3
51.6	52.2	Collapsed River Sediment	0.6
52.2	53.0	Collapsed Glacial Deposit	0.8
53.0	54.4	Collapsed Glacial Deposit	1.4
54.4	58.0	Collapsed Glacial Deposit	3.7
58.0	59.5	Thrust Masses Glacial Deposit	1.5
59.5	61.0	Collapsed Glacial Deposit	1.5
61.0	62.7	Collapsed Glacial Deposit	1.7
62.7	64.4	Collapsed Glacial Deposit	1.7
64.4	67.2	Thrust Masses Glacial Deposit	2.8
67.2	68.1	Collapsed Glacial Deposit	1.0
68.1	71.4	Collapsed River Sediment	3.3
71.4	72.2	Collapsed Glacial Deposit	0.7
72.2	72.9	Collapsed River Sediment	0.7
72.9	77.3	Collapsed Glacial Deposit	4.4
77.3	79.5	Collapsed River Sediment	2.3

The Project is likely to have temporary and direct impacts on the shallow subsurface geologic environment during construction due to the depths associated with trenching, pipe installation, and backfilling activities (4 to 5 feet). During operation, direct impacts on subsurface geologic resources may also occur to the extent erosion is caused by Vantage's vehicles and if construction activities were to cause undercutting, which could initiate slumping, landslides, or other mass movements of surrounding geologic resources.

To reduce potential mass movement concerns, Vantage would grade as necessary cross slope areas. Based on past and recent pipeline construction practices and industry-recognized standards, grading reduces the slope for safe operation of construction equipment and to accommodate pipe-bending limitations. In such areas, the slopes would be excavated prior to pipeline installation and reconstructed to their original contours during restoration. To limit erosion, temporary sediment barriers such as silt fence and straw bales would be installed during clearing to prevent the movement of disturbed soil into wetlands, waterbodies, or other environmentally sensitive areas. Temporary slope breakers, consisting of

mounded and compacted soil, would be installed across the right-of-way during grading, and permanent slope breakers would be installed during restoration.

Direct impacts on paleontological resources may occur during Project construction and significant fossil resources in the underlying glacial deposits may be exposed. To reduce the potential impacts associated with the loss of fossil resources, Vantage would instruct construction personnel about the types of fossils that might be encountered and the steps to take if fossils are uncovered. Should fossil resources be uncovered during surface disturbance, Vantage would immediately notify the appropriate state or federal agency and cease work in the area of the discovery until the fossil remains can be evaluated for scientific significance by a qualified paleontologist. If fossil remains of significance are identified, additional mitigation may be required. Additional mitigation could include collection, identification, and curation of the fossil remains and potentially monitoring of ongoing surface disturbance in the area of discovery, and would be determined with agency personnel depending on the paleontological find.

The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8). In addition to the mitigation measures proposed by Vantage, it would also be required to comply with any special conditions of the NDPSC listed in the Certificate of Corridor Compatibility and Route Permit applicable to geological and paleontological resources.

2.2 SOILS

2.2.1 Environmental Setting

The Project is located in the northern Great Plains Spring Wheat Land Resource Region that includes most of North Dakota, northern Montana, north-central South Dakota, and northwest Minnesota (USDA NRCS, 2006). The majority of the Project is located within the Central Dark Brown Glaciated Plains Major Land Resource Area (MLRA) (MLRA 53B, 76.1 miles), with a minor amount (3.7 miles) in the Northern Dark Brown Glaciated Plains (MLRA 53A) (USDA NRCS, 2006). The two MLRAs share similar physiography, geology, and soils.

The soils crossed by the Project were identified by Vantage and assessed by DOS using the Soil Survey Geographic (SSURGO2) database for Williams and Divide Counties (USDA NRCS, 2011). The SSURGO2 database is a digital version of original and updated county soil surveys developed by the USDA NRCS for use with geographic information systems. It provides the most detailed level of soils information for natural resource planning and management. The attribute data within the SSURGO database give the proportionate extent of the component soils and their properties for each soil map unit (USDA NRCS, 2011). Additional information about the soils in the Project area was obtained by Vantage from Official Soil Series Descriptions and verified by DOS's third-party contractor (USDA NRCS, 2011). Tables 2.2.1-1 and 2.2.1-2 provide soil characteristics and topsoil depth and slope class for soils affected by the Project, respectively.

2.2.1.1 Pipeline Facilities

Pipeline facilities include the 70-foot-wide temporary construction right-of-way and ATWS areas.

Prime Farmland

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, and oilseed crops (USDA, 2011). This designation includes cultivated land, pasture, woodland, or other lands that are or can be used for food or fiber crops, or are available for these uses. Prime farmland typically contains few or no rocks, is permeable to water and air, is not excessively erodible or saturated with water for long periods, and is not subject to frequent, prolonged flooding during the growing season. Soils that do not meet the above criteria may be considered prime farmland if the limiting factor is mitigated (e.g., by draining or irrigating). Approximately 1.9 percent (14.1 acres) of the soils included within the construction footprint is considered prime farmland. Prime farmland is evenly split between those soils where all areas are prime farmland (6.3 acres) and those areas that are prime farmland if drained (7.8 acres). The majority of the prime farmland (13.5 acres) is located within the Williams County portion of the Project (see table 2.2.1-1).

Erosion by Wind and Water

Erosion is a continuing natural process that can be accelerated by pipeline construction activities. Factors such as soil texture, structure, slope, vegetative cover, rainfall intensity, and wind intensity can influence the degree of erosion. Soils most susceptible to erosion by water are typified by bare or sparse vegetative cover, poor soil-structure resulting in non-cohesive soil particles with low infiltration rates, and moderate to steep slopes. Soils typically more resistant to erosion by water include those that occupy low relief areas, are well vegetated, and have high infiltration capacity and internal permeability. Wind erosion processes are less affected by slope angles than water erosion processes. Wind-induced erosion often occurs where vegetative cover is sparse, strong winds are prevalent, and soils have coarse and medium-textured surfaces that are low in clay content. Approximately 31.1 percent (228.2 acres) of the soils within the Project construction area are considered highly susceptible to erosion by water. No soils affected by the Project are considered to be highly susceptible to wind erosion because none of the soils within the Project construction area have a wind erodibility group designation of two or less. Most of the soils that are susceptible to water erosion (166.2 acres, 22.6 percent) in the Project area occurs within Divide County (see table 2.2.1-1).

Hydric Soils

Hydric soils are defined as "soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (FR, 1994). Soils that are artificially drained or protected from flooding (e.g., by subsurface drain tiles or surface ditches) are still considered hydric if the soil in its undisturbed state would meet the definition of a hydric soil. Approximately 5.1 percent (37.8 acres) of the soils affected by the Project are considered hydric (see table 2.2.1-1).

TABLE 2.2.1-1

Soil Characteristics Affected by the Vantage Pipeline Project (acres) [a]

County	Facility	Prime Farmland [b]		Highly Erodible		Hydric [b]	Compact. Prone [e]	Stony/ Rocky [f]	Shallow to Bedrock [g]	Droughty [h]	Saline [i]	Saline/ Sodic [j]
		All Areas	If Drained	Water [c]	Wind [d]							
Williams	Right-of-Way	6.3	7.2	61.6	0.0	17.8	19.9	0.0	0.0	12.3	2.6	0.0
	Access Roads	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Block Valves	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Contractor Yards	0.0	0.0	0.3	0.0	1.7	1.7	0.0	0.0	0.0	1.7	0.0
Williams Total		6.3	7.2	62.0	0.0	19.5	21.6	0.0	0.0	12.3	4.3	0.0
Divide	Right-of-Way	0.0	0.6	164.7	0.0	18.2	18.6	0.0	0.0	66.2	17.5	0.9
	Access Roads	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Block Valves	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Contractor Yards	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Divide Total		0.0	0.6	166.2	0.0	18.2	18.6	0.0	0.0	66.2	18.1	0.9
Project Total		6.3	7.8	228.2	0.0	37.8	40.2	0.0	0.0	78.6	22.4	0.9

[a] An area may have more than one characteristic.

[b] As designated by the Natural Resources Conservation Service.

[c] Includes land in capability subclasses 4e through 8e and soils with an average slope greater than 8 percent.

[d] Includes soils in wind erodibility group designation of two or less.

[e] Includes soils in somewhat poor to very poor drainage classes with surface textures of sandy clay loam and finer.

[f] Includes soils with a cobbley, stony, bouldery, shaly, very gravelly, or extremely gravelly modifier to the textural class of the surface layer and/or that have a surface layer that contains greater than 5 percent by weight rock fragments larger than 3 inches.

[g] Includes soils identified as containing bedrock at a depth of 5 feet or less from the surface.

[h] Includes soils with a surface texture of sandy loam or coarser that are moderately well to excessively drained.

[i] Includes soils that have a soil horizon or horizons within the soil profile with an EC > 4 dS/m.

[j] Includes soils that have a soil horizon or horizons within the soil profile with an EC > 4 dS/m and an SAR > 13.

TABLE 2.2.1-2

Topsoil Depths and Slope Class for Soils Affected by the Vantage Pipeline Project (acres) [a]

			Topsoil Depth (inches) [a]				Slope Class (percent)				
County	Facility	Total	0-6	>6 – 12	>12 - 18	>18	0-5	>5-8	>8-15	>15-30	>30
Williams	Right-of-Way	350.4	316.2	11.9	12.2	10.1	255.1	71.3	11.4	11.1	1.5
	Access Roads	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
	Block Valves	0.2	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
	Contractor Yards	4.0	2.3	1.7	0.0	0.0	3.3	0.7	0.0	0.0	0.0
Williams Total		354.6	318.7	13.6	12.2	10.1	258.6	72.0	11.4	11.1	1.5
Divide	Right-of-Way	375.8	353.9	8.8	0.4	12.7	167.8	101.7	61.1	42.1	3.1
	Access Roads	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
	Block Valves	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
	Contractor Yards	4.0	4.0	0.0	0.0	0.0	1.4	2.6	0.0	0.0	0.0
Divide Total		380.1	358.2	8.8	0.4	12.7	169.4	104.4	61.1	42.1	3.1
Project Total		734.8	676.9	22.4	12.6	22.8	428.0	176.4	72.5	53.2	4.6

[a] Includes A-horizons and subsurface layers with organic matter content > 2 percent by weight.

Note: The totals shown in this table may not equal the sum of addends due to rounding.

Compaction Potential

Soil compaction modifies the structure and reduces the porosity and moisture-holding capacity and water movement characteristics of soils. The degree of compaction depends on moisture content, soil texture, and soil structure. Fine-textured soils (i.e., sandy clay loam or finer) with poor internal drainage that are moist or saturated during construction are the most susceptible to compaction and rutting. Approximately 5.5 percent (40.2 acres) of the soils affected by the Project are considered prone to compaction (see table 2.2.1-1).

Stony/Rocky and Shallow-to-Bedrocks Soils

Stony/rocky soils are identified as soils that have a very gravelly, extremely gravelly, cobbley, stony, boulder, or shaly modifier to the textural class of the surface layer, or have a surface layer that contains greater than 5 percent (weight basis) rock fragments larger than 3 inches in diameter. None of the soils within the Project construction area are considered stony rocky soils based on the presence of rocks greater than 3 inches in any dimension in and near the soil surface (see table 2.2.1-1).

No hard bedrock was indicated within the Project construction area. It is possible that some soft (paralithic) bedrock may be present in isolated areas. However, no paralithic bedrock is indicated in the SSURGO2 database, and paralithic bedrock, if encountered, is considered easily excavated with normal construction equipment and should not require blasting for pipeline installation.

Revegetation Concerns

Based on past and recent pipeline construction practices and industry-recognized standards, successful restoration and revegetation are important for maintaining soil productivity and protecting the underlying soil from potential damage, such as erosion. The revegetation potential of soils affected by proposed Project was evaluated by Vantage and the DOS based on the soil surface texture, slope, and drainage class. Droughty soils that have a coarse surface texture (i.e., sandy loam or coarser) and are moderately well to excessively drained may prove to be difficult to revegetate because drier soils have less water to aid in seed germination and the eventual establishment of new vegetation. The coarser-textured soils also have a lower water holding capacity following precipitation, which could result in moisture deficiencies in the root zone and create unfavorable conditions for many plants. About 10.7 percent (78.6 acres) of soil within the Project construction area are considered droughty (see table 2.2.1-1). An additional 17.7 percent (130.3 acres) of the soils within the Project construction area have an average slope of greater than 8 percent, which may make the establishment of vegetation difficult. The majority of droughty and steeply sloping soils (greater than 8 percent) are in Divide County (66.2 acres, 9.1 percent and 106.3 acres, 14.4 percent of the total construction footprint, respectively) (see tables 2.2.1-1 and 2.2.1-2, respectively).

Saline and Sodic Soil

Soil salinity describes the amount of soluble minerals that are present in the soil. Soil salinity is evaluated by measuring the electrical conductivity (EC) of a soil solution measured as deci-siemens per meter (dS/m). Soil solutions progressively higher in dissolved solids are progressively better conductors of electricity and have higher electrical conductivity values. When present in high amounts (EC > 4 dS/m), the dissolved ions compete with plant roots for water and can adversely affect seed germination and seedling growth (Richards, 1954).

Soil sodicity is a measure of the amount of sodium (Na^+) in the soil solution and is evaluated by determining the chemically reactive amount of Na^+ relative to other dissolved ions. Soil sodicity is

evaluated by determining the Sodium Adsorption Ratio (SAR). When present as a high relative percentage of all ions (SAR > 13) sodium can adversely affect soil structure resulting in a soil that is hard with massive structure when dry and dispersed and impermeable when wet. Both conditions can adversely affect plant growth (Richards, 1954).

Soil salinity and sodicity are relatively common conditions in northwestern North Dakota. Soils can be saline, sodic, or both saline and sodic. Pipeline construction can aggravate saline and sodic conditions when saline or sodic subsoils that are excavated during trenching are brought into the plant rooting zone during backfill.

The Project construction area would affect 22.4 acres (3.1 percent) and 0.9 acre (0.1 percent) of saline and saline/sodic soils, respectively. No purely sodic soils were identified by Vantage or the DOS independent third-party contractor in the Project area (see table 2.2.1-1).

Topsoil Thickness

Based on past and recent pipeline construction practices and industry-recognized standards, stripping topsoil and replacing the topsoil to the soil surface is important in maintaining soil quality because the topsoil is where crop seed germination and rooting occur and topsoil is typically highest in organic matter and plant nutrients. Vantage proposes several methods to maintain topsoil characteristics of potentially affected soils within the construction footprint by stripping and storing topsoil separately from the underlying subsoils during construction and restoring topsoil to the soil surface during backfill and restoration. These include use of one of the following options, as described in the EPP:

- Option 1 – Full width stripping (for cultivated lands, or grassland and pasture land).
- Option 2 – Full width stripping (for cultivated lands, or grassland and pasture land) same as Option 1 with alternative stockpile locations.
- Option 3 – No stripping within the temporary workspace portion of the right-of-way (pasture or grassland).
- Option 4 – Full width stripping with salvage of the A and B soil horizon (prime farmland).
- Option 5 – Limited stripping over the trench line (wetland/waterbody crossings and frozen conditions).

The majority of soils affected within the Project construction work area (676.9 acres, 92.1 percent) have relatively thin (0-6 inches thick) topsoil (see table 2.2.1-2).

2.2.1.2 Other Project Facilities

Vantage would construct and operate eight MLBVs, permanently affecting 0.4 acre of soil. None of the soils within the area identified for a MLBV site would result in the permanent loss of prime farmland.

Vantage would construct and maintain seven new access roads, permanently affecting 0.2 acre of soil. Soils in areas proposed for access roads have few limitations. None of the areas are hydric, highly erodible by wind or water, compaction prone, shallow-to-bedrock, saline or saline sodic, or drought-affected.

Vantage would use four contractor/pipe yards during construction, temporarily affecting approximately 8.0 acres of soil. None of the soils within areas proposed for yards are highly susceptible to wind erosion; however, 21.3 percent (1.7 acres) are susceptible to erosion by water, 21.3 percent (1.7 acres) are prone to compaction, and 2.3 acres (28.8 percent) are saline (see table 2.2.1-1). None of the potentially affected yards are expected to have revegetation issues due to the presence of drought affected soils or steep (greater than 8 percent) soils (see tables 2.2.1-1 and 2.2.1-2, respectively). Following construction, the contractor/pipe yard sites would be returned to preconstruction conditions and would not result in permanent impacts on prime farmland.

2.2.2 Construction and Operation Impacts and Mitigation

Based on past and recent pipeline construction experience, nearly every phase of pipeline construction would directly and temporarily affect soils. Construction activities such as clearing, grading, trench excavation, backfilling, and the movement of construction equipment along the right-of-way would result in direct, temporary impacts soil resources. Clearing, although anticipated by Vantage and the DOS to be minor along the Project given the topography, removes protective vegetative cover and exposes the soil to the effects of wind, rain, and runoff, which increases the potential for soil erosion and sedimentation in sensitive areas. Grading, spoil storage, and equipment traffic would be extensive and can compact soil, reducing porosity and increasing runoff potential. Trenching of stony/rocky or shallow-to-bedrock soils can bring stones or rock fragments to the surface that could interfere with agricultural practices and hinder restoration of the right-of-way. Construction activities can also affect soil fertility and facilitate the dispersal and establishment of weeds. Contamination from spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely affect soils.

Vantage would implement its EPP (see section 1.6) to reduce the impacts of construction on soils (e.g., soil compaction). Vantage would also implement a Soil Conditions Contingency Plan. Aspects of the plan, included as part of the EPP, include protective measures for wet soil and high wind conditions, limiting topsoil depth, topsoil identification, constructing in uneven surfaces, construction and post-construction handling of stony soils and shallow bedrock areas, minimizing hazards associated with unstable trench walls, and minimizing soil pulverization. Vantage would also implement a Soil Erosion Contingency Plan as necessary during construction. Aspects of the plan, included as part of the EPP, include, but are not limited to: use of silt fences; construction of water bars and berms; use of sandbags and straw bales to filter and direct runoff; application of erosion netting, mulch, and/or tackifiers to limit sediment detachment and transport; and regrading and planting of cover crops. Additionally, Vantage would manage windrow size and, as necessary, apply water to manage fugitive dust resulting from construction activities.

To mitigate for water and wind erosion concerns, Vantage would implement stormwater BMPs as stipulated in a Project-specific SWPPP. Vantage would also comply with all conditions of the Construction Stormwater Permit required by the NDHD.

Grading would be minimized to the extent practicable to reduce the erosion potential and the amount of reclamation required. Some grading would be necessary to prepare a safe construction surface in areas of cross slopes and in steeply sloping areas. Post-construction grading of the right-of-way would restore contours to pre-construction grades and reestablish original drainage patterns to the extent practicable.

Vantage would implement one of five topsoil handling protocols to maintain pre-construction topsoil conditions to the extent practicable within the Project construction area. These topsoil stripping options are dependent on the land use and right-of-way configuration and would range from full right-of-way topsoil stripping (cultivated land, native range, or managed pasture lands) to stripping topsoil over

the trench only (wetland and watercourse crossings and winter construction). The handling of topsoil in prime farmland is a special consideration and, as such, Vantage would perform full right-of-way width topsoil (A horizons) and upper subsoil (B horizons) stripping on all areas of prime farmland. Windrows of A and B horizon material would be kept separate from the underlying trench subsoil. A and B horizons would be returned to the trench the opposite order removed.

Vantage would develop and require contractor compliance with a Project-specific SPCC Plan. The plan, included as part of the EPP, would provide BMPs for handling spills, and require that equipment refueling and servicing is conducted appropriately and in locations so as to avoid potential contamination of sensitive resources such as wetlands and waterbodies. Vantage would also develop and require contractor compliance with a Project-specific Fuels and Hazardous Materials Spill Contingency Plan. The plan, included as part of the EPP, would prescribe procedures to handle the initial spill response and reporting, spill clean-up procedures, and special situations such as spills next to waterbodies.

To minimize potentially adverse or long-term impacts on soil resources that could occur during clean up and/or restoration activities, Vantage would implement the following mitigation measures.

- Subsoil and topsoil would be replaced to the trench after the pipeline is installed in the reverse order removed, and the disturbed areas would be graded to preconstruction contours.

- A small trench crown may be left on the surface and over the pipeline to account for soil settling in the trench.

- Erosion and sediment control BMPs, including slopebreakers constructed of subsoil material capped with topsoil, would be established and maintained until revegetation successfully stabilizes the area.

- Tillage equipment would be used to smooth the soil surface prior to seeding.

- Compacted soils would be decompacted with appropriate equipment (multi-shank ripper, chisel plow).

- The right-of-way would be seeded with an appropriate seed mix prescribed to match the adjacent land use: native grasslands, wetlands, depressions, saline sites, and pasture lands.

- Fertilizers would be applied according to adjacent land uses as needed and requested by the landowner.

In addition, Vantage would conduct a post-construction soil assessment to document the degree of subsoil compaction, topsoil depth, topsoil and subsoil texture, degree of topsoil and subsoil mixing, contour restoration, and erosion. If issues are identified, Vantage would implement site-specific mitigation measures as soon as feasible.

During operation, direct impacts on soils may also occur as a result of vehicles used to periodically conduct inspection and vegetation maintenance activities along the right-of-way. However, based on recent pipeline projects and the inspection requirements set forth by the DOT in 49 CFR 195, these activities would be limited in scale and time, and are anticipated to result only in temporary, minor, and localized impacts on soils.

The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8). In addition to the mitigation measures proposed by Vantage, it would also be required to comply with any special conditions of the NDPSC listed in the Certificate of Corridor Compatibility and Route Permit applicable to soils.

2.3 GROUNDWATER

2.3.1 Environmental Setting

In general, groundwater can be potentially impacted by a pipeline construction and is dependent on the groundwater setting of a Project area. Construction activities may affect groundwater quantity and/or quality; however, these impacts are generally temporary to short term, and limited in scale. An evaluation of hydrogeologic resources in the Project area was conducted by Vantage through review of publications and public Geographic Information System databases provided by the EPA, the NDHD, the USGS, and the North Dakota State Water Commission (NDSWC).

As noted in section 2.1.1, the surficial geologic deposits that directly underlie the Project are comprised of unconsolidated glacial drift to a depth of hundreds of feet. Where these glacial deposits have saturated sand and gravel deposits (aquifers), groundwater is appropriated for public water systems, private drinking-water wells, irrigation, and livestock. The named sand and gravel aquifers crossed by the pipeline include the Skjermo Lake aquifer, Yellowstone River Channel aquifer, Little Muddy aquifer, and West Wildrose aquifer. Specific to these aquifers (Armstrong, 1967; NDSWC, 2010; USGS, 2000 and 2003):

- the Project would cross the Skjermo Lake aquifer at its northernmost end near the U.S.-Canada border. This aquifer is approximately 1 million acres in area, with the underlying water table ranging from above ground level to 100 feet below the ground surface. The saturated thickness of the aquifer in this area ranges from 38 to106 feet;

- the Project would cross the northern portion of the Yellowstone River Channel aquifer near the Williams and Divide Counties border. This aquifer runs from the southeast to northwest occupying an area of approximately 4.3 million acres. The saturated thickness of the aquifer in this area ranges from 12 to 20 feet;

- the Project would cross the Little Muddy aquifer north of the Yellowstone River Channel aquifer in Divide County. This aquifer occupies approximately 2.6 million acres and extends northeast of the Little Muddy River just north of the Yellowstone River Channel. The saturated thickness of the aquifer in this area rangers from 0 to 116 feet; and

- the Project would cross the West Wildrose aquifer in the northern portion of Williams County. This aquifer occupies approximately 4.3 million acres. The groundwater table in this area lies at a depth ranging from 88 to 125 feet with a saturated thickness ranging from 15 to 46 feet.

Ambient ground water quality in North Dakota's glacial drift aquifers typically ranges from 200 to thousands of miligrams per liter (mg/L) of total dissolved solids (TDS). The National Secondary Drinking Water Regulations suggest a secondary drinking water standard (MCL) of less than 500 mg/L for TDS. These secondary standards relate to aesthetic water quality (hardness, mineral deposits, colored water, staining, and salty taste) attributes rather than toxicity. Armstrong (1967) reports the TDS levels for the Skjermo Lake aquifer as 907 mg/L, the West Wildrose aquifer as 500 mg/L, and the Little Muddy aquifer as 1,030 to 2,050 mg/L. Water quality of the Yellowstone River Channel aquifer was not reported

due to the lateral and vertical variability in water quality. All of the TDS levels are at or exceed the secondary MCL for TDS.

2.3.1.1 Sole-Source Aquifers

The Sole Source Aquifer Protection Program is authorized by Section 1424(e) of the Safe Drinking Water Act of 1974 (42 U.S.C. 300 et seq.). The EPA defines a principal or sole-source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer (EPA, 2012a). These areas have few to no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. According to the EPA (2010), NDHD (2008), and correspondence from the NDSWC (2011), there are no designated federal or state sole-source aquifers in North Dakota and the Project area.

2.3.1.2 Public and Private Water Supply Wells

State and federal databases were reviewed by Vantage to identify public water supply wells, springs, wellhead protection areas (WHPAs), and private wells within 150 feet of the Project (NDSWC, 2007; NDHD, 2003). Vantage identified 11 domestic water supply wells are located within 1 mile of the Project; however, no private water supply wells or springs were identified within 150 feet of the Project construction work area. In addition, no public water supply wells are located within 1 mile of the Project. The nearest municipal wells, owned by the City of Tioga, are located approximately 1.4 miles southwest of the southern end of the Project. The North Dakota State Water Commission's website (2012) maps no federal- or state-designated WHPAs in the State of North Dakota.

2.3.1.3 Potential Contaminated Groundwater

The EPA's Geospatial Data Download databases, which include Superfund National Priorities List and RCRA site information, were reviewed by Vantage and DOS's independent third-party contractor to identify known and potential hazardous waste sites that have either impacted or have the potential to impact groundwater. In the general Project area, 10 sites were identified by address only in Tioga by the EPA (2012b). No referenced site had a noted permit violation, contaminant release, or enforcement action. Based on the proposed Project route and the EPA databases, there are no known hazardous or contaminated waste sites within the Project construction work area (EPA, 2010; EPA, 2012b).

2.3.1.4 Hydrostatic Testing

Once pipeline construction is completed, the pipeline would be hydrostatically tested consistent with DOT specifications to ensure pipeline integrity (49 CFR 192). Table 2.3.1-1 lists Vantage's estimated volume of groundwater that would be appropriated from a high capacity well at the Tioga Gas Plant near Tioga, North Dakota to complete the tests.

The pipeline would be hydrostatically tested in seven discrete sections to reduce the amount of water required for testing. This procedure requires that the water from one test section be transferred to the adjoining section by means of foam or poly pigs and air pressure; the sequence of testing and transfer would be repeated until all sections have been filled and tested. If any leaks are detected by a failure to maintain pressure, Vantage would identify the precise location of the leak, repair the pipe, and re-pressurize the test section until the DOT specifications are satisfied. Testing would begin on the south end of the pipeline (MP 0.0) and proceed north and west to the end of the U.S. section of the pipeline near MP 79.8.

TABLE 2.3.1-1

Currently Proposed Hydrostatic Test Water Volumes for the Vantage Pipeline Project

Test Section	Start Milepost	End Milepost	Volume of Water (approximate gallons)
1	0.0	7.8	168,038
2	7.8	19.8	258,002
3	19.8	37.5	382,664
4	37.5	52.7	327,350
5	52.7	59.8	153,148
6	59.8	65.2	114,796
7	65.2	71.9	143,870
8	71.9	79.8	171,743

2.3.2 Construction and Operation Impacts and Mitigation

Based on past and recent pipeline construction practices and industry-recognized standards, impacts, if any, on groundwater resources would be temporary and limited to that portion of a groundwater system(s) that is near the land surface, near or within the Project construction work area. The depth to groundwater in the Project area would generally be below the trench excavation depth of 5 feet, as discussed in section 2.3.1. During construction, if the groundwater table is found to be less than 5 feet below the land surface, dewatering may be necessary. Dewatering would temporarily appropriate groundwater resources creating a short-term fluctuation in groundwater levels, and a change in shallow groundwater flow direction. However, it should not change water quality. These impacts would be direct, temporary to short term, and localized to the construction area. As discussed in section 2.3.1, no wells or springs were identified within 150 feet of the Project. Therefore, it is anticipated that area groundwater supply quantity and quality should not be significantly impacted by Project construction and operation.

Blasting could impact groundwater systems creating potential water quality and quantity impacts at nearby water supply wells and springs. However, blasting is not anticipated for the Project (see section 2.1.1).

Shallow groundwater could be vulnerable to contamination caused by inadvertent surface spills of hazardous materials used during construction. Vantage's SPCC Plan would be used to minimize the potential for groundwater impacts associated with an inadvertent spill of fuel, oil, and other hazardous fluids. The SPCC Plan would describe response, containment, cleanup, and reporting procedures. The SPCC Plan would also describe preventative measures such as spill training for construction personnel, regular inspection of equipment for leaks, and construction of containment systems around temporary fuel storage areas. It is anticipated that implementation of the SPCC Plan would reduce the potential for long-term impacts and contamination due to construction activities.

Project construction, including fueling activities and accidental spills of hazardous substances, could potentially impact the water quality and capacity of nearby private water supply wells. Though no water supply wells were identified within 150 feet of the Project, to avoid or minimize potential Project impacts on area water wells, Vantage would prohibit fueling within 200 feet of any identified private wells.

Vantage does not anticipate encountering previously existing contamination but would dispose of or mitigate any hazardous materials uncovered during construction consistent with applicable federal, state, and local requirements.

After successfully testing all sections, Vantage would dewater the last section of pipeline by discharging the hydrostatic test water consistent with Vantage's North Dakota NPDES permit conditions. In addition, Vantage would utilize measures outlined in its EPP to minimize the potential for erosion during discharge of the hydrostatic test water by regulating the discharge rate, using energy dissipation devices, and installing sediment barriers as necessary. Vantage would obtain approval from and notify the landowner of the hydrostatic test water discharge and approximate volume prior to the release. It is anticipated that water appropriation and discharge for hydrostatic testing is not expected to have a long-term or significant impact on the source aquifers groundwater quantity or quality.

The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8). In addition to the mitigation measures proposed by Vantage, it would also be required to comply with any special conditions of the NDPSC listed in the Certificate of Corridor Compatibility and Route Permit applicable to groundwater resources.

2.4 SURFACE WATER AND WETLANDS

2.4.1 Environmental Setting

The Project is located in the Northwestern Glaciated Plains ecoregion, a region characterized by a semi-arid, continental climate with short, hot summers and long, cold winters (USGS, 2011c). The area is a transitional region between the generally more level, moister, more agricultural Northern Glaciated Plains to the east and the generally more irregular, dryer, Northwestern Great Plains to the west and southwest (USGS, 2010). Located throughout this ecoregion are semi-permanent and seasonal wetlands, locally referred to as Prairie Potholes.

Snowmelt and spring rain runoff over frozen soil discharges the greatest volume of water from the area. Stream flow data for the area obtained by Vantage indicates that on average 64 percent of the volume of water discharged in the Project area occurs in March and April. The lowest stream flows in the Project area occur between August and January (USGS, 2012a). The data suggests that precipitation falling in the period for May through August is lost to evapotranspiration or infiltration.

The Project would cross the prairie pothole region of the Missouri Coteau (Coteau) between approximate MPs 25.5 and 79.8 (Sloan, 1972). The topography of the Coteau was formed by the advance and retreat of glaciers, which resulted in a rolling land surface with numerous depressions ranging in size from less than one acre to more than 10,000 acres. Most of the wetlands (i.e., prairie potholes) in the Coteau are shallow temporary or seasonal basins; however, deeper semi-permanent wetlands and lakes area also scattered throughout the area (FWS, 1988a).

The Project is located in the Lake Sakakawea, Little Muddy, and the Brush Creek Closed sub-basins of the Missouri River Watershed (USGS, 2012c; North Dakota State Water Commission, 2011). Waterbodies crossed by the Project include intermittent and ephemeral drainages that were classified as wetlands during Vantage's surveys. These areas exhibit flow primarily during periods of snowmelt and rainfall, but are more characteristic of wetlands. As such, intermittent and ephemeral drainages affected by the Project are identified as wetlands.

Based on Vantage's correspondence with the USACE (KC Harvey, 2010; Kovach, 2011), it was determined that formal wetland delineations were not necessary for pipeline route planning. Rather, the USACE recommended that a conservative and approximate wetland boundary would be appropriate for impact avoidance and minimization efforts. Therefore, wetland delineations were not completed for the Project.

As described in Vantage's Wetland Assessment Report (see appendix B (included as appendix A)), National Wetland Inventory (NWI) data was used to conduct preliminary routing and planning, followed by a wetland survey to field-proof the NWI data along the preliminary pipeline route to more accurately identify the wetlands that could be affected during project construction. Wetlands were identified and mapped by Vantage consistent with the Routing Determination method as specified in the *Corps of Engineers Wetland Delineation Manual* (USACE, 1987). Table 2.4.1-1 lists the wetlands crossed by the pipeline route as identified during the wetland assessment.

TABLE 2.4.1-1

Waterbodies/Wetlands Crossed by the Pipeline Route [a]

Sub-Basins/Feature	MP	Width (feet)	NWI Classification [b]	Fishery	Flow Regime	Crossing Method
Lake Sakakawea Watershed (MPs 0.0 – 19.0)						
Unnamed wetland	2.5	72.9	PEMB/C	None	Intermittent	Bore
Unnamed wetland	9.4	67.7	PEMC/F	None	Ephemeral	Bore
Unnamed wetland	12.8	53.1	PEMB/C	None	Intermittent	Bore
Unnamed wetland	15.0	44.0	PEMB	None	Intermittent	Bore
Unnamed wetland	16.0	24.5	PEMB	None	Intermittent	Bore
Unnamed wetland	18.5	74.6	PEMA	None	Ephemeral	Bore
Little Muddy River Watershed (MPs 19.0 – 46.2)						
Unnamed wetland	25.5	110.4	PEMB/C	None	Basin	Bore
Unnamed wetland	25.9	31.4	PEMB/C	None	Ephemeral	Bore
Unnamed wetland	30.2	121.4	PEMB/C	None	Intermittent	Bore
Unnamed wetland	43.6	326.7	PEMC	None	Basin	Bore
Unnamed wetland	44.8	54.5	PEMB/C	None	Ephemeral	Bore
Brush Lake Closed Basin (MPs 46.2 – 79.8)						
Unnamed wetland	69.5	485.1	PUB	None	Basin	Bore
Unnamed wetland	77.6	51.1	PEMB	None	Basin	Bore

[a] Waterbodies crossed by the Project include intermittent and ephemeral drainages that were classified as wetlands during Vantage's surveys. These areas exhibit flow primarily during periods of snowmelt and rainfall, but are more characteristic of wetlands and have been identified as wetlands.

[b]
PEMA Palustrine, emergent, temporarily flooded.
PEMB Palustrine, emergent, saturated.
PEMC Palustrine, emergent, seasonally flooded.
PEMC/F Palustrine, emergent, seasonally flooded, semipermanently flooded.
PUB Palustrine, unconsolidated bottom.

Intermittent streams are defined as those channels or depressions that hold or flow water during wet or seasonal periods of the year, and are fed by groundwater, impoundments, snowmelt, or precipitation, but do not flow continuously. Intermittent stream bed and banks (i.e., channels) are typically well defined but lack the hydrological and biological characteristics associated with perennial streams. Typically during dry periods, flow ceases in intermittent channels and only deeper pools may remain; however, obligate wetland vegetation is present in these areas.

Ephemeral streams or channels are features that hold water only during and immediately after rain events or snowmelt. Ephemeral stream channels are not always well defined and may lie above the water table. In the semi-arid areas of North Dakota, ephemeral waters may also serve as transitional areas between uplands and jurisdictional waterbodies, and support obligate and facultative wetland species throughout the year.

Shallow-basin wetlands in the Project area collect and retain runoff from a relatively small surrounding area and do not outlet water. These wetlands exhibit varying degrees of saturation or inundation during the year and support obligate wetland species.

Intermittent and ephemeral waterbodies support hydrophytic vegetation and are classified as palustrine emergent (PEM) wetlands. Most of the PEM wetlands consist of a broad, vaguely defined channel (i.e., bed and bank) and are vegetated with obligate and facultative wetland species. Water levels and relative flow in the intermittent and ephemeral channels fluctuate dramatically with each season. Peak water levels and flows occur during early spring when snowmelt and rainfall runoff occurs over saturated or frozen soils. Decreasing flow rates are common during the summer, fall, and winter seasons; however, thunderstorms or heavy rains during summer can generate additional flow events (USGS, 2011a). Considering the hydrologic behavior and vegetative community in the intermittent and ephemeral channels, waterbodies and shallow-basin wetlands crossed by the Project were grouped into a single waterbody/wetland category.

With the exception of one palustrine unconsolidated bottom (PUB) wetland type (i.e., an excavated livestock water source), all waterbodies/wetlands crossed by the Project are classified as PEM wetlands (see table 2.4.1-1). The vegetative composition within PEM wetlands is dependent on hydrology, salinity, and dynamics, specifically grazing and cultivation. Vegetation generally occurs in a concentric pattern from a wetter center area dominated by spike rush (*Eleocharis* species). A drier ring of foxtail or wild barley (*Hordeum jubatum*) and an outer margin of western wheatgrass (*Pascopyrum smithii*) or thickspike wheatgrass (*Elymus lanceolatus*) may also be present unless cultivated. The wettest wetland types, where water stands into or through summer, are typically characterized by hardstem bulrush (*Schoenoplectus acutus*), often occurring as a near monoculture, or fringed with soft stem bulrush (*Schoenoplectus tabernaemontani*) or common three-square bulrush (*Schoenoplectus pungens)* along drier margins. Cattails (*Typha* species) are also seen in these wetter systems, although they are typically a minor component. During spring or in permanently flooded sites, aquatic buttercups (*Ranunculus* species), aquatic smartweeds, pondweeds (*Potamogeton* species), or duckweeds (*Lemna* species) may also be common.

PEM wetlands are further categorized into palustrine emergent temporarily flooded wetlands (PEMA), saturated wetlands (PEMB), seasonally flooded wetlands (PEMC), and deep marshes (PEMF). PEMA wetlands located in the Project area may contain standing water for a short period during the growing season, but are usually dry for the majority of the growing season. These wetlands can be cultivated in most years and are considered farmed wetlands. In the Project area, PEMA wetlands were frequently vegetated with smartweed, reed canary grass, foxtail or wild barely, curly leaf dock, field mint, and barnyard grass prior to cultivation. Other species common to PEMA wetlands in the Project area included fox sedge (*Carex Vulpinoidea*), Dudley's rush (*Juncus dudleyi*), Torrey's rush (*J. torreyi*), Macoun's buttercup (*Ranunculus macounii*), marsh cress (*Rorippa islandica*), rough cinquefoil (*Potentilla norvegica*), and biennial wormwood (*Artemisia biennis*).

Wetlands classified as PEMB and PEMC are the most common wetland types within the Project area. Dominant vegetation in PEMB wetlands includes smartweed, reed canary grass, several species of sedges (*Carex* species), and rushes (*Juncus* species). Under prolonged dry conditions, some PEMB wetlands can also be farmed. PEMC wetlands typically have shallow water areas for part or most of the year and are typically vegetated with broad-leaved cattail and soft-stem bulrush. Depending on the amount of spring and summer precipitation, these wetlands may in inundated or saturated throughout the year. PEMC wetlands crossed by the Project were not cultivated in 2011 due to the wet conditions that occurred that year.

Wetland complexes, consisting of two or more wetlands types (e.g., PEMB/C and PEMC/PEMF), would also be crossed by the Project (see table 2.4.1-1). PEMF wetlands are deeper marshes typically inundated between 3 inches and 3 feet or more of standing water. In the Project area, PEMC wetland types surround the deeper water PEMF wetland types.

High Value Wetland Habitat

The FWS identified two designated critical habitat wetland basins near the proposed Project area: Radar Waterfowl Production Area (WPA) and McCone Lake, which are known to provide breeding habitat for the federally threatened piping plover (FWS, 2011). The FWS also identified Hapet Lake, a known wetland used by piping plover (FWS, 2011). The wetlands at these locations are considered high value and are federally designated as critical habitat for piping plover. The FWS recommended that a 0.5-mile buffer be maintained from the high water mark of a plover nesting basin to avoid disturbance and reduce the possibility of "take." While the Project would be about 0.5 mile from McCone Lake, it would be within about 0.25 mile of Radar WPA near MP 68 and within about 650 feet of Hapet Lake near MP 52. Potential Project impacts and mitigation measures for these areas are discussed in section 2.4.2 below.

Wetland Easements

The FWS's Wetland Easement Program is a legal agreement between landowners and the FWS such that wetlands are protected from draining, filling, leveling, or burning activities (FWS, 2012g; FWS, 2011). Wetlands may be farmed, grazed, or hayed when they naturally dry up (FWS, 2012g). Based on the DOS independent third-party contractor's review of wetland easement maps provided by the FWS, the Project would cross wetland easements at several locations along the pipeline route and three MLBVs appear located within or adjacent to a wetland easement parcel (FWS, 2012b). Potential Project impacts and mitigation measures for these areas are discussed in section 2.4.2 below.

Water Quality

Water quality reporting requirements under Sections 305(b) and 303(d) of the CWA require states to assess the extent to which lakes, reservoirs, rivers, and streams are meeting water quality standards applicable to their waters, including beneficial uses as defined in their state water quality standards. In addition to beneficial uses, applicable water quality standards also include narrative and numeric standards and anti-degradation policies and procedures. While Section 305(b) requires states to provide only a statewide water quality summary, Section 303(d) provides a mechanism by requiring states to identify and list the individual waterbodies that are not meeting applicable water quality standards and to develop Total Maximum Daily Loads (TMDLs) for those waters. Both Section 305(b) reporting and Section 303(d) listings accomplish this assessment by determining whether a waterbody is supporting its designated beneficial uses. Waterbodies (wetlands) affected by the Project, however, have not been assessed or have had TMDLs identified (NDHD, 2010).

"Sensitive waterbodies" include those streams designated as one or more of the following: state-listed impaired waterbodies (Section 303(d)), waterbodies that are crossed less than 3 miles upstream of a potable water intake structure, agency-identified waterbodies of concern, fisheries of concern, streams supporting cold water fisheries, and/or state-designated scenic waterbodies. Based on a review of the State of North Dakota's reports, the Project would not cross or affect sensitive waterbodies, including receiving waterbodies or streams down gradient from the pipeline crossings.

North Dakota's water quality standards provide for four stream classes: I, IA, II, and III, but excludes wetlands. Although wetlands are "waters of the state" and protected under the state's standards,

the North Dakota's water quality standards do not define beneficial uses for wetlands. However, the water quality standards apply to intermittent and ephemeral channels, which are crossed by the Project. In all cases, channels with a defined bed and back are considered Class III waters, which are defined as:

> The quality of the waters in this class shall be suitable for agricultural and industrial uses. Streams in this class generally have low average flow with prolonged periods of no flow. During periods of no flow, they are of limited value for recreation and fish and aquatic biota. The quality of these waters must be maintained to protect secondary contact recreation uses (e.g., wading), fish and aquatic biota, and wildlife uses (North Dakota Legislation, 2012).

2.4.2 Construction and Operation Impacts and Mitigation

Based on National Wetlands Inventory wetland data and DOS's review of Vantage's Wetland Assessment Report, construction and operation of the Project would primarily affect PEM wetland types (see table 2.4.2-1). Vantage's Wetland Assessment Report is included as part of appendix B and includes maps of the wetland crossing locations in relation to the pipeline route.

TABLE 2.4.2-1

Wetland Classifications and Areas Affected by the Vantage Pipeline Project

Feature	MP	NWI Classification	Crossing Width (feet)	Area Affected by the Construction (acres) [a]	Area Affected by the Operations (acres) [b]	Proposed Crossing Method
Unnamed wetland	2.5	PEMB/C	72.9	0.0	0.1	Bore
Unnamed wetland	9.4	PEMC/F	67.7	0.0	0.1	Bore
Unnamed wetland	12.8	PEMB/C	53.1	0.0	<0.1	Bore
Unnamed wetland	15.0	PEMB	44.0	0.0	<0.1	Bore
Unnamed wetland	16.0	PEMB	24.5	0.0	<0.1	Bore
Unnamed wetland	18.5	PEMA	74.6	0.0	0.1	Bore
Unnamed wetland	25.5	PEMB/C	110.4	0.0	0.1	Bore
Unnamed wetland	25.9	PEMB/C	31.4	0.0	0.1	Bore
Unnamed wetland	30.2	PEMB/C	121.4	0.0	0.1	Bore
Unnamed wetland	43.6	PEMC	326.7	0.0	0.2	Bore
Unnamed wetland	44.8	PEMB/C	54.5	0.0	<0.1	Bore
Unnamed wetland	69.5	PUB	485.1	0.0	0.3	Bore
Unnamed wetland	77.6	PEMB	51.1	0.0	<0.1	Bore
Project total			**1,517.3**	**0.0**	**1.0**	

[a] Because the pipeline would be installed using the bore crossing method, direct impacts on wetlands as a result of construction would not occur.

[b] Assumes a 30-foot- wide permanent right-of-way. However, no wetlands would be filled or permanently lost, and wetlands would retain functionality similar to that of the pre-construction state.

As previously discussed, the majority of the waterbodies/wetlands that would be crossed by the pipeline are intermittent drainages and washes that are expected to be dry at the time of construction. If the drainages are dry at the time of construction, Vantage would use conventional upland construction methods. The depth of cover over the pipeline once reclaimed would be a minimum of 4 feet. The crossing location would be reclaimed to original contour and preconstruction conditions.

Based on typical pipeline construction practices, impacts on intermittent drainages would be limited to temporary alteration of channel beds and banks and possibly increased sediment load during

initial storm events following construction. Vantage would minimize direct impacts on waterbodies/wetlands where water is flowing, including associated floodplains, by installing the pipeline using the horizontal bore technique with the entrance and exit points located outside the wetland boundaries. The horizontal bore method allows for installation of the pipeline beneath a water feature by eliminating direct surface disturbance to the resource that would result from clearing and grading of streambanks, in-stream trenching, blasting, trench dewatering, and backfilling. Additionally, the horizontal bore method typically installs the pipeline to a depth where surface hydrology is unaffected. Therefore, it is anticipated that surface disturbance to waterbodies/wetland areas would not occur, and it is expected that the value and function of wetland areas would not be significantly affected by construction or operation of the Project.

In addition to preventing direct surface impacts using the horizontal bore method, the risk of stormwater runoff is also minimized using this crossing method. No grading adjacent to the waterbody is required using the horizontal bore method because the drill rig and associated equipment would be staged away from the waterbody. Stormwater runoff from the construction area could indirectly introduce contaminants and sediment into waterways and negatively impact aquatic resources. Vantage would be required, as part of its permitting process with the NDHD, to develop and implement the BMPs outlined in a Project-specific SWPPP. Vantage has also committed to developing with the construction contractor a Project-specific SPCC Plan to reduce the potential occurrence of fuel and chemical spills near waterbodies and to decrease the response time to remove spills should one occur.

Based on Vantage's Wetland Assessment Report, approximately 1.0 acre of PEMA, PEMB, PEMC, PEMF, and PUB wetlands would be located within the permanent right-of-way; however, wetlands would not be filled or permanently lost as a result of operation of the Project and they would retain functionality similar to that of the pre-construction state. Therefore, it is anticipated that operation of the Project would not adversely affect wetland areas.

Construction and operation of the Project is not anticipated to affect the function or compromise the value of wetlands in the prairie pothole region. As stated above, Vantage would use the horizontal bore method to avoid disturbance to wetland hydrology, soils, and vegetation. The drill entrance and exit holes would be located outside the wetland boundaries, and bentonite clay used during the drill would seal the pipe preventing drainage of subsurface water. Restoration of the right-of-way on either side of the wetland to preconstruction contours would reestablish surface hydrology.

The Project would affect several Wetland Easement Program areas. As previously discussed, wetland easements protect basins from being drained, leveled, filled, or burned. As stated above, Vantage would use the horizontal bore method to avoid disturbance to wetlands and, therefore, they are not expected to be drained, leveled, filled, or burned by pipeline construction or operation activities. However, Vantage's MLBVs 5, 6, and 7 may be located within a property parcel where a wetland easement has been established between the landowner and the FWS. The DOS expects that Vantage would continue to consult with the FWS regarding wetland easements and measures to avoid significantly impacting a wetland enrolled in the program. Further, Vantage has committed to obtaining the necessary authorizations form the FWS required for construction.

While the Project would be within the FWS-recommended 0.5-mile buffer near the Radar WPA and Hapet Lake, because the horizontal bore method would be used, wetland impacts on the basin of the critical habitat would not occur during construction or operation of the Project. Vantage would avoid construction within the breeding season (i.e., between April 1 to September 1) when piping plovers are typically present in the breeding area. Additionally, a 0.5 mile no-entry buffer would be maintained around known or potential nesting habitat during the breeding period. Vantage would limit vehicle use to the construction right-of-way where the pipeline would cross wetlands and vehicle use would be

prohibited outside of the construction right-of-way within 200 feet of a wetland edge. As discussed further in section 2.8.1.2, construction and operation of the Project may affect, but is not likely to adversely affect the piping plover, including its high value wetland habitat.

As discussed in section 2.3.1, Vantage would hydrostatically test the pipeline using water obtained from a high capacity well at the Tioga Gas Plant and, therefore, impacts on surface waters or wetlands are not anticipated as a result of hydrostatic testing activities. No wetlands would be affected by construction and operation of the MLBVs, access roads, and contractor/pipe storage yards proposed for the Project.

Based on Vantage's correspondence with the USACE, the Project would fall under NWP 12 (see section 1.8.2.1) (KC Harvey, 2010; Kovach, 2011). However, no mitigation or pre-notification to the USACE would be necessary because Vantage would not trigger any of the seven NWP thresholds that require pre-notification to the USACE. The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8), as well as NPDES and stormwater authorizations from the NDHD. In addition to the mitigation measures proposed by Vantage, it is expected that it would continue to consult with the FWS regarding wetland easements and comply with any necessary authorizations required for construction. It is also expected that Vantage would be required to comply with the conditions of the USACE's NWP 12 and any special conditions listed in the Certificate of Corridor Compatibility and Route Permit and NPDES and stormwater authorizations applicable to surface water and wetland resources.

Also, as discussed in section 1.8.2.2, the EPA is meant to review and comment in writing on the consistent with CEQ's Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500 to 1508). The proposed Project would be located within EPA Region 8. Prior to issuance of the EA, the DOS solicited comments on the EA from Region 8 of the EPA. The EPA's comments on issues related to wetlands and air quality (see section 2.12) have been incorporated into this EA.

2.5 FISHERIES

2.5.1 Environmental Setting

Based on Vantage's review of the Project and field surveys, no game or recreational fisheries are present in the waterbodies crossed by the Project, and no known fisheries considered significant by the NDGF would be affected by construction and operation of the Project. Further, no essential fish habitat under the jurisdiction of the FWS and no naturally reproducing or stocked trout streams are located in the Project area.

The Project would not directly affect perennial streams; however, intermittent and ephemeral conveyances crossed by the Project eventually discharge water into the Little Muddy River or the Missouri River, both of which support a diverse fishery.

Based on a review of USGS topographic maps, one ephemeral channel crossed by the Project at about MP 30.8 discharges directly into Cottonwood Lake in Williams County, a perennial waterbody that supports a stocked, warm water fishery. Cottonwood Lake is located approximately 0.5 mile west of the Project and supports a fishery that is actively managed by the NDGF. Since 1997, the lake has been regularly stocked with yellow perch (*Perca flavescens*), northern pike (*Esox lucius*), and fathead minnows (*Pimephales promelas*), a prey species for yellow perch and northern pike. The lake also has a boat landing and fishing pier. Impacts on fisheries and Vantages' proposed mitigation measures are discussed in section 2.5.2 below.

2.5.2 Construction and Operation Impacts and Mitigation

Based on past and recent pipeline construction experience, impacts on fisheries during pipeline construction are dependent on the resources, construction method, time of the crossing, duration of in-stream construction activities, water volume and velocity of flow, and mitigation measures employed during construction. Impacts related to sedimentation and increased turbidity can also occur after construction of the stream crossing has been completed, especially if stream banks are not stabilized and revegetated as soon as possible. Fishery resources could also be indirectly affected by improper discharge of hydrostatic test water, spills of hazardous materials, and stormwater runoff.

To minimize adverse impacts on downstream and aquatic resources, Vantage would cross waterbodies using the horizontal bore method (see table 2.4.1-1 and section 2.4.2). Potential impacts from sedimentation, turbidity, and potential contaminants encountered during and after construction would be minimized by Vantage's implementation of the measures included in its EPP. Further, Vantage would be required to develop and implement a Project-specific SWPPP as part of the NDHD permitting process. Sediment and erosion control devices (e.g., straw bales, silt fences, sediment containment berms, and other erosion controls) would be installed to contain soil within the approved work area. If necessary, trench water would be discharged into a straw bale filtering structure. Fuels, lubricating agents, hazardous materials, and chemicals would not be stored within 100 feet of a waterbody or wetland.

Based on correspondence with the NDGF Fisheries Division regarding the Project's potential impacts on the fishery resources located downstream, the Little Muddy River has a diverse fish assemblage but most species are restricted to the lower few miles of the Little Muddy River near the confluence with the Missouri River, which is located outside the Project area. In the headwaters of tributary streams nearer the construction area, the number of species present is significantly reduced to nonexistent (Ryckman, 2011). Therefore, it is anticipated that construction and operation of the Project would not significantly affect fishery resources.

As discussed in section 2.3.1, Vantage would hydrostatically test the pipeline to find leaks and verify the integrity of the pipeline using water obtained from a high capacity well at the Tioga Gas Plant. Impacts on fishery resources are not anticipated because these hydrostatic testing activities would ensure the pipeline is sealed. No fisheries are anticipated to be affected by construction and operation of the MLBVs, access roads, and contractor/pipe storage yards proposed for the Project.

Based on Vantage's correspondence with the USACE, the Project would fall under NWP 12 (see section 1.8.2.1) (KC Harvey, 2010; Kovach, 2011). However, no mitigation or pre-notification to the USACE would be necessary because Vantage would not trigger any of the seven NWP thresholds that require pre-notification to the USACE. The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8), as well as NPDES and stormwater authorizations from the NDHD. In addition to the mitigation measures proposed by Vantage, it would also be required to comply with the conditions of the USACE's NWP 12, and any special conditions listed in the Certificate of Corridor Compatibility and Route Permit and NPDES and stormwater authorizations applicable to fisheries.

2.6 VEGETATION

2.6.1 Environmental Setting

The Project is located area within a semiarid continental climatic regime in which, despite maximum summer rainfall, evaporation typically exceeds precipitation. Pre-settlement vegetation was mixed-grass steppe, which included short and tall grass species (e.g., blue grama (*Bouteloua gracilis*),

buffalo grass (*Bouteloua dactyloides*), little bluestem (*Schizachyrium scoparium*), needle-and-thread grass (*Hesperostipa comate*)). Woody vegetation was rare, except for cottonwoods (*Populus deltoide*), which were prevalent in riparian areas, floodplains, and wetter sites, and widely distributed Rocky Mountain junipers (*Juniperus scopulorum*) on steep side slopes.

With the settlement of the Northern Plains, native vegetation on land suitable for cultivation was replaced by crops and steep terrain was used for livestock rangeland. As a result, agriculture is the most extensive land use in the Project area. Agricultural practices in the Project are strongly influenced by the severe winters and limited precipitation of the region. As a result, spring wheat is planted rather than winter wheat and the practice of "summer fallow" is commonly used. The practice involves allowing a field to lie idle during the growing season, tilling as necessary to control weeds and maintain a loose soil surface. This practice reduces moisture loss by soil surface evaporation and evapotranspiration while allowing for efficient catchment of infrequent rain.

The main crop grown in the Project area is durum wheat. Other crops grown include hard red spring, hard white, and soft white spring varieties of wheat, and barley. Sunflowers, oats, safflower, canola, and flax are also important cultivated crops in the Project area (NRCS, 1991).

Conservation Reserve Program

Vantage identified several parcels enrolled in the CRP that would be affected by construction of the Project. The CRP is a voluntary program for agricultural landowners and involves a long-term agreement to conserve vegetative cover on eligible farmland (FSA, 2012). By agreement, each parcel placed in CRP has been planted with a specific seed mix. To preserve the landowner's eligibility in the CRP, the same seed mix identified in the agreement must be planted during restoration of the parcel.

Grassland Easement

The Grassland Easement Program is an agreement between landowners and the FWS such that land is not cultivated in order to preserve grassland (FWS, 2012a). To allow grassland nesting bird species an undisturbed nesting season, mowing, haying, and grass seed harvesting of a grassland easement must be delayed until after July 15 each year. Based on information the DOS and its independent third-party contractor received from the FWS, the Project would cross about 62 feet of one grassland easement parcel at about MP 59.0 (FWS, 2012b).

Invasive Weeds

North Dakota law (North Dakota Century Code § 4.1-47-02) requires every person to do all things necessary and proper to control the spread of noxious weeds and makes it illegal for any person to distribute, sell, or offer for sale within the state a noxious weed. Authority to carry out the noxious weed law is vested with the North Dakota agriculture commissioner and county and city weed boards. The Noxious Weed Team coordinates the efforts of county weed boards and state and federal land managers to implement integrated weed management programs.

Currently, there are weed boards in all of North Dakota's 53 counties. Each county has the option to add additional species to the state's noxious weed list for enforcement only in their jurisdiction.

Vantage completed weed surveys of the Project area in fall 2010 and the DOS and its independent third-party contractor used this information to assess the extent of weed infestations in the Project area and the species observed. Weed infestations observed were subsequently compared to federal and state noxious weed lists. Vantage's field surveys indicated that no federally listed noxious weed species were

present in the Project area in notable concentrations. Of the weed species on North Dakota list, Canada thistle (*Cirsium arvense*) was commonly found throughout the Project area adjacent to wetlands, field roads, and idle cultivated fields. Musk thistle (*Cardus nutans*) was also observed in isolated locations. No other noxious weed infestations were recorded during Vantage's surveys.

2.6.2 Construction and Operation Impacts and Mitigation

Based on a review of USGS topographic maps and Vantage's correspondence with the FWS and NDGF, construction of the Project would not affect vegetative communities that are designated as unique, significant, or protected. However, as discussed in section 2.8.1.1, FWS-designated critical habitat for piping plovers is located in the Project area. No woodlots or forested areas would be affected by construction; however, some tree lines (i.e., shelter belts) would be crossed by the pipeline route.

Table 2.6.2-1 provides a summary of vegetated land affected by construction and operation of the Project based on a review of aerial photograph and Vantage's field survey observations. Construction within the pipeline right-of-way and use of ATWS would temporarily affect about 726.2 acres of land, of which about 290.5 acres would be retained as new permanent right-of-way. The remaining 435.7 acres used for temporary construction right-of-way and ATWS would be allowed to revert to prior uses following construction.

TABLE 2.6.2-1

Summary of Vegetated Land Affected by Construction and Operation of the Vantage Pipeline Project

	Agricultural [a]		Open Land [b]		Wetlands		Total	
Facility	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.
Pipeline Right-of-Way [c, d]								
Williams County	243.2	103.0	74.1	33.3	0.4	0.4	317.6	136.8
Divide County	160.7	68.8	195.7	84.3	0.6	0.6	357.0	153.8
Additional Temporary Workspace	30.7	0.0	20.8	0.0	0.0	0.0	51.6	0.0
Aboveground Facilities – Mainline Valves	0.2	0.2	0.1	0.1	0.0	0.0	0.4	0.4
Access Roads	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.2
Pipe Storage/Contractor Yards	8.0	0.0	0.0	0.0	0.0	0.0	8.0	0.0
Project Total	442.9	172.2	290.8	117.9	1.0	1.0	734.8	291.1

[a] Agricultural land includes cultivated lands.
[b] Open land includes grassland or pasture/hay fields.
[c] Assumes a 70-foot-wide temporary construction right-of-way.
[d] Assumes a 30-foot-wide permanent operational right-of-way.
Note: The totals shown in this table may not equal the sum of addends due to rounding.

Prior to construction of the proposed pipeline facilities, Vantage would clear vegetation from the 70-foot-wide construction right-of-way and ATWS. In cropland, grassland, or improved (managed) pasture land, topsoil would be removed from either the full temporary right-of-way or from over the trench line and trench spoil area. Topsoil stripping and segregation from trench spoil would protect and retain the inherit fertility of the surface layer.

Based on past and recent pipeline construction experience and the facilities proposed, construction of the Project would result in short- to long-term and limited permanent impacts on vegetation. Short-term effects are associated with the length of time to return of the construction right-of-way and other temporary work areas to pre-construction conditions. The primary impact of construction and operation of the Project on vegetation would be the short- to long-term alteration of cover on managed hay land, grassland, and rangeland.

Following removal of the vegetative cover, the construction work area would be susceptible to wind and water erosion. These affects, however, would be minimized by the implementation of BMPs outlined in the Vantage's EPP to limit temporary impacts on exposed soils. Further, Vantage would be required to develop and implement a Project-specific SWPPP as part of the NDHD permitting process. Following construction, topsoil replacement would occur and restoration of the right-of-way in disturbed areas not under annually cultivation would be seeded according to landowner's preferences.

Following construction, the majority of disturbed areas would be allowed to revert to preconstruction conditions. The temporary construction right-of-way and ATWS would be allowed to return to pre-construction conditions shortly after construction, although that may require more than one full growing seasons to reestablish a protective vegetative cover. Agricultural lands would be available for planting immediately following restoration of the pipeline right-of-way. Vantage would revegetate disturbed areas consistent with the EPP, other permit requirements, and site-specific landowner requests. Further, Vantage would conduct routine monitoring of the right-of-way throughout the life of the pipeline, as required by the DOT.

Permanent impacts are those associated with operation of the pipeline and would occur where the Project would convert vegetated land to other uses. Construction of the Project would limit conversion of approximately 0.6 acre of native and mixed native vegetation to commercial/industrial uses by the installation of MLBVs and gravel roads providing access to the MLBV sites.

Vantage would mitigate impacts on 60 feet of FWS Grassland Easement Program lands by installing the pipeline under the easement using the horizontal bore method. A horizontal bore under the easement would avoid the need to create a pipeline trench and temporarily disturb existing vegetation.

The success of revegetation would depend on the local climate and soil moistures conditions at the time of planting, subsequent rainfall, soil type, seed, and seeding method. While Vantage's reclamation efforts would reestablish vegetation along the right-of-way, the amount of time required for complete recovery of the right-of-way to pre-construction conditions would vary depending on the species, with some areas restored to pre-construction conditions in 1 to 3 years, while others, such as native prairie, possibly taking 10 years or more for full recovery. To address impacts on CRP land, Vantage would contact landowners enrolled in CRP and determine the seed mix that must be planted to satisfy the conditions of the agreement and the acceptable seeding window.

As discussed in section 1.8.2.3, the DOS and its independent third-party contractor solicited comments on the EA from the FWS North Dakota Field Office prior to issuance of the EA. In its comments on the EA, the FWS recommend that Vantage conduct post-construction reseeding and develop a monitoring protocol to ensure that the habitat along the pipeline right-of-way is returned to pre-Project conditions. The FWS suggested that Vantage consider planting a diverse mixture of native cool and warm season grasses and forbs. Research has suggested that a more diverse mix, including numerous forb species, is not only ecologically beneficial, but is also more weed resistant, allowing for less intensive management and chemical use. In essence, the more species included in a mixture, the higher the probability of providing competition to resist invasion by non-native plants. The FWS recommended that the seed source should be as local as possible, preferably collected from the nearby native prairie, and that seed stock be obtained from nurseries within 250 miles of the Project area to insure the particular cultivars are well adapted to the local climate. The FWS also recommend that Vantage monitor reseeded areas to ensure that the area revegetates as expected.

As stated in its EPP, Vantage would select seed mixes to match the surrounding land use, which would include seed mix recommendations for native grassland, pastureland, and wetland sites; cultivated crop land would be put back into production by the landowner or lessee. Vantage would visually inspect

the right-of-way for vegetation issues (e.g., invasive weed infestations, poor vegetation establishment, reduced crop growth along the right-of-way) following construction. If visual differences are noted on and off the right-of-way, plant yield indices such as height, density, and vigor would be considered. Vantage's post-construction right-of-way inspections would focus on areas with extensive surface disturbance, moderate to steep slopes, waterbody/wetlands crossings, and areas of terrain instability that may be prone to erosion.

Based on past and recent pipeline construction experience, construction activities could potentially result in the spread of noxious weeds. Construction equipment carrying soil with weed seeds and propagules from previous use could introduce noxious weeds to the Project area. Additionally, the spread of weed seeds from an area of infestation to other areas along the pipeline route through transport on construction equipment and vehicles could occur. To mitigate the spread of any noxious weeds, Vantage would implement BMPs and weed control practices discussed in its EPP. These measures include, but are not limited, to the following:

- equipment would be cleaned prior to mobilizing equipment to the Project area;
- a pre-construction weed survey would be conducted to identify pre-existing weed conditions; and
- Vantage would consult with the Divide and Williams Counties Weed Control Association Boards to discuss information acquired during the survey and develop weed management plans, as necessary.

The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8). In addition to the mitigation measures proposed by Vantage, it would also be required to comply with any special conditions of the NDPSC listed in the Certificate of Corridor Compatibility and Route Permit applicable to vegetation resources.

2.7 WILDLIFE

2.7.1 Environmental Setting

2.7.1.1 Terrestrial Species

The Project area is inhabited by a diversity of large and small mammals, raptors, waterfowl, game and non-game birds, reptiles, and amphibians (see table 2.7.1-1). Upland and wetland wildlife habitats that are present include agricultural lands, improved grassland, CRP land, native grass land, scrub-shrub uplands, riparian areas, and herbaceous wetlands.

Mammal species present in the Project area are typical of those inhabiting mixed short-grass prairie and agricultural areas in northwestern North Dakota. Wildlife diversity and abundance is highest in the native grasslands and agricultural lands enrolled in the CRP, and along fence rows, ditches, and in wetland and riparian areas. The mosaic of these habitats provides wildlife with areas for foraging, cover, and breeding. No forested areas would be affected by construction or operation of the proposed Project.

Of the mammal species potentially present in the Project area, the gray wolf is only federally listed endangered mammal species listed in North Dakota (see section 2.8.1.1).

TABLE 2.7.1-1

Representative Wildlife Species Potentially Present in the Vantage Pipeline Project Area

Species	Species	Species
Mammals		
American badger	Gray wolf - extirpated/rare	Plains harvest mouse
American beaver	Hoary bat	Plains pocket gopher
American mink	House mouse	Plains pocket mouse
Arctic shrew	Keen's myotis	Prairie vole
Baird's shrew	Least chipmunk	Pronghorn
Big brown bat	Least weasel	Pygmy shrew
Black bear	Little brown myotis	Red fox
Black-tailed prairie-dog	Long-eared myotis	Richardson's ground squirrel
Bobcat	Long-tailed weasel	Sagebrush vole
Boreal red-backed vole	Meadow jumping mouse	Silver-haired bat
Bushy-tailed woodrat	Meadow vole	Small-footed myotis
Cinereus or masked shrew	Moose	Snowshoe hare
Common muskrat	Mule or black-tailed deer	Striped skunk
Common porcupine	Northern grasshopper mouse	Thirteen-lined ground squirrel
Common raccoon	Northern myotis	Western harvest mouse
Cottontail	Northern pocket gopher	Western red bat
Coyote	Northern river otter	White-footed mouse
Deer mouse	Northern short-tailed shrew	White-tailed deer
Eastern red bat	Norway rat	Woodchuck
Franklin's ground squirrel	Ord's kangaroo rat	
Reptiles		
Bullsnake	Prairie rattlesnake	Smooth green snake
Common garter snake	Racer	Western hognose snake
Common snapping turtle	Short-horned lizard	Western painted turtle
Plains garter snake		
Amphibians		
Canadian toad	Tiger salamander	Wood frog
Northern leopard frog	Western chorus frog	Woodhouse's toad
Plains spadefoot toad		

As discussed in section 2.4.1, the Project would be located within the prairie pothole region of the Missouri Coteau between approximate MPs 25.5 and 79.8. Prairie potholes are highly productive environments due to the rapid nutrient cycling that sustains colonizing microorganisms, algae, and larger invertebrates. High primary productivity (e.g., vegetative growth) combined with water fluctuations and a severe climate result in rapid nutrient cycling in prairie pothole wetlands. Emergent vegetation acts as a nutrient pump, drawing nutrients from the wetland soil during the growing season. With an abundance of dead vegetation in the spring, runoff water typically provides a flush of nutrients in the form of detritus and soluble water-borne nutrients into the wetland basins. In addition to seasonal flushes, annual variation in water permanence in the basins results in multi-year variation in nutrient cycles as additional plants die and enter the detrital layer. Detritus functions as a substrate for colonizing microorganisms, including a number of algal species that absorb necessary nutrients directly from the water. The algae are subsequently consumed by larger invertebrates. It is the biomass of the larger aquatic invertebrates that are critically important for foraging waterfowl and shorebirds during migration and breeding (FWS, 1988a).

2.7.1.2 Avian Species

The Project is located within the Central Flyway, a bird migration route that encompasses the States of Montana, Wyoming, Colorado, New Mexico, Texas, Oklahoma, Kansas, Nebraska, South

Dakota, and North Dakota, and the Canadian provinces of Alberta, Saskatchewan, and the Northwest Territories (Flyways.us, 2012). A portion of the Project is also located within the Missouri Coteau, which is a narrow band of prairie upland that stretches from southern Saskatchewan to South Dakota. The Missouri Coteau trends parallel to and east of the Missouri River and consists of hummocky topography characterized by unintegrated drainage (i.e., depressions, ponds, and sloughs are not connected to one another and no streams flow out of the area). The depressions, ponds, and sloughs provide valuable and, in some cases, unique waterfowl and shorebird habitat.

The State of North Dakota currently recognizes 365 avian species, of which 353 are considered valid and 12 are hypothetical (USGS, 2012d). A breakdown of this list includes 207 species that nest or have nested in North Dakota, 95 species that occur as migrants, 28 species that are accidental, 21 species that are occasional, 2 species that are extirpated, and 1 that is an extinct species.

Including those with inferred breeding status, at least 223 species are considered components of the breeding avifauna of North Dakota; however, not all species nest in the Project area. Table 2.7.1-2 lists the most common resident and migratory species that are known to be present during some part of the year in or near the Project area. The highest density and diversity of bird species can be expected to be associated with native prairie, wetlands, prairie potholes and alkaline lakes, and riparian corridors along waterways.

Migratory birds are those species that nest in the United States and Canada during summer and migrate south to the United States, Mexico, Central and South America, and the Caribbean for the winter season (FWS, 2012c). Migratory birds are protected under the MBTA and EO 13186. The MBTA "prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations and does not require intent to be proven." Section 703 of the MBTA states that "unless and except as permitted by regulations it shall be unlawful at any time, by any means or in any manner, to take, capture, kill, attempt to take, capture, or kill, or possess any migratory bird, any part, nest, or eggs of any such bird...." Unlike Section 7 of the ESA, the MBTA has no incidental take permit or its equivalent. Instead, there are only some very specific take permits allowed for specific purposes, such as falconry and scientific collecting. In addition, the MBTA itself authorizes take permits for numerous intentional acts including hunting, and there is a set of regulations specifically for the hunting of migratory birds.

While the MBTA has no provisions for allowing unauthorized take, the FWS has stated they recognize that some birds may be killed during the construction of linear projects even if all known reasonable and effective measures to protect birds are used (FWS, 2011). The FWS's Office of Law Enforcement's mission is to protect migratory birds through investigations and enforcement, as well as by fostering relationships with companies that have implemented effective steps to avoid the take of migratory birds. Companies are encouraged to work closely with the FWS biologists to identify reasonable, prudent, and effective measures to avoid any take.

Vantage conducted a sharp-tailed grouse and nesting habitat aerial survey of a 0.5-mile-wide corridor based on the proposed pipeline centerline in April and May 2011. Nineteen sharp-tailed grouse leks were identified in CRP grasses or native rolling pastures, and where larger tracts of grassland/pasture habitat were intact. One sharp-tailed grouse lek was identified within the construction disturbance area, approximately 15 feet from the pipeline centerline.

TABLE 2.7.1-2

Representative Avian Species Potentially Present in the Vantage Pipeline Project Area

Species	Species	Species	Species
American avocet	Dickcissel	Marsh wren veery	Short-eared owl
American bittern	Double-crested cormorant	Mccown's longspur	Smith's longspur
American coot	Dowitcher	Merlin	Snowy egret
American crow	Dunlin	Mourning dove	Solitary sandpiper
American golden-plover	Eared grebe	Nelson's sharp-tailed sparrow	Sora rail
American kestrel	Eastern kingbird	Northern flicker	Sprague's pipit
American tree sparrow	Ferruginous hawk	Northern harrier	Stilt sandpiper
American white pelican	Franklin's gull	Northern pintail	Swainson's hawk
American wigeon	Gadwall	Northern rough-winged swallow	Swamp sparrow
American woodcock	Golden eagle	Northern saw-whet owl	Trumpeter swan
Baird's sparrow	Grasshopper sparrow	Northern shoveler	Tundra swan
Bald eagle	Great blue heron	Olive-sided flycatcher	Upland sandpiper
Bank swallow	Greater prairie-chicken [a]	Ovenbird	Vesper sparrow
Bell's vireo	Greater sage grouse [a]	Peregrine falcon	Virginia rail
Black tern	Green heron	Philadelphia vireo	Warbling vireo
Black-billed cuckoo	Harris' sparrow	Pied-billed grebe	Western grebe
Black-crowned night heron	Henslow's sparrow	Pileated woodpecker	Western kingbird
Blue-winged teal	Hooded merganser	Piping plover	Western meadowlark
Bobolink	Horned grebe	Prairie falcon	Whimbrel
Bonaparte's gull	Horned lark	Red knot	White-faced ibis
Brewer's sparrow	House wren	Redhead	White-rumped sandpiper
Brown-headed Cowbird	Hudsonian godwit	Red-headed woodpecker	White-throated Sparrow
Buff-breasted sandpiper	Lapland longspur	Red-winged Blackbird	Whooping crane
Burrowing owl	Lark bunting	Ringneck	Willet
Canvasback	Le Conte's sparrow	Ruddy turnstone	Willow flycatcher
Caspian tern	Least tern	Rusty blackbird	Wilson's phalarope
Chestnut-collared Longspur	Lesser scaup	Sanderling	Wood duck
Chestnut-sided warbler	Loggerhead shrike	Sandhill crane	Wood thrush
Cinnamon teal	Long-billed curlew	Sedge wren	Yellow rail
Clay-colored sparrow	Mallard	Semipalmated sandpiper	Yellow-bellied sapsucker
Common goldeneye	Marbled godwit	Sharp-tailed grouse [a]	Yellow-headed Blackbird
Common snipe			
Common tern			

[a] This avian species is not protected by the Migratory Bird Treaty Act (MBTA). All other avian species in this table are protected by the MBTA (FWS, 2012h).

Based on FWS data, bald and/or golden eagles may use the Project area. According to the FWS (2011), golden eagles inhabit a wide variety of habitat types, including open grassland areas. Golden eagles are known to nest on cliffs, in trees, on man-made structures, and on the ground. Bald eagles tend to be more closely associated with forested areas near water; however, the birds have been found to nest in single trees several miles from the nearest water body. Considering the habitats used, there may be a potential for bald eagles to be using nest trees in or near the Project area. Nesting eagles can be very sensitive to disturbances near the nest site and may abandon the nests as a result of low disturbance levels, even those from pedestrian traffic.

Vantage conducted raptor nest location and nest occupancy surveys of a 1-mile-wide corridor based on the proposed pipeline centerline in May 2011. Five northern harriers and a Swainson's hawk

were observed, and one active red-tailed hawk nest (approximately 1,300 feet from the Project) and one inactive buteo nest (approximately 1,200 feet from the Project) were also observed. Northern harrier nests were not identified during the surveys.

2.7.2 Construction and Operation Impacts and Mitigation

2.7.2.1 Terrestrial Species

Based on past and recent pipeline construction experience and the facilities proposed, the primary effect on wildlife would be the temporary loss of habitats and displacement of wildlife during construction. Larger and more mobile wildlife, including bird and large mammals, would vacate the construction area during construction. Large expanses of available habitat lie adjacent to the construction work areas and mobile species would disperse to those areas, thereby only temporary displacement would occur. Smaller, less mobile wildlife species such as voles and mice may experience some direct mortality during clearing and grading activities; however, the losses would most likely be minor and insignificant on the local populations. The most common vole species in the Project area is the meadow vole. This species' population fluctuates in cycles every 2 to 5 years with peak densities of 60 to 250 individuals per acre recorded. After the peak density occurs, the population will often crash to a low as one vole per acre. The common deer mouse has widespread distribution throughout the Project area and population densities vary widely in different habitats and from season to season, but the species is considered generally abundant (Grondahl, No Date). While construction can impact a relatively small numbers of individuals, the overall impact on any species would be negligible.

Wetland areas and waterbodies that provide preferred habitat for frogs, turtles, and some snakes would not be affected by construction because Vantage would cross these areas using the horizontal bore method, thereby preventing impacts on aquatic habitats and minimizing impacts on individuals. Reptiles that prefer upland habitats (e.g., western hog-nose snake, prairie rattlesnake) are expected to be infrequently encountered during construction of the Project as population densities are low (Grondahl, No Date). It is probable that construction could affect a small number of individuals; however, the effect of construction on the total population is expected to be minimal.

The possibility that construction could cause permanent displacement of wildlife or result in a decrease in wildlife population densities due to long-term changes in habitat is highly unlikely. The majority of the Project route (approximately 60 percent) is located in actively managed agricultural land that is periodically plowed, planted, sprayed, and/or harvested. The remaining areas consist of native grassland and many of these parcels support grazing livestock. Wildlife species occupying grassland may disperse into nearby habitats during construction, including marginal habitats, resulting in lowered reproductive success and survival due to increased competition or other effects of being forced into sub-optimal habitats; however, the affected habitat is minimal in relation to the adjacent habitat available. Grassland is anticipated to be restored and returned to a pre-construction condition within 10 years following construction, with the exception of about 0.6 acre of land converted to commercial/industrial use for the MLBVs and access roads. Based on past and recent pipeline projects, wildlife populations are expected to return to levels comparable to adjacent, undistributed areas within a short time period, and it is anticipated that no significant habitat alteration or detrimental affects to local wildlife populations are likely to occur as a result of construction and operation the Project.

2.7.2.2 Avian Species

Based on past and recent pipeline construction experience, disturbance to migratory bird species, including raptor species, during nesting is dependent on site-specific conditions, including vegetation types, terrain, presence of trees, line of sight, and adaptation of the species to development. Short-term

impacts on migratory birds would consist of loss of habitat during construction of the pipeline until the restored area could support vegetation sufficient to replace habitat impacted by construction. During this period, migratory birds that would have nested or fed within, or adjacent to, the area disturbed during construction would be temporarily displaced due to construction activities, noise, and traffic. During the spring and fall, migrating birds would avoid construction-impacted areas and use areas not impacted by construction. Habitat fragmentation created by the temporary loss of habitat and the creation of open early successional and induced edge habitats could also decrease the quality of habitat and food sources (e.g., insects) for some grassland bird species.

To avoid potential impacts on migratory birds, several measures can be used, including effective vegetation removal (i.e., nesting habitat removal) prior to the nesting season; construction after the nesting season has been completed, the young of the year have fledged, and the fledged birds are able vacate the area if disturbed (July 15 in the Project area); and to conduct nest surveys during construction to identify and avoid nests during construction.

Based on correspondence from the FWS, it is recommended that the construction corridor be mowed or disked to remove vegetative cover in the preceding fall to discourage nesting migratory birds from using the area if construction is to occur between the breeding season (i.e., between February 1 and July 15) (FWS, 2011). Vantage intends to conduct construction outside of the breeding season and, therefore, vegetation cover removal is not planned. The FWS has also recommended that Vantage wait until after the young have fledged or coordinate with the FWS on appropriate nest buffers. In the event construction activities occur between February 1 and July 15, Vantage would hire a qualified biologist to conduct bird nest surveys 5 days prior to construction. If migratory birds nests are discovered in the Project construction work area, construction would be halted in that specific area and Vantage would consult with the FWS regarding protection of the nest and the means to allow construction equipment to bypass the nest and proceed along the right-of-way.

Implementing the FWS-recommended measures is anticipated to avoid impacts on the local migratory bird population. In addition, Vantage, in consultation with the FWS and the DOS, has agreed to prepare a Conservation Agreement (Agreement) for the conservation of migratory bird species in furtherance of the MBTA, the BGEPA, and EO 13186. The Agreement would represent a voluntary effort between Vantage and the FWS, and would be designed to include conservation measures that avoid and minimize potential adverse impacts on migratory birds and their habitats. The Agreement would also provide a list of conservation options that the FWS and Vantage would consider as compensatory mitigation for loss of "habitat services" from the temporary and permanent loss of migratory bird habitat for construction and operation of the Project. The goal of the Agreement would be to aid in the long-term conservation of migratory birds with active management of the species and the habitat on which they depend. A signed Agreement between the FWS and Vantage would be provided to the DOS prior to construction. Following construction, Vantage would reclaim disturbed areas to pre-construction habitat conditions consistent with the EPP.

Specific to sharp-tailed grouse, Vantage would avoid leks identified within 0.25 mile of the Project during the nesting/breeding season (i.e., between March 1 and May 15). Construction activities would typically not occur until 2 hours after sunrise in order to avoid birds remaining on the lek. If construction occurs within 0.25 mile of an identified lek, Vantage would limit construction hours.

Measures to protect migratory birds would include, but are not limited to, conducting pre-construction surveys, construction monitoring during the nesting season, construction avoidance of sensitive areas or active nests (including sharp-tail grouse leks), nest preclusion by clearing land and removing nesting habitat outside the breeding season, and compensatory mitigation. Following construction, Vantage would reclaim disturbed areas to pre-construction habitat conditions.

Vantage would comply with the provisions of the BGEPA, which prohibits anyone without a permit issued by the Secretary of the Interior from taking bald eagles, including their parts, nests, or eggs. While no bald or golden eagle nests were identified during Vantage's raptor surveys, Vantage has committed to complying with the BGEPA and would continue coordination with the FWS. If Vantage identifies any active nesting sites during construction, construction would be stopped in the specific area and the FWS would be contacted for further direction. Additionally, Vantage would maintain a minimum 0.5-mile buffer around identified bald and golden eagle nest sites.

The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8). In addition to the mitigation measures proposed by Vantage, including FWS-recommended mitigation related to the MBTA and BGEPA, it would also be required to comply with any special conditions of the NDPSC listed in the Certificate of Corridor Compatibility and Route Permit applicable to terrestrial and avian species.

2.8 THREATENED AND ENDANGERED SPECIES

2.8.1 Federally Listed Threatened and Endangered Species

The FWS is responsible for administering Section 7 consultation pursuant to the ESA. The DOS, as the lead federal agency, is responsible for completing Section 7 consultation with the FWS consistent with the ESA to determine effects on federally listed species. The DOS is required to consult with the FWS to determine whether any federally listed or proposed endangered or threatened species or their designated critical habitat occur in the vicinity of the proposed Project.

For the proposed Project, the DOS designated Vantage and its consultants as the non-federal representative for the purpose of informal consultation with the FWS Service Office of Ecological Services in Bismarck; however, the DOS has retained ultimate responsibility for completing the consultation with the FWS. The DOS provided the FWS and Vantage with a letter designating the applicant as a non-federal representative to respond to ESA Section 7 consultation matters on behalf of the DOS.

During informal consultations, Vantage contacted, met, or had discussions with the FWS on several occasions. These discussions included descriptions of the Project area, construction methods, and project schedule; location maps and Project drawings; a description of listed species that may be affected in the Project area; information related to the ESA baseline; a list of existing scientific information/studies available; identification of needed Project studies or surveys; identification of effects of the Project on listed and proposed species, including direct and indirect effects of the project, as well as any cumulative effects; and potential conservation actions and operational criteria that could be incorporated into Project plans to avoid or minimize effects on listed and proposed species and habitats. During informal consultations, the DOS and its independent third-party contractor also consulted with the FWS and Vantage. The DOS, in consultation with its independent third-party contractor, provided guidance and review, and independently reviewed information as it was available. The DOS has concluded that the information submitted was the most current and best information available.

Upon review of existing data, several federally protected species under the jurisdiction of FWS were identified that could be potentially affected by the Project (see table 2.8.1-1). This finding required that a BA be prepared to identify the nature and extent of any adverse impacts and to recommend mitigation measures that would avoid the habitat and/or species or that would reduce potential impact to acceptable levels.

TABLE 2.8.1-1

Federally Threatened and Endangered Species in Williams and Divide Counties, North Dakota

Species	Status	County	Habitat Conditions
Whooping crane (*Grus americana)*	Endangered	Williams and Divide	Stopover wetland habitat is present in the Project area.
Gray wolf (*Canis lupus*)	Endangered	Williams and Divide	Habitat is not present or affected in the Project area.
Pallid sturgeon (*Scaphirhynchus albus)*	Endangered	Williams	Habitat is not present or affected in the Project area.
Interior least tern (*Sterna antillarum*)	Endangered	Williams	Habitat is not present or affected in the Project area.
Piping plover (*Charadrius melodus*)	Threatened	Williams and Divide	Designated critical habitat is present in the vicinity of the Project and could be affected.

In addition to the federally listed threatened and endangered species listed in table 2.8.1-1, the Sprague's pipit (a candidate species) and designated critical habitat for the piping plover were identified by the FWS as occurring in the Project area.

The BA includes assessments of potential Project-related impacts on ESA-protected species, candidate species, and designated critical habitat; recommended conservation measures; and effects determinations. The BA is included as appendix B. The FWS is reviewing the BA and will provide a response to the action agency (i.e., the DOS) effects determinations, as well as any conservation recommendations.

2.8.2 State Sensitive Species

2.8.2.1 Description of Listed Species

In addition to threatened and endangered species, the NDGF has published a North Dakota Comprehensive Wildlife Conservation Strategy (NDCWCS) that identifies Level 1 species. Level 1 species are defined as those species that are of a high level of conservation priority because of declining status either in North Dakota or across their range; or are at a high rate of occurrence in North Dakota constituting the core of the species' breeding range, but are at-risk range wide. Level 1 species identified by the NDGF (2012a) are listed in table 2.8.2-1.

2.8.2.2 Construction and Operation Impacts and Mitigation

Of the Level 1 species listed in the NDCWCS, 20 are avian species. Vantage would avoid disturbance to nesting birds by constructing the facilities after the nesting season has concluded or by removing nesting habitat prior to the nesting season (see section 2.7.2.2). This measure would prevent impacts on grassland birds because no suitable nesting habitat would remain in the right-of-way. Birds would be displaced to adjacent undisturbed areas with suitable nesting habitat.

Impacts on the four fish species would be negligible because no perennial waterbodies would be affected by construction, and the crossings of intermittent and ephemeral streams would be mitigated by use of the horizontal bore crossing method and implementation of erosion and sediment control measure identified in Vantage's EPP. As a consequence, fish species would not be affected by construction and operation activities.

TABLE 2.8.2-1

Level I Species for North Dakota

Common Name	Scientific Name
Birds	
American bittern	*Botaurus lentiginosus*
American white pelican	*Pelecanus erythrorhynchos*
Baird's sparrow	*Ammodramus bairdii*
Black tern	*Chlidonias niger*
Black-billed cuckoo	*Coccyzus erythropthalmus*
Chestnut-collared Longspur	*Calcarius ornatus*
Ferruginous hawk	*Buteo regalis*
Franklin's gull	*Larus pipixcan*
Grasshopper sparrow	*Ammodramus savannarum*
Horned grebe	*Podiceps auritus*
Lark bunting	*Calamospiza melanocorys*
Long-billed curlew	*Numenius americanus*
Marbled godwit	*Limosa fedoa*
Nelson's sharp-tailed sparrow	*Ammodramus nelsonii*
Sprague's pipit	*Anthus spragueii*
Swainson's hawk	*Buteo swainsoni*
Upland sandpiper	*Bartramia longicauda*
Willet	*Catoptrophorus semipalmatus*
Wilson's phalarope	*Phalaropus tricolor*
Yellow rail	*Coturnicops noveboracensis*
Amphibians	
Canadian Toad	*Bufo hemiophrys*
Plains Spadefoot	*Spea bombifrons*
Reptiles	
Smooth Green Snake	*Liochlorophis vernalis*
Western Hognose Snake	*Heterodon nasicus*
Mammals	
Black-tailed Prairie Dog	*Cynomys ludovicianus*
Fish	
Blue Sucker	*Cycleptus elongatus*
Pearl Dace	*Margariscus margarita*
Sturgeon Chub	*Macrhybopsis gelida*
Sicklefin Chub	*Macrhybopsis meeki*

Source: North Dakota Game and Fish Department, 2012a.

Two Level 1 species of toads and two species of snakes (smooth green snake and western hognose snake, discussed below) may be directly affected by construction, but the impacts would be minor. Although the toads are relatively immobile, Vantage would use the horizontal bore method to avoid impacts on wetlands and to the species that inhabit wetland area. The Canadian toad is more aquatic than most toads, typically found in or near the margins of prairie wetlands. The Plains spadefoot is usually found in areas with soft sandy/gravelly soils near permanent or temporary bodies of water. For much of each year the Plains spadefoot lives largely inactive in burrows of its own construction or occupies rodent burrows and enters water only to breed.

The smooth green snake is one of the most widely distributed snake species in North America. Its current longitudinal distribution ranges from the Canadian Maritime Provinces and the Appalachian

Mountains of Virginia to Saskatchewan and Utah. Habitat for the smooth green snake is characterized by mesic sites with thick grassy, herbaceous, and shrubby vegetation, especially wet meadows. Smooth green snakes may not move far because their diminutive size allows them to hibernate in more microhabitats than the communally hibernating garter snakes. If the small daily movements of less than 6 miles per day are typical, smooth green snake populations are probably extremely localized and have very limited dispersions into neighboring habitats. The snake is threatened through the direct and indirect consequences of habitat destruction from cattle grazing, logging, dewatering of streams, road building, pesticide use, and development, particularly in meadows, riparian areas, and mountain foothills.

The western hognose snake's range runs from southern Canada through the central United States into northern Mexico. The snake prefers open, sparsely vegetated habitats on well-drained soils, such as dry prairie or oak savanna. It frequently uses pocket gopher burrows and prefers open, sparsely vegetated habitats on well-drained soils, such as dry prairie or oak savanna. The western hognose snake overwinters below the frost line in a mammal tunnel or self-dug burrow and emerges from hibernation early in the spring.

Potential impacts on snakes are expected to be minor. Disturbance to wetland habitat preferred by the smooth green snake would be minimal as Vantage would adopt the horizontal bore method to cross wetlands. As discussed in section 1.6.1.2, the primary impact that could occur as a result of a horizontal bore is an inadvertent release of drilling mud (frac-out) directly or indirectly into a waterbody or wetland, which, if in large quantities, could affect aquatic organisms by settling in and temporarily inundating the habitats used by these species. Vantage would implement the measures discussed in its EPP that describe how each horizontal bore would be conducted to minimize the potential for an inadvertent release of drilling mud to occur, and the procedures to follow and the NDHD personnel to contact in the event of a drilling fluid release.

Although dry prairie would be affected by construction, a vast area of optimal habitat for the western hognose snake is located adjacent to the construction work area. Additionally, a portion of the construction activity would occur after these species hibernate for the fall and winter seasons.

The black-tailed prairie dog is a large, burrowing, ground squirrel belonging to a group of four other prairie dog species found only in North America. The black-tailed prairie dog is the most abundant and widely distributed prairie dog. In North Dakota, the black-tailed prairie dog present range is confined to areas south and west of the Missouri River. The possibility of black-tailed prairie dogs present in the Project area is highly unlikely.

Based on the construction plans and mitigation measures proposed by Vantage (e.g., horizontal bore method at waterbodies/wetlands), habitat requirements, and the amount of habitat potentially affected for these species, it is anticipated that construction and operation of the Project may result in short-term and temporary but minor impacts on the local population of some Level 1 species of concern.

The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8). In addition to the mitigation measures proposed by Vantage, it would also be required to comply with any special conditions of the NDPSC listed in the Certificate of Corridor Compatibility and Route Permit applicable to state-listed species.

2.9 LAND USE, RECREATION, SPECIAL INTEREST AREAS, AND VISUAL RESOURCES

2.9.1 Land Use

2.9.1.1 Environmental Setting

As discussed in section 2.6.2, the Project would affect agricultural, open, and wetland land uses. Agricultural lands impacted by the pipeline and ATWS are primarily used for raising crops. Spring wheat, barley, and oats are the most common commodities grown in farmed areas (Find the Data, 2007, 2008). Based on information from Vantage, no organic farms would be crossed by the pipeline. Vantage has identified about 23.3 miles of land enrolled in the NRCS FSA's CRP that would be crossed. The CRP is a voluntary landowner reserve program that allows for long-term preservation of vegetative land cover and is discussed in sections 2.6.1 and 2.6.2.

Open land impacted by the pipeline and ATWS primarily consists of grasslands and pasture and hay fields used for livestock grazing. The proposed pipeline would cross wetlands at 12 locations; no ATWS would be located within wetlands (see section 2.4.2).

2.9.1.2 Construction and Operation Impacts and Mitigation

Table 2.6.2-1 summarizes the acres of each land use type that would be affected by construction and operation of the Project. Land use impacts associated with the proposed pipeline would include the disturbance of existing land uses during construction and retention of an expanded permanent right-of-way during operation of the facilities. Vantage proposes to generally use a 70-foot-wide construction right-of-way for the 79.8-mile-long pipeline, of which 6.3 miles (8 percent) would be adjacent to and within 100 feet of existing rights-of-way. Vantage would also utilize ATWS during construction at locations such as road and waterbody crossings.

The permanent right-of-way would typically be 30 feet wide, consisting of 25 feet and 5 feet on either side of the pipeline centerline. The land retained as permanent right-of-way would generally be allowed to revert to former use; however, certain activities such as the construction of aboveground structures would be prohibited. To facilitate pipeline inspection, operation, and maintenance, the entire permanent right-of-way in upland areas would be cleared of woody vegetation and maintained in an herbaceous/scrub-shrub vegetated state. Drawings depicting the construction and permanent right-of-way configurations for the proposed pipeline are included in Vantage's EPP. Construction on agricultural and open land use types would be conducted as described in section 1.6.1.1. Waterbody/wetland construction techniques are described in section 1.6.1.2.

Based on past and recent pipeline construction practices and industry-recognized standards, the effects of pipeline construction and use of ATWS on land uses are expected to be direct and short term (i.e., less than 3 years). Short-term impacts on land uses would include the loss of standing or row crops and vegetation within the construction work area, the disruption of farming operations for the growing season during the year of construction, and the disruption of livestock grazing activities during the active construction period.

To reduce short-term impacts, Vantage would adhere to the measures outlined in its EPP. Mitigation measures include implementing pipeline industry-recognized BMPs such as salvaging topsoil and preventing mixing of topsoil with subsoil; installing erosion control devices; and coordination with landowners to provide for livestock passage and providing temporary fencing and gates to protect livestock from construction-related hazards. Additionally, as discussed in its EPP, Vantage would make arrangements for a landowner or lessee to harvest hay or cereal grain crops prior to stripping, if possible.

Following construction, Vantage would implement the restoration practices outlined in its EPP and agricultural, open, and wetland land uses would continue as before construction, with the exception of the loss of trees (e.g., agricultural windbreaks) and shrubs within the permanent right-of-way, which would not be revegetated following construction. Fences and gates would be rebuilt to original condition or better. Additionally, for CRP lands crossed, Vantage has committed to restoring these areas consistent with FSA requirements. Post-construction monitoring measures would include a post-construction soil assessment and visual inspections of the right-of-way to identify locations of invasive weed infestations, poor vegetation establishment, and reduced crop growth.

MLBVs would be installed at eight locations along the pipeline (see table 1.4.2-1). While land uses within the operational pipeline right-of-way would be allowed to revert to preconstruction conditions, operation of the MLBV sites would result in a permanent impact on about 0.2 acre of agricultural land and 0.1 acre of open land (see table 2.6.2-1). Visual impacts associated with the operation of these facilities are discussed separately in section 2.9.7.

While public roads and the construction right-of-way would be used for primary access to the pipeline during construction, Vantage proposes to construct seven new roads for access to MLBVs (see table 1.4.3-1). The effects of access road operation would permanently impact about 0.1 acre of agricultural land and 0.1 acre of open land (see table 2.6.2-1).

Vantage has identified four locations for temporary use as a contractor/pipe yard to support construction activities (see section 1.4.4). These yards would result in short-term impacts on about 8.0 acres of agricultural land. Upon completion of construction, prior use of the sites would continue, resulting in no anticipated long-term or permanent impact.

As described in section 1.6.1.1, during and following construction, Vantage would collect and dispose of all construction garbage and debris at an approved facility. Additionally, Vantage would adhere to any special landowner requirements (e.g., seeding, restoration measures) in addition to permit requirements. As discussed further in section 2.9.2 below, Vantage would compensate landowners for the loss of land, crops, non-renewable, or other resources, and restoration of any unavoidable damage to personal property during construction.

The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8). In addition to the mitigation measures proposed by Vantage, it would also be required to comply with any special conditions of the NDPSC listed in the Certificate of Corridor Compatibility and Route Permit applicable to land use requirements for Project construction and operation activities.

2.9.2 Land Ownership and Easement Requirements

To construct, operate, and maintain the proposed Project, Vantage would need the rights to easements along the entire proposed route. Vantage is responsible for negotiating easement agreements with landowners along the route. The easement agreements would list the conditions that both the landowner and Vantage agree to, including financial compensation to the landowners in return for granting easements. Compensation would also be made for loss of use during construction, crop loss, loss of non-renewable or other resources, and restoration of any unavoidable damage to personal property during construction. The DOS expects Vantage to negotiate fairly, honestly, and respectfully with landowners when they negotiate an easement. However, those negotiations and final agreements are private business concerns between the landowners and Vantage.

If Vantage obtains all necessary permits and approvals and an easement negotiation cannot be completed in a manner suitable to both parties, Vantage may use state eminent domain laws, as appropriate, to obtain easements needed for pipeline construction, maintenance, and operation. State laws dictate under what circumstances eminent domain may be used and define the eminent domain process within the state. The level of compensation would be determined by a court according to applicable state law.

State or local trespass and access laws are applicable along the entire route. A landowner who considers Vantage to be out of compliance with an easement agreement may take up the matter with Vantage or local law enforcement officials.

2.9.3 Existing Residences, Commercial Facilities, and Planned Developments

Based on information provided by Vantage and the DOS and its independent third-party contractor's review of aerial photographs, no residences or commercial facilities would be within 50 feet of the Project's construction workspace.

Vantage contacted county and local officials in Williams and Divide Counties and the City of Tioga to identify planned residential or commercial developments within 0.25 mile of the Project. One planned, approximately 80-acre commercial and residential property located on the west side of Highway 40, between the highway and the Tioga Medical Center/Tioga Dam Property, was identified near the beginning of the Project (MP 0.0). The construction timeframe for the planned development is unknown (Eraas, 2011).

Consistent with its EPP, Vantage would contact agency personnel (i.e., Williams and Divide Counties' Planning and Zoning Administrators, City of Tioga Auditor) prior to construction and would maintain coordination with these personnel until Project completion. Vantage has committed to developing, if necessary, mitigation strategies in consultation with local governments and landowners for any potential disruptions to planned residential or commercial development in the vicinity of the Project.

Section 2.15 discusses the cumulative impacts of the Project and other projects (e.g., planned developments) in the general Project area.

2.9.4 Recreation and Special Interest Areas

2.9.4.1 Environmental Setting

The nearest federally designated recreation or special interest area to the Project is the Lake Zahl National Wildlife Refuge, which is about 7 miles southwest of the Project (FWS, 2012d; FWS, 2012e). Several WPAs also exist in Divide and Williams Counties. These WPAs range in size from 12 acres to 2,270 acres, are managed by the Crosby Wetland Management District of the FWS, and may be used for hunting during established seasons, which typically begin in mid to late September for waterfowl and sharptail, partridge, ruffed grouse, early October for pheasant, and early November for white-tailed deer (gun) (FWS, 2012f; NDGF, 2012b). Additionally, small ponds, lakes, and impoundments within the two Project-affected counties support recreational fishing. However, the Project would not directly impact these areas. High value and critical habitats are discussed in section 2.8.

Based on information provided by Vantage and the DOS and its independent third-party contractor's review of the NDGF's publically available interactive mapping guide, the Project would cross approximately 4.9 miles of Private Land Open to Sportsman (PLOTS) between approximate MPs 30.6 and 31.6, MPs 49.6 and 50.2, MPs 61.3 and 64.5, and MPs 64.5 and 64.7, and less than 0.1 mile

between MPs 32.2 and 32.3 (NDGF, 2012c). PLOTS lands are defined as lands open to hunting through agreements between the NDGF and private landowners, as well as public lands such as wildlife management and WPAs (NDGF, 2012c). The PLOTS lands crossed by the Project are privately owned. The Project's impacts on and the mitigation measures for construction that Vantage would provide on PLOTS lands is discussed in section 2.9.4.2 below.

2.9.4.2 Construction and Operation Impacts and Mitigation

Based on past and recent pipeline construction experience, one of the primary concerns when crossing recreation and special interest areas is the impact of construction on the purpose for which the area was established (e.g., the recreational activities, public access, resources the area aims to protect). As discussed previously, the Project would not directly affect federally, state-, or locally designated recreation areas.

The Project would temporarily affect about 42 acres of PLOTS land during construction. To mitigate for and minimize disruptions to PLOTS land, Vantage would contact the NDGF prior to construction and would maintain coordination with agency contacts until Project completion. In addition, during preconstruction activities, Vantage and its construction contractor would implement landowner notification and coordination procedures to develop, if necessary, mitigation to avoid disruptions to hunting on PLOTS parcels.

Indirect effects on recreational and special interest areas farther removed from the Project would include noise and visual impacts. Construction would alter visual aesthetics of the area by removing existing vegetation and disturbing soils. Construction would also generate dust and noise, which could be a nuisance to recreational users. Construction could also interfere with or diminish the quality of the recreational experience by affecting wildlife movements or disturbing trails. These impacts would be temporary and limited to the period of active construction, which typically would last only several days to several weeks in any one area. Impacts on the recreational or special interest function of these areas would be minimized by implementing Vantage's EPP, which includes commitments by Vantage to coordinate with agency personnel and landowners. Following construction, Vantage would restore and revegetate disturbed areas in coordination with landowners and agency personnel, and the recreational function of the areas would be able to revert to their former uses.

The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8). In addition to the mitigation measures proposed by Vantage, it would also be required to comply with any special conditions of the NDPSC listed in the Certificate of Corridor Compatibility and Route Permit applicable to recreation and/or special interest areas.

2.9.5 Coastal Zone Management Act

Based on the DOS and independent third-party contractor's review of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management's website, the Project falls outside of the geographical boundaries of a designated coastal zone, and, therefore, is not subject to coastal consistency (National Oceanic and Atmospheric Administration, 2012; North Dakota RUS Bulletin, 2007).

2.9.6 Hazardous Waste

The EPA's Geospatial Data Download databases, which include Superfund National Priorities List and RCRA site information, were reviewed by Vantage and the DOS and its independent third-party

contractor to identify known and potential hazardous waste sites in the Project area. No known hazardous or contaminated waste sites were identified within the Project construction work areas (EPA, 2010; EPA, 2012b).

In the event hazardous material is encountered during construction, Vantage would implement the protocols described in its EPP and SPCC Plan. The SPCC Plan describes response, containment, cleanup, and reporting procedures and preventative measures such as spill training for construction personnel, regular inspection of equipment for leaks, and construction of containment systems around temporary fuel storage areas.

2.9.7 Visual Resources

2.9.7.1 Environmental Setting

Visual resources along the proposed pipeline route are a function of geology, climate, and historical processes, and include topographic relief, vegetation, water, wildlife, land use, and human uses and development. Williams County is characterized by rolling to hilly plains while Divide County is generally a hummocky plain punctuated by numerous prairie potholes. Predominant visual features of the Project area consist of private, large farms; native or restored grasslands; mid- to moderate-sized towns with scattered rural housing; east-west railroad corridors and primary road networks; and petroleum and natural gas development facilities. About 8 percent of the pipeline would be installed parallel to existing rights-of-way, which are maintained periodically on different schedules, using different methods of maintenance. As a result, some areas along the proposed Project have been previously affected by other visual impacting activities.

The Project would not affect designated scenic highways or byways (America's Byways, 2012; North Dakota Parks and Recreation Department, 2012).

2.9.7.2 Construction and Operation Impacts and Mitigation

Visual impacts associated with the construction right-of-way and ATWS would include the removal of existing vegetation and the exposure of bare soils, as well as earthwork and grading scars associated with heavy equipment tracks, trenching, blasting (if required), rock formation alteration or removal, and machinery and tool storage. Other visual effects would result from the removal or alteration of vegetation that may currently provide a barrier, such as windbreaks, or landform changes that introduce contrasts in visual scale, spatial characteristics, form, line, color, or texture.

Based on past and recent pipeline construction experience, visual impacts would be greatest where the pipeline route would parallel or cross roads and the pipeline right-of-way may be seen by passing motorists, and on residences near windbreaks where trees would be removed and prevented from re-establishing on the permanent right-of-way. The duration of visual impacts would depend on the type of vegetation that is cleared or altered. The impact of vegetation clearing would be short term and temporary in areas consisting of short grasses and in agricultural crop and pasture lands where the re-establishment of vegetation following construction would be relatively fast (generally less than 5 years). Long-term and permanent impacts would occur in clearing trees associated with windbreaks. However, based on a review of aerial photography, very few to no tree clearing would be required for the Project.

After construction, disturbed areas would be restored and returned to preconstruction conditions consistent with Vantage's EPP, landowner agreements, and Vantage's easement requirements, with the exception of aboveground facility sites, discussed further below. Based on other pipeline examples located throughout the country, the operational pipeline right-of-way is anticipated to become almost undistinguishable from its surroundings.

MLBVs would be the most visible features and would result in a direct, permanent impact on visual resources. The magnitude of these impacts depends on factors such as the existing landscape, the remoteness of the location, and the number of viewpoints from which the facility could be seen. The 20-foot by 30-foot MLBV sites would include an exposed segment of the pipeline, fittings, a small building, and chain-link fencing. Also, direct, permanent visual impacts would occur from pipeline warning signs and markers.

Vantage would not visually screen MLBVs or pipeline signs and markers. While the aboveground features would likely stand out in contrast to the surrounding agricultural and open lands, these features are not out of character with the landscape of Divide and Williams Counties based on the DOS and its independent third-party contractor's review of aerial photographs and the ongoing oil and gas development activities in the area. While permanent, MLBVs are not anticipated to have an adverse impact on the visual landscape of the area because of the modest changes in elevation characteristic of this terrain, which tends to obscure low-lying features.

In addition to using existing public roads, Vantage would build seven new gravel roads to the MLBV sites, resulting in a direct, permanent visual impact. However, gravel roads are not out of character with the landscape of Divide and Williams Counties and the roads would be located along the permanently maintained right-of-way.

The primary visual impact associated with the proposed contractor/pipe yards would be the storage of equipment, materials, and heavy machinery during Project construction. All of these uses would be short term and temporary and generally concurrent with pipeline construction activities. Upon completion of construction, the contractor/pipe yards would be cleared of construction equipment and debris and be allowed to return to their original use. As a result, there would be no permanent impacts on visual resources associated with the use of these yards.

The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8). In addition to the mitigation measures proposed by Vantage, it would also be required to comply with any special conditions of the NDPSC listed in the Certificate of Corridor Compatibility and Route Permit applicable to visual resources.

2.10 SOCIOECONOMICS

Construction and operation of the Project could impact socioeconomic resources in the area. Some of these potential effects are related to the number of construction workers that would work on the Project and their impact on population, public services, and temporary housing during construction. Other potential effects are related to construction activities, such as increased traffic or disruption of normal traffic patterns. Other effects associated with the Project include increased property tax revenue, increased job opportunities, and increased income associated with local construction employment.

2.10.1 Socioeconomic Setting

Population, Economy, and Employment

Table 2.10.1-1 provides a summary of selected demographic and socioeconomic conditions for affected communities within the Project area. Prior to the recent economic expansion related to natural resource development, resident population in the region had been in long-term decline. In 2005, the estimated population of Williams County was 19,136, nearly 2,000 fewer residents than in 1990. However, the county's population has since increased, to 22,398 in 2010. Population density in Williams County is similar to that of the state.

TABLE 2.10.1-1

Existing Economic Conditions in the Vicinity of the Vantage Pipeline Project

State/County	Population (2010) [a]	Population Density (persons/sq. mile, 2010) [a]	Per Capita Income (2010) [a]	Civilian Workforce (2005-2009) [b]	Unemployment Rate, 2005-2009 (percent) [c]	Top Three Industries [c]
North Dakota	672,591	9.7	$24,978	358,902	3.6	E, R, A
Divide	2,071	1.6	$27,954	1,026	0.3	A, E, P
Williams	22,398	10.8	$27,293	10,900	1.2	A, E, R

[a] Source: U.S. Census Bureau, Census, 2010a.
[b] Source: U.S. Census Bureau, Census, 2005-2009a.
[c] Source: U.S. Census Bureau, Census, 2005-2009b.
[d] A = Agriculture, forestry, fishing and hunting, and mining
E = Education services, and health care and social assistance
P = Public administration
R = Retail trade

In contrast to the recent population gains in Williams County, the population in Divide County has declined from 2,899 in 1990 to 2,071 in 2010. Population density for Divide County is significantly lower than that of the state and Williams County.

The major occupations in the Project area are in agriculture, forestry, fishing and hunting, and mining. Education, health, and social services are also main industries in the area. The counties affected by the Project have per capita incomes that are higher than the state average of $24,978. Unemployment rates within the counties affected by the Project are also lower than the state average.

Table 2.10.1-2 provides the non-farm employment statistics in Divide and Williams Counties. Compared to Williams County, Divide County's economy is smaller (596 non-farm jobs compared to 13,055 in Williams County in 2009) and agriculture remains an important element of its economic base (503 farms totaling 708,000 acres and 678 operators) (USDA, 2009). Farming added another 466 jobs in Divide County in 2008 (U.S. Department of Commerce, Bureau of Economic Analysis, 2012). Divide County also has oil and gas production (1.9 percent of state-wide oil production and 2.4 percent of state-wide natural gas production in 2009) (North Dakota Oil and Gas Division, 2010a and b). Total employment in Divide County has trended downward over the last decade, losing about 10 percent of locally based jobs.

Williams County has more land in farms and more employment in the agricultural sector than Divide County (857 farms totaling 1,445,000 acres, 1,151 operators) but farm employment totals approximately 5 percent of county-wide employment. Since 2005, Williams County has hosted a booming oil and gas industry. In 2009, the local mining sector (which is primarily oil and gas) had average annual employment of 3,069 jobs, or 23.5 percent of all non-farm employment in the county, 7 percent of state-wide oil production, and 22 percent of state-wide gas production. Driven by the increase in mining sector employment, total employment in the county has increased by more than 4,200 jobs since 2005.

TABLE 2.10.1-2

2009 Non-Farm Covered Employment by Industrial Sector for Divide and Williams Counties, North Dakota

	Divide County		Williams County	
Industrial Sector	Average Annual Employment	Share of Non-Farm Employment (percent)	Average Annual Employment	Share of Non-Farm Employment (percent)
Accommodation and Food Services	43	7.2	953	7.3
Administrative and Waste Services	9	1.5	340	2.6
Agriculture, Forestry, Fishing & Hunting	n/a	n/a	n/a	n/a
Arts, Entertainment, and Recreation	n/a	n/a	177	1.4
Construction	12	2.0	722	5.5
Educational Services	n/a	n/a	n/a	n/a
Finance and Insurance	31	5.2	348	2.7
Health Care and Social Assistance	151	25.3	1,546	11.8
Information	17	2.9	150	1.1
Management of Companies & Enterprises	0	0.0	n/a	n/a
Manufacturing	n/a	n/a	317	2.4
Mining, including oil and gas	n/a	n/a	3,069	23.5
Other Services, Ex. Public Admin	15	2.5	344	2.6
Professional and Technical Services	15	2.5	325	2.5
Public Administration	82	13.8	444	3.4
Real Estate and Rental and Leasing	3	0.5	332	2.5
Retail Trade	72	12.1	1,407	10.8
Transportation and Warehousing	17	2.9	595	4.6
Utilities	n/a	n/a	74	0.6
Wholesale Trade	n/a	n/a	988	7.6
Total Employment	596	100.0	13,055	100.0

Note: "n/a" as reported above totals 129 jobs in Divide County and 924 jobs in Williams County.
Source: Job Service of North Dakota, 2010.

Housing

Housing statistics for the counties affected by the Project are presented in table 2.10.1-3. In 2010, the counties in the Project area had between 347 and 1,171 vacant housing units with a rental vacancy rate of between 1.5 and 4.2 percent, which is lower than the state average, likely as a result of the increase in oil and gas industry jobs in the area.

TABLE 2.10.1-3

Housing Statistics by County in the Vicinity of the Vantage Pipeline Project

State/County	Owner occupied (percent) (2010) [a]	Renter occupied (percent) (2010) [a]	Median Monthly Housing Costs (with a mortgage/not mortgaged) (2000) [b]	For Seasonal or Occasional Use (2010) [a]	Vacant Housing Units (2010) [a]	Rental Vacancy Rate (percent) [a]
North Dakota	65.4	34.6	$818/$270	11,483	36,306	7.1
Divide	80.2	19.8	$654/$252	104	347	1.5
Williams	69.3	30.7	$529/$226	417	1,171	4.2

[a] Source: U.S. Census Bureau, 2010b.
[b] Source: U.S. Census Bureau, 2000.

Temporary housing availability varies seasonally and geographically within the counties and communities near the proposed facilities. Temporary housing is available in the form of daily, weekly, and monthly rentals in motels, hotels, campgrounds, and recreational vehicle parks. The demand for temporary housing in the Project area is generally greatest during the summer months when tourism and seasonal work are at their highest. Table 2.10.1-3 provides the vacant housing units and median monthly housing costs in the counties crossed by the proposed facilities.

Table 2.10.1-4 provides temporary housing resources from hotel/motel, recreational vehicle (RV) parks, and guesthouse/lodges in Divide and Williams Counties. Temporary housing resources are located in most communities near the proposed pipeline corridor. The inventory conducted for this assessment (November 2010) identified a total of 778 hotel/motel rooms, 410 RV park pads and 32 guesthouse/lodge rooms in the two-county area. Several new motels were completed in the Williston area during the past several years, at least in part to meet demand associated with conventional oil and gas, more recently, the Bakken Shale resources (Loomer, 2010). In addition to those included in table 2.10.1-4, a 127-bed commercial hotel-style worker camp was opened in 2010 in the Williston area (Williston Herald, 2010), and more such facilities are being considered.

TABLE 2.10.1-4

Hotels/Motels, RV Parks, and Other Area Lodging in the Vantage Pipeline Project Area

	Hotel/Motel		Recreational Vehicle Parks		Guesthouse/Lodges	
County/Community	Motels	Rooms*	Parks	Spaces*	Lodges	Rooms*
Divide County						
Alkabo	--	--	1	5	--	--
Crosby	1	40	1	5	1	3
Fortuna	--	--	1	8	3	10
Noonan	--	--	4	54	--	--
Williams County						
Epping	--	--	2	56	--	--
Ray	--	--	3	40	3	15
Tioga	1	28	4	64	1	4
Trenton	--	--	1	15	--	--
Wildrose	--	--	1	--	--	--
Williston	8	710	6	163	--	--
Totals	10	778	24	410	8	32

Source: North Dakota Tourism Division, 2010; Williston Convention and Tourism Bureau, 2010; Camp Scout, 2010.

Transportation and Traffic

The local road and highway system in the vicinity of the proposed Project facilities consists of U.S. highways, state highways, secondary state highways, county roads, and private roads. The principal roadways crossed by the Project are U.S. Highway 85, and State Highways 5, 50 and 40. Six of the roads crossed by the proposed route are paved. In addition to highway crossings, 39 gravel road crossings and 48 trail crossings provide access to the pipeline right-of-way during construction.

Public Services

Law enforcement, fire suppression, and emergency medical response services in Divide and Williams Counties are located in a number of communities. The Williams County and Divide County sheriffs' departments are primarily responsible for law enforcement in the unincorporated area of their

respective counties. Williston and several other communities in the region maintain municipal police departments as well. There are three hospitals in the area: the Tioga Medical Center, Mercy Medical Center in Williston, and Saint Luke's Hospital in Crosby.

Environmental Justice

Other demographic characteristics of the local population are important to consider when evaluating potential environmental justice impacts of the Project. Environmental justice refers to the "fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." An analysis of potential environmental justice effects is included in this EA pursuant to EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (1994). Related guidance, *Environmental Justice: Guidance under the National Environmental Policy Act* (1997), has also been prepared by the CEQ.

In 2010, minority residents comprised an estimated 2.0 percent of the Divide County population and 7.9 percent of the Williams County population, as compared to 10.0 percent for North Dakota (U.S. Census Bureau, 2010b). Individuals with per capita income below the poverty level (2009) include 11.6 percent of the Divide County population and 8.6 percent of the Williams County population, compared to the 11.7 percent state-wide (U.S. Census Bureau, 2010a).

2.10.2 Construction and Operation Impacts and Mitigation

Construction and operation of the Project could impact socioeconomic resources in the area. Some of these potential effects are related to the number of construction workers that would work on the Project and their impact on population, public services, and temporary housing during construction. Other potential effects are related to construction, such as increased traffic or disruption of normal traffic patterns. Other effects associated with the Project include increased property tax revenue, increased job opportunities, and increased income associated with local construction employment. The DOS and its third-party contractor have reviewed the Project-specific information projected by Vantage (e.g., proposed construction workforce, construction plans, and tax revenues). The following analysis of potential socioeconomic effects is based on this review.

Population, Economy, and Employment

As identified in its application to the DOS, Vantage estimates that construction of the Project would employ a temporary workforce averaging 60 to 70 workers, and would take about 6 months beginning during summer 2012. Based on the population statistics listed in table 2.10.1-1, this would represent a 0.2 to 0.3 percent increase in the combined local populations of Divide and Williams Counties during the 6-month construction period.

Vantage anticipates that operation of the Project would employ two to three permanent staff, augmented periodically by employees of pipeline service companies contracted by Vantage to support operations. The permanent staff would be based in the Tioga area. In addition, ongoing operations and maintenance expenditures by Vantage, along with the consumer expenditures by Project staff, would support a comparable number of jobs elsewhere in the regional economy. The total long-term employment impact in the region, including the incremental indirect and induced positions, would likely be equivalent to 6 to 8 jobs over the operating life of the Project. These jobs would likely be filled by current residents. The small employment increment would have a small beneficial effect on local labor markets. While it is expected that the permanent Vantage positions and potential incremental employment positions in the Project area would be filled by current residents, in the event workers

relocate to the area for them, the combined addition of these positions in the Project area would represent less than a 0.05 percent increase in the combined local populations of Divide and Williams Counties.

Because of the existing construction and oil and gas industries in the area, a substantial pool of skilled workers exists in the region and would likely fill many of the direct construction jobs associated with the Project. Construction of the proposed pipeline through portions of northwestern North Dakota would result in limited effects on the existing population. These effects would be temporary and result from the influx of non-local construction workers to work on the pipeline. Fewer than 50 non-local workers would be expected due to the scale of the overall Project and availability of local skilled workers, which would represent about 0.2 percent of the local population.

It is anticipated that Project-area impacts during construction are expected to be temporary and minor. The total population change would equal the total number of non-local construction workers, plus any family members that accompany them. Based on similar pipeline construction projects in the area, Vantage expects that most non-local construction workers would not be accompanied by other family members while working on the Project. Based on the county populations within the Project area, the additional people that might temporarily relocate to the area would not result in a significant change. A brief decrease in the unemployment rate could occur as a result of hiring local workers for construction and increased demands on the local economy, including purchases by Vantage, its construction contractors, and workers employed on the Project. Most of these jobs would be in local trade, services, transportation, and construction industries.

Because of the small number of jobs required during operation of the Project and likely availability of local labor to fill those jobs, it is anticipated that the Project would not result in long-term effects on regional population.

Housing

Construction of the Project could affect the availability of housing in the Project area. The Project would likely have a short-term positive impact on the area rental industry through increased demand and higher rates of occupancy; however, no significant impacts on the local housing markets would be expected. Given the vacancy rates, the number of rental housing units in the area, hotel/motel rooms, and campgrounds available in the nearby communities, construction crews should not encounter difficulty in finding temporary housing. While construction activities may occur during the peak tourism/ summer construction season, temporary housing would likely be available, but may be more difficult to find, and/or more expensive to secure.

Due to the small number of jobs associated with Project operations and the likely availability of local labor to fill those jobs, operations of the Project is anticipated to result in negligible long-term effects on housing conditions in the region.

Transportation and Traffic

Construction of the proposed Project could result in minor, short-term impacts along some roads and highways due to the movement and delivery of equipment, materials, and workers.

To reduce impacts on the flow of traffic, Vantage would coordinate and limit the hours of construction, including scheduling the transportation of construction materials and the daily arrival and departure of workers to occur generally outside peak commuting hours. Multi-lane highways would be used to the extent possible for the transport of heavy, slow moving equipment to minimize impacts on traffic flow by allowing traffic to pass utilized construction equipment.

Traffic impacts at pipeline crossings would further be minimized by using a horizontal bore method at all gravel and paved road crossings, where possible. Vantage would also prepare detours in locations requiring open cuts. Where crossings are open cut, temporary measures would be available to allow for emergency crossings. During construction, Vantage would monitor and remove soil transport onto paved highways during passage to and from the construction site.

Following construction, Vantage would repair any damage to road quality caused by the transport of heavy construction equipment or other procedures related to pipeline construction to pre-existing conditions.

Public Services

The influx of non-local workers and any family members would likely be small relative to the current populations in the Project area. This would result in minor, temporary impacts on local community facilities and services, such as police, fire, and medical services. The counties and communities in the Project vicinity presently have adequate infrastructure and services to meet the needs of the non-local workers and family members. Because few or no construction workers are expected to bring family members to the Project area, an increase in the enrollments in area schools or demand for family-based services such as child care and social services is expected to be limited.

Short-term impacts on public services could include the need for localized police assistance to control traffic flow during construction activities. Also, construction-related injuries could occur as a result of unanticipated accidents or emergencies. Given that most construction workers are likely to be non-local and not have established relationships with physicians, they are likely to seek urgent care or hospital emergency room facilities for treatment of non-emergency injuries or illnesses. The anticipated demand for police, fire, and medical services is not expected to exceed the existing capability of the infrastructure in the Project area to provide them, as the Project would result in a temporary addition of 60 to 70 workers in the area and these services are expected to be used only in emergencies. The law enforcement, fire suppression, and emergency medical response and treatment services would likely not be strained in providing services to the Project -related construction workforce, although response times to certain areas of the pipeline corridor could be lengthy.

Due to the small number of jobs associated with Project operations and likely availability of local labor to fill those jobs, Project operations are anticipated to result in negligible long-term demand for local government facilities and services.

Environmental Justice

The Project would not be expected to result in adverse impacts that would fall disproportionately on minority or low-income populations located along the Project route. Construction impacts would be restricted to the brief construction period along the proposed pipeline route, and impacts would diminish once construction activities end. These impacts would be spread equally among the counties and communities affected by the Project, and the environmental justice populations within the Project area are not meaningfully greater than the state totals. No group is greater than 50 percent of the state average. No adverse or disproportionate impacts on environmental justice populations are expected as a result of construction and operation of the Project.

2.10.3 Tax Revenues

The Project would cross the jurisdictional boundaries and service areas of Divide and Williams Counties, four public school districts, and numerous special service districts. The Project would also pass

near the towns of Tioga, Alamo, and Fortuna. Construction and operation of the Project is anticipated to have beneficial impacts on local sales tax revenue. Payroll taxes would also be collected from the workers employed on the Project. The State of North Dakota would receive approximately $1.38 million in a one-time tax revenue owed due to the construction of the Project. Additional revenue would accrue from taxable expenditures by contractors and workers directly and indirectly employed by the Project. In addition, some communities along the construction corridor would realize temporary revenues from local option taxes on lodging, meals, and beverages in restaurants and bars and other convenience retail purchases as the construction workforce passes through the area. Due to the availability of temporary lodging, Williston could realize gains as well, as some workers might choose to stay in the community and commute, assuming availability of temporary housing resources. These gains would be short-term and largely beneficial. Although relatively small in magnitude for any given community, the gains in relative terms could still be important.

During operation of the Project, Divide and Williams Counties, local school districts, townships, and other local taxing jurisdictions would realize ad valorem/property tax revenues assessed on the pipeline. Over the first 15 years of operations, total ad valorem/property tax revenues, based on current tax rates, is anticipated by Vantage to exceed $3.4 million, approximately half of which would accrue to taxing entities in each county. These taxes are anticipated by Vantage to, among others, benefit local schools.

2.11 CULTURAL RESOURCES

Cultural resources include the locations of human activity, occupation, or usage that contain materials, structures, or landscapes that were used, built, or modified by people. For example, for the proposed Project, cultural resources include precontact Native American archaeological sites, historic period farmsteads, railroads, and properties of religious and cultural significance. For the purposes of the proposed Project, field studies to identify and assess archaeological resources (sites), and historic resources (buildings, structures, objects, and districts) were conducted. Studies of historic properties of religious and cultural significance to Native Americans are pending. Paleontological resources are discussed in section 2.1.1.

2.11.1 Section 106 of the National Historic Preservation Act

The proposed Project is considered an undertaking under Section 106 of the NHPA. The DOS is acting consistent with Section 106 of the NHPA in parallel with NEPA (FR, Volume 76, No. 7, page 1659 and Volume 76, No. 239, page 77583). Vantage provided information, analyses, and recommendations to assist the DOS and its independent third-party contractor in their review. Vantage's contractor, Ethnoscience, assisted with conducting cultural resources investigations and consultations. Section 106 states that federal agencies must take into account the effects of a proposed undertaking on any historic properties situated within the APE and to give the ACHP an opportunity to comment on the Project. The DOS, its third-party contractor, and, by way of assistance, the Project applicant, consulted with the North Dakota SHPO, federally recognized Indian tribes, other federal agencies with concurrent undertakings as a result of the Project, local governments, and any other interested parties regarding the proposed undertaking and its potential effects on historic properties.

The effects to historic properties are analyzed consistent with the regulations of Section 106 as potential Project "effects." A "historic property" is defined as any district, archaeological site, building, structure, or object that is either listed, or eligible for listing, in the NRHP. For the purposes of this EA, the term "historic resource" refers to buildings, structures, objects, and districts that may or may not meet NRHP criteria of evaluation. Likewise, "archaeological resource" refers to a site that may or may not meet the NRHP criteria of evaluation. The term "sites of religious and/or cultural significance" refers to

areas of concern to Indian tribes that may or may not be eligible for listing in the NRHP. If certain criteria are met, these locations may also be considered Traditional Cultural Properties (TCPs).

The DOS, its independent third-party contractor and, by way of assistance, the Project applicant, have identified historic properties that may be affected by the proposed undertaking; assessed the undertaking's effects on those properties; and engaged in consultation that seeks ways to avoid, reduce, or mitigate any effects on NRHP-listed or eligible properties. Potential effects in such an analysis may include, but are not limited to, destruction or alteration of all or part of a property; isolation from or alteration of its surrounding environment; introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting; transfer or sale of a federally owned property without adequate conditions or restrictions regarding preservation, maintenance, or use; and neglect of a property resulting in its deterioration or destruction.

Review consistent with Section 106 is referred to as a process because the discovery, evaluation, and mitigation of effects on historic properties involve numerous parties and tasks. The Section 106 process is not complete for the proposed Project and would continue until the DOS determines that the process is complete, and the ACHP has an opportunity to comment on the Project. The DOS has received no comments specific to cultural resources issues on the Project in response to the NOI. The results of surveys conducted to date and summary of cultural resources identified is discussed in section 2.11.4 below.

National Register of Historic Places

Not all archaeological resources, historic resources, or sites of religious and traditional significance are considered historic properties under Section 106. To be designated as a historic property, the resource must be listed, or eligible for listing, in the NRHP. To be considered eligible, properties must first retain integrity of location, materials, setting, design, association, workmanship, and feeling, and be at least 50 years old. The criteria (36 CFR 60.4 [a–d]) used to evaluate the significance of a resource are as follows:

a) it is associated with events that have made a significant contribution to the broad patterns of American history; or

b) it is associated with the lives of past significant persons; or

c) it embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d) it has yielded or may be likely to yield, information important in history or prehistory.

The analysis in the EA provides a summary of the cultural resources that have been reported to the DOS and its third-party contractor to date for the proposed Project. This includes cultural resources assessed as being eligible and ineligible for listing in the NRHP, and cultural resources for which NRHP eligibility has not been evaluated. The reported cultural resources are divided into three main temporal groupings: precontact period, historic period, and multi-component. Precontact resources are sites that contain material evidence of Native American activities before Europeans entered the proposed Project area. Examples of precontact sites include, but are not limited to stone features, such as stone rings, cairns, alignments, effigies, and utilized rocks. Historic period resources can include historic Native American sites but generally reflect Euro-American activities of the last 250 years. The historic sites are

barrow pits, a church and cemetery, a coal mine, farmsteads/homesteads, an outbuilding and corral, trash scatters, and two railroad lines. Multi-component resources are locations where both Historic period and precontact cultural material is present.

Historic properties can include sites of religious or cultural significance (including TCPs) that meet the NRHP criteria of eligibility. National Register Bulletin 38 defines TCPs as locations that embody the "beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional cultural significance of a historic property, then, is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices" (Parker and King 1990, revised). It should be noted that the ACHP is currently reassessing the definition of TCPs, especially as the term relates to large-scale properties of multiple linked features that are better described as Traditional Cultural Landscapes. The ACHP sponsored a forum in August 2011 that resulted in an action plan to address the challenges of defining and protecting Traditional Cultural Landscapes (ACHP, 2011). The DOS has consulted and would continue to consult with American Indian tribes to identify, evaluate, and mitigate potential effects to properties with religious or cultural significance to the tribes. The summary of tribal consultation is provided in section 2.11.3.

2.11.2 Agency Consultations

The DOS has consulted with the appropriate state, tribal, and federal agencies regarding the proposed undertaking. The SHPO is appointed by each state to protect the interests of its citizens with respect to issues of cultural heritage. Section 101(b)(3) of the NHPA provides each SHPO a prominent role in advising the responsible federal agencies and ACHP. In addition to the SHPO, the lead federal agency works with state and local governments, private organizations, and individuals during the initial planning and development of the proposed Project.

State Historic Preservation Office Consultation

Vantage contacted the North Dakota SHPO on August 11 and 12, 2010. The North Dakota SHPO participated in a Project meeting among state agencies on August 18, 2010. The North Dakota SHPO also attended a federal and state agency meeting held in Bismarck on December 7, 2010. Vantage has consulted with the North Dakota SHPO regarding the APE, field survey methodology, recording practices, and other regulatory topics throughout the Class III cultural resources inventory planning, field survey, and reporting effort.

As discussed in section 1.3, the DOS issued the *Notice of Intent to Prepare an Environmental Assessment and Request for Comments on Environmental Issues, and to Initiate Consultation Under Section 106 of the National Historic Preservation Act for the Proposed Vantage Pipeline Project* for the Project to the North Dakota SHPO, as well as other agencies, in August and December 2011. In a letter to the North Dakota SHPO dated December 16, 2011, DOS authorized the Project applicant, Vantage, consistent with 36 CFR 800.2(c)(4), to consult directly with the state agency. Vantage submitted the Class III cultural resources inventory report to the North Dakota SHPO on December 29, 2011. Details regarding the areas surveyed and report findings are discussed in section 2.11.4. On January 11, 2012, the North Dakota SHPO submitted a letter to the DOS stating that it concurred with the Class III cultural resources inventory report's "no historic properties affected" and "no significant sites affected" determinations.

Representatives of the North Dakota SHPO also attended a March 21, 2012 tribal consultation meeting in New Town (see section 2.11.3). The DOS and Vantage would continue to consult with the

North Dakota SHPO to solicit comments on additional Project reports, plans, and historic preservation issues.

Advisory Council of Historic Preservation Consultation

On January 28, 2012 the DOS contacted a representative of the ACHP, provided background information about the Project, and identified those American Indian tribes with whom they had consulted to date. The DOS will continue to consult with the ACHP as indicated by Project issues or concerns.

North Dakota Department of Transportation

Vantage contacted the NDDOT on August 23, 2010 to inform it of the Project. The NDDOT stated that it would not be a regulatory agency for the Project and, therefore, would not participate in the Section 106 process.

U.S. Fish and Wildlife Service

The FWS participated in the August 18, 2010 meeting of state agencies discussed above. Vantage contacted the FWS Region 6 Dakotas Zone Archaeologist on August 23, 2010 to discuss crossing FWS easements during the Class III field survey. The FWS issued an Archaeological Resources Protection Act (ARPA) permit to Vantage's cultural resources consultant Ethnoscience on September 8, 2010 and extended the permit June 2011 to conduct field surveys on FWS easement land. The results of the field surveys on included with the Class III survey report.

Public Outreach

Vantage reported as part of its Class III survey report that on July 6, 2011 it contacted a local historian regarding the Bethel Lutheran Cemetery, which is located near the Project, and inquired about the possibility for burials to be located outside of the church grounds. Vantage further reported that Ms. Stepanek stated that there are no records of burials outside the church cemetery.

2.11.3 Tribal Consultations

Section 106 recognizes the importance of consulting with American Indian tribes when federal undertakings occur. Specifically, 36 CFR 800.2(c)(2)(ii) notes: "Section 101(d)(6)(B) of the NHPA requires the agency official to consult with any Indian tribe or Native Hawaiian organization that attaches religious and cultural importance to historic properties that may be affected by an undertaking. This requirement applies regardless of the location of the historic property." In addition, 36 CFR 800.2(c)(2)(ii)(B) says the "Federal Government has a unique legal relationship with Indian tribes set forth in the Constitution of the United States, treaties, statutes, and court decisions. Consultation with Indian tribes should be conducted in a sensitive manner respectful of tribal sovereignty. Nothing in this part alters, amends, repeals, interprets or modifies tribal sovereignty, any treaty rights, or other rights of an Indian tribe, or preempts, modifies or limits the exercise of any such rights."

Consistent with 36 CFR 800, DOS has engaged American Indian tribes in government-to-government consultation (see below). Vantage also contacted Indian tribes as part of their efforts to assist the DOS in gathering information. Both the DOS and Vantage as the Project applicant would continue to work with American Indian tribes who are interested in the Project.

In an August 17, 2010 letter, Vantage contacted the following American Indian tribes to inform them of the Project: the Rosebud Sioux Tribe, the White Earth Band of the Minnesota Chippewa Tribe,

the Lower Sioux Indian Community of Minnesota, the Crow Creek Sioux Tribe, the Standing Rock Sioux Tribe, the Sisseton-Wahpeton Oyate Tribe, the Yankton Sioux Tribe, the Lower Brule Sioux Tribe, the Northern Cheyenne Tribe, the Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, the Upper Sioux Community of Minnesota, the Flandreau Santee Sioux Tribe, the Oglala Sioux Tribe, the Turtle Mountain Band of Chippewa Indians, the Crow Tribe of Montana, the Spirit Lake Tribe, the Cheyenne River Sioux Tribe, and the Three Affiliated Tribes of the Fort Berthold Reservation. The letter introduced the Project, provided a Vantage-produced color brochure describing the Project, and reported that a cultural resources reconnaissance survey would be completed along the Project route.

Vantage asked the Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation and the Three Affiliated Tribes of the Fort Berthold Reservation to provide monitors during the Class III field inventory surveys. Vantage explained that although numerous tribes have traditional ties to the region, these two tribes occupy reservations closest to the Project area. Tribal monitors accompanied the survey crews, and provided cultural and historic information for several of the recorded archaeological sites.

On December 15, 2011, the DOS contacted the same Indian tribes that Vantage contacted and one additional tribe, the Santee Sioux Nation of Nebraska. The DOS's letter was sent to the tribal council chairperson for each tribe and, if applicable, the Tribal Historic Preservation Office (THPO). The letter described the Project and the DOS's role, and invited government-to-government consultation. On December 20, 2011, the THPO for the Yankton Sioux Tribe responded to the DOS's letter, asked to be a consulting party to the Project, and requested a copy of the Class III inventory survey report. At the request of the DOS, Vantage provided the report to the Yankton Sioux THPO on December 30, 2011.

In January 2012, the DOS received a return mailer to its government-to-government consultation letter from the Standing Rock Sioux Tribe's THPO. The mailer noted that the Standing Rock Sioux Tribe would like to participate in government-to-government consultation regarding the Project, and that it traditionally occupied lands within or close to the Project, the Project would affect its native culture, and the Project would affect archaeological sites, historic structures, or places with religious or traditional cultural significance.

Follow-up telephone calls were made to tribes between January 23 and 25, 2011. In some cases, if telephone contact was not successful, emails were sent to THPO officers. During the course of follow-up phone calls, the Northern Arapaho Tribe was added to the invitation list on February 14, 2012 at the request of another tribe. Two tribes, the Lower Brule Sioux Tribe and the Lower Sioux Indian Community of Minnesota, stated that they were not interested in consulting but would like to remain on the Project mailing list. In an email correspondence, the Fort Peck Dakota and Assiniboine Tribe stated that they have concerns about the Project area and are interested in consulting with the DOS. The Rosebud Sioux Tribe responded that they are interested in consulting on the Project. A representative of the Sisseton-Wahpeton Oyate Tribe sent an email explaining that he is the current THPO for the Sisseton-Wahpeton Oyate Tribe, and he is interested in consulting on the Project. Also, a representative of the Turtle Mountain Band of Chippewa called and requested the survey report and shapefiles of the survey area, and stated that he would conduct ethnographic research for his tribe within the area of the Project.

On February 14, 2012, the DOS issued a letter to tribal leaders and, if available, THPO representatives from the 19 tribes inviting them to attend a conference call on March 1, 2012 hosted by the DOS. The intent of the call was to solicit comments and concerns about the Project, and consider the need to have face-to-face meetings and the need to conduct a study for historic properties of religious and cultural significance to an Indian tribe. In addition to the letter, the DOS attempted to personally contact each tribe via telephone or email to gather updated contact information and provide a reminder about the conference call. The March 1, 2012 telephone conference call hosted by the DOS was attended by representatives from the Sissteon-Wahpeton Oyate Tribe, the Standing Rock Sioux Tribe, the White Earth

Band of the Minnesota Chippewa Tribe, the Cheyenne River Sioux Tribe, the Yankton Sioux Tribe, and the Turtle Mountain Band of Chippewa Indians, as well as representatives from the DOS's independent third-party contractor and Vantage and its contractors. NEPA Compliance Officer Mr. Alexander Yuan and Director of the Office of Environmental Policy Mr. George Sibley represented the DOS. During the call, the tribes expressed dissatisfaction that government-to-government consultation was not started sooner; concern about the cultural resources studies completed to date and the lack of tribal input; interest in a face-to-face meeting with the DOS; and interest in conducting a study for historic properties of religious and cultural significance to an Indian tribe. During the conference call, the DOS committed to attending a meeting in North Dakota in late March 2012.

Vantage organized and sponsored tribal consultation meetings in New Town, North Dakota on March 21 and 22, 2012. The DOS sent invitations to the meetings to the 19 consulting tribes on March 9, 2012 and made follow-up phone calls and emails. During these calls, a tribal member requested that the Southern Cheyenne and Arapaho be included in consultation; an invitation to consult and attend the March 21 and 22 meetings was sent to their respective Governor and THPO.

Representatives from the Crow Tribe of Montana, Cheyenne River Sioux Tribe, Crow Creek Sioux Tribe, Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, Northern Cheyenne Tribe, Sisseton-Wahpeton Oyate Tribe, Three Affiliated Tribes of the Fort Berthold Reservation, Standing Rock Sioux Tribe, and Yankton Sioux Tribe, as well as the North Dakota SHPO attended the meetings in New Town, North Dakota held at the 4 Bears Casino and Lodge on the Fort Berthold Reservation. Mr. George Sibley represented the DOS and was accompanied by representatives of the DOS's independent third-party contractor. Mr. David Schmunk and Mr. Terry Killackey represented Vantage; Ms. Lynelle Peterson of Ethnoscience attended as Vantage's cultural resources contractor. On March 21, Vantage began the information portion of the meetings by explaining how the proposed pipeline would transport ethane to industrial facilities in Alberta, Canada. Vantage's contractor, Ethnoscience, spoke about the cultural resources inventories, and explained that the survey corridor for the Class III inventory was 300 feet wide to allow for avoidance where archaeological sites were present and further explained that tribal monitors from the closest reservations to the Project area were invited to accompany the field survey. After a question and answer period, the information session ended and the tribal representatives caucused among themselves.

The meeting reconvened on March 22. Tribal representatives stated that they believed the DOS should have consulted sooner to allow the tribes an opportunity to participate in pipeline routing to avoid sensitive Native American sites. The tribal representatives also expressed concern that the Class III inventory report included sensitive information provided by tribal monitors.

Tribal representatives formally requested a study for historic properties of religious and cultural significance. It was noted by the tribes that the archaeologists who conducted the Class III cultural resources inventory may not recognize their important sites. Tribal representatives recommended that an experienced and familiar surveyor be hired to conduct the survey in spring 2012. Vantage agreed to sponsor the study for historic properties of religious and cultural significance to an Indian tribe and a follow-up phone call to organize the logistics for such a study was planned, with consideration for a pre-survey visit to the Project area.

On March 29, 2012, Vantage hosted a conference call to discuss the logistics and timeframe for completing the study for historic properties of religious and cultural significance to an Indian tribe. No firm dates for the study have been established to date; however, logistical issues (e.g., accommodations) are being investigated. Vantage has committed to continuing to work with the tribal contractor, the consulting tribes, and the DOS to complete the study. Vantage, the DOS, and the consulting tribes, in consultation with the North Dakota SHPO and ACHP, as needed, would also address issues of

confidentiality regarding the sensitive tribal information gathered during the Class III cultural resources inventory and the proposed study for historic properties of religious and cultural significance to an Indian tribe.

2.11.4 Cultural Resources Surveys

Vantage has conducted Class III cultural resources inventory surveys of all currently identified Project locations. The survey covered approximately 150 linear miles using the 300-foot-wide corridor for the proposed pipeline route, and other non-linear project locations, totaling approximately 5,466 acres. This total includes the survey of alternative pipeline routes that have since been abandoned. The Class III cultural resources report specifies that the inventory survey did not consider TCPs or Traditional Cultural Landscapes.

The APE is defined as 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)). For the purposes of the proposed Project and Section 106 of the NHPA, the APE consists of a 300-foot-wide survey area that includes a 70-foot-wide construction corridor and a 30-foot-wide permanent right-of-way. The 300-foot-wide corridor would allow for minor adjustments or route variations as needed. ATWS, access roads, and ancillary facilities (e.g., yards) that lie outside of the proposed construction corridor are also part of the proposed APE. The APE for indirect effects was defined as 0.25 mile around the same Project locations.

2.11.4.1 Cultural Resources Overview and Class III Survey Results

Vantage conducted a literature review of the previously recorded archaeological and historic resources, and previously conducted inventory surveys for the Project APE. This review revealed that three archaeological sites, two segments of railroad, and one standing structure were previously recorded within the Project's 300-foot-wide corridor. The following describes the results of the Class III cultural resources survey, site recommendations, and North Dakota SHPO consultation.

Vantage recorded 79 archaeological sites and 19 isolated finds during the Class III cultural resources inventory. Of the 79 sites, 50 are precontact, 22 are historic, and 7 contain both precontact and historic components. The precontact sites are lithic scatters and stone features, such as stone rings, cairns, alignments, effigies, and utilized rocks. The historic sites are barrow pits, a church and cemetery, a coal mine, farmsteads/homesteads, an outbuilding and corral, two railroad lines, and trash scatters.

The 19 isolated finds, which range from single precontact lithic tools to isolated farm machinery parts, are not considered eligible for listing on the NRHP because the objects do not have any archaeological context and offer no potential for additional study. They are not studied beyond their recordation.

Vantage recommends that 17 of the total 79 sites are not eligible for listing on the NRHP, and that 2 sites are eligible for listing. The two sites recommended as eligible for the NRHP are the Bethel Lutheran Church and Cemetery (32WI0887) and a segment of the Soo Line railroad (32DV0057). The NRHP eligibility for the remaining 60 sites is undetermined. To avoid adverse impacts on the NRHP-unevaluated archaeological sites, Vantage would provide a minimum 45-foot buffer and/or has realigned the construction centerline, narrowed the construction workspace, and/or rerouted the construction corridor. Vantage has also committed to using tribal and environmental monitors during construction.

The original pipeline route was moved so that the Bethel Lutheran Church and Cemetery would be more than 100 feet from the pipeline centerline. Vantage would use a horizontal bore to install the

pipeline under the Soo Line railroad near MP 64 in order to avoid adverse impacts to the site. Because use of the horizontal bore method would avoid the site, additional avoidance treatment measures are not recommended by the DOS. Vantage would also horizontal bore beneath a section of the Great Northern Railroad near MP 31, which is not recommended as eligible for NRHP listing at this time.

Vantage submitted to the DOS the Class III inventory survey report in September 2011. In January 2012, Vantage submitted a revised version of the report that included reroutes and comments from the DOS and its independent third-party contractor. Vantage submitted the revised inventory survey report to the North Dakota SHPO on December 30, 2011. As discussed in section 2.11.2, the North Dakota SHPO concurred that if the proposed Project follows the recommendations of the cultural resources report, no historic properties would be affected by the proposed Project. This determination does not apply to TCPs, which were not considered in Vantage's Class III cultural resources inventory.

2.11.4.2 Traditional Cultural Properties, Traditional Cultural Landscapes Study

Studies of historic properties of religious and cultural significance to an Indian tribe or Traditional Cultural Landscapes are pending. As discussed in section 2.11.3, Vantage, the DOS, and the consulting tribes, in consultation with the North Dakota SHPO and ACHP, as needed, would also address issues of confidentiality regarding the sensitive tribal information gathered during the proposed study.

2.11.4.3 Pending Studies

Vantage proposes to construct eight MLBVs as part of the Project. Vantage has recommended a 0.25 mile APE around each MLBV site to assess potential visual impacts on historic properties. An inventory of the standing structures within the 0.25-mile APE has not yet been reported by Vantage.

Vantage would construct and operate seven new roads to access seven MLBV sites. Vantage would also use four areas for equipment parking, construction staging, and pipe and material storage. Each of these contractor/pipe yards would be located outside of the pipeline construction right-of-way. A Class III cultural resources inventory of the access roads and contractor/pipe yards has not yet been reported by Vantage.

Additional cultural resource surveys for the proposed MLBVs, access roads, and contractor/pipe yards are forthcoming. These reports would be reviewed by the DOS and then forwarded to the applicable consulting parties consistent with 36 CFR 800.

2.11.5 Public Involvement

Consistent with 36 CFR 800.2(d)(1–3), the DOS has followed ACHP guidance in its efforts to seek the views of the public in the Section 106 process through the NEPA process. As stated previously, the DOS placed notices in the FR. Additionally, the DOS provided direct mailings of its NOI to stakeholders through mailing lists that included over 200 individuals and organizations.

With the exception of correspondence received from the North Dakota SHPO and Indian tribes discussed in sections 2.11.2 and 2.11.3, no comments have been received relating to the protection of historic properties and the Section 106 consultation process.

2.11.6 Unanticipated Discovery Plan

Unanticipated discovery plans are approved by the DOS for the proper response and treatment of any discoveries that are made during construction. Discoveries can be buried archaeological resources, or

human remains. The main topics of an unanticipated discovery plan are the circumstances when work is stopped and resumed, and the proper chain of contact when a discovery is made. Vantage would implement these plans in the event that unanticipated cultural materials or human remains are encountered during the construction phase of the proposed Project.

Vantage has prepared an unanticipated discovery plan, referred to as the Cultural Resources Contingency Plan, which is under review by the DOS and may be revised following consultation with the North Dakota SHPO and Indian tribes.

2.11.7 On-going Section 106 Process

The Section 106 process for the Project is not complete. Class III cultural resources inventory studies for additional Project facilities are pending, as well as the study for historic properties of religious and cultural significance to an Indian tribe, a tribal monitor plan, site treatment plans, and other documentation. Vantage would submit to the DOS all cultural resources Project reports, plans, correspondence, and other documentation as required. The Section 106 process would continue until the DOS has determined the Project effects to historic properties and given the ACHP an opportunity to comment on the Project.

2.12 AIR QUALITY

2.12.1 Environmental Setting

As discussed in section 1.5, the DOS has determined that a heater associated with the Tioga Gas Plant modifications would be a connected action to the proposed Project for the purposes of this NEPA review consistent with 40 CFR 1508.25(a)1. The Tioga Gas Plant is located in Tioga, North Dakota and, due to its proximity to the Project, the environmental setting of the connected action is similar to that of the proposed Project as described below.

Air quality is influenced not only by pollutant emissions but also the meteorology and climate of the region in which they are emitted or transported. The Project would be located in northwest North Dakota, within a semiarid to continental climate typified by low to moderate precipitation, hot summers, and winter temperatures cold enough to support a fixed period of annual snow cover. The closest climate measurements to the Project area were recorded at Tioga, North Dakota (1905–2010) at an elevation of 2,260 feet above mean sea level, as summarized in table 2.12.1-1 (High Plains Regional Climate Center, 2010).

Wind characteristics in the Project area can affect the dispersion and transportation of air pollutants. These wind characteristics include wind direction, speed, and atmospheric stability. High frequency of a particular wind direction with low wind speeds and stable atmosphere can result in poor air pollutant dispersion. Table 2.12.1-2 summarizes the wind characteristics in the Project area based on the closest wind measurement data collected at the Williston Airport in Williston, North Dakota. There is no dominant wind direction, wind speeds vary but are generally moderate with few extremely low wind speed conditions, and atmospheric stability is generally neutral.

TABLE 2.12.1-1

Temperature, Precipitation, and Snowfall at Tioga, North Dakota (1905-2010)

Season	Month	Average Temperature Range (° F)	Average Total Precipitation (inches)	Average Total Snowfall (inches)
Spring	March	13.6-34.9	0.5	5.1
	April	27.9-52.6	1.1	3.6
	May	39.5-65.8	1.9	0.9
	Total Spring Average	27.0-51.1	3.5	9.6
Summer	June	49.3-74.6	2.8	0.0
	July	53.8-81.5	2.1	0.0
	August	51.6-81.4	1.7	0.0
	Total Summer Average	51.6-79.2	6.6	0.0
Fall	September	40.5-68.7	1.4	0.4
	October	28.8-54.5	0.8	2.3
	November	14.6-35.1	0.5	4.9
	Total Fall Average	28.0-52.8	2.7	7.7
Winter	December	1.6-21.8	0.5	6.2
	January	-4.1-16.4	0.5	6.3
	February	1.6-22.5	0.4	5.0
	Total Winter Average	-0.3-20.2	1.3	17.5
Total Annual Average		26.5-43.1	3.5	8.7

TABLE 2.12.1-2

Wind Direction Frequency Distribution for Williston, North Dakota

Parameter/Value	Percent of Occurrence
Wind Direction	
NE-NNW	26.2
NW-WSW	28.5
SW-SSE	26.8
SE-ENE	16.3
Wind Speed (MPH)	
0-4.0	5.3
4.0-19.0	86.5
Greater than 19.0	8.1
Stability Class	
A (Unstable)	0.16
B	2.50
C	10.64
D (Neutral)	53.92
E	14.99
F (Very stable)	17.79

Source: Williston, North Dakota meteorological data collected 1988-1992.

The EPA has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants, based on health effects studies, to protect human health (primary standards) and public welfare (secondary standards). The EPA set NAAQS for the following air contaminants designated "criteria pollutants": nitrogen dioxide (NO_2), carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), lead (Pb),

particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$). The NDHD, Air Quality Division (NDDAQ) regulates air pollutant levels in the North Dakota pursuant to North Dakota Air Pollution Control Rules, Chapter 33-14-02. In addition to adopting the NAAQS, NDDAQ has set its own ambient air quality standards.

The Project area is designated attainment or unclassifiable for all criteria pollutants. Site-specific air quality monitoring data are not available for the Project area; however, ambient air pollutant monitoring has been conducted in northwestern North Dakota. A summary of the most representative monitoring data in the vicinity of the Project is listed in table 2.12.1-3.

TABLE 2.12.1-3

Monitored Concentrations of Air Pollutants in the Region

Pollutant [a]	Averaging Period	Regional Background Concentration ($\mu g/m^3$)	NDDAQ AAQS ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
SO_2	Annual	2.6	60	80
	24-hour	15.7	260	365
	3-hour	57.6	715	1,300
	1-hour	112.7	- -	196
NO_2	Annual	1.9	100	- -
	1-Hour	41.1	- -	188
PM_{10}	24-hour	30	150	150
$PM_{2.5}$	Annual	5.2	15	15
	24-hour	17.3	35	35
CO	8-hour	1.2	10,000	10,000
	1-hour	6.5	40,000	40,000
O_3	8-hour	115.6	147	147

[a] SO_2, NO_2, and PM_{10} concentrations from Burke County monitoring site, most recent available data year, 2008.
$PM_{2.5}$ concentrations from McKenzie County monitoring site, most recent available data year, 2006.
CO concentrations from only North Dakota CO monitoring site of record available on AIRS, located in Cass County, data year 2008.
O_3 concentration is fourth highest 8-hour concentration from Burke County monitoring site, 2008.

O_3 is not typically emitted directly to the atmosphere but instead is formed in atmospheric reactions between oxides of nitrogen and volatile organic compounds (VOCs) in the presence of sunlight. Similarly, not all $PM_{2.5}$ is emitted directly to atmosphere; it is also formed by oxides of nitrogen and sulfur reacting with chemicals in atmosphere to form sulfate and nitrate aerosols (e.g., ammonium sulfate or ammonium nitrate). As such, nitrogen oxide (NOx) and VOCs are regulated pre-cursors to O_3 and NO_x and SO_2 are regulated precursors to $PM_{2.5}$.

In addition to criteria pollutants, the EPA also regulates hazardous air pollutants (HAPs) and greenhouse gases (GHGs). HAPs are those pollutants that cause or may cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental and ecological effects (EPA, 2009). GHGs are believed to cause global climate change. The EPA regulates GHGs as the sum of CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Air pollutants would be generated by the Project during construction and operation of the proposed facilities. Additionally, operation of the heater at the Tioga Gas Plant, which has been identified as a connected action to the Project, would also produce air pollutants. Section 2.12.2 below discusses the impact of the connected action on air quality.

2.12.2 Construction and Operation Impacts and Mitigation

Proposed Action

Emissions associated with construction and installation of the pipeline would include fossil-fuel combustion emissions and fugitive dust. Emissions associated with construction activities generally include: 1) exhaust emissions from construction equipment, 2) fugitive dust emissions associated with construction vehicle movement, and 3) fugitive dust associated with trenching, backfilling, and other earth-moving activities. The exhaust emissions would depend on the equipment used and the hours of operation. Tables 2.12.2-1 and 2.12.2-2 summarize the estimated construction emissions associated with the Project.

TABLE 2.12.2-1

Construction Air Emissions Associated with the Vantage Pipeline Project

Source Type	Pollutant	Emission Rate (tons per year)
On-Road Vehicles	CO	1.12
	SO_2	0.007
	NOx	1.55
	$PM_{10}/PM_{2.5}$	0.049 / 0.039
	CO_2e	388
Off-Road Vehicles and Equipment	CO	3.5
	SO_2	0.03
	NOx	8.28
	$PM_{10}/PM_{2.5}$	0.78 / 0.75
	CO_2e	1,617

Note: On-road criteria pollutant emissions and CO_2e emissions calculated based on emission factors from EPA MOBILE6C and Transport Canada. Off-road criteria pollutant and CO_2 emissions calculated based on emission factors from EPA Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition (EPA, 2009).

TABLE 2.12.2-2

Fugitive Dust Emissions from Construction of the Vantage Pipeline Project

Source Type	Pollutant	Emission Rate (tons per day)
Construction Activities	PM_{10}	0.045
	$PM_{2.5}$	0.025
Wind Erosion of Disturbed Areas	PM_{10}	7.16
	$PM_{2.5}$	1.07

Note: Emissions calculated using emission factors from EPA's Compilation of Air Pollutant Emission Factors (AP-42).

In addition to the emissions summarized above, emissions may result from small (22,000 British thermal units per hour) propane heaters used to warm personnel during construction activities.

Emissions from construction would be controlled to the extent required by state and local agencies (e.g., any special conditions of the NDPSC listed in the Certificate of Corridor Compatibility and Route Permit applicable to air quality), while tailpipe emission from gasoline and diesel powered construction equipment would be subject to federal mobile source regulations, such as 40 CFR 85 – Control of Air Pollution from Mobile Sources. Vantage has also committed to using sufficient measures

to ensure that appropriate levels of air quality are maintained during construction and that emissions from construction-related activities do not significantly affect local or regional air quality.

Based on the proposed mitigation and the local and intermittent nature of the construction emissions, these emissions are not expected to impact local air quality attainment status.

Because the Project does not include combustion-driven compressor stations, the emissions from operating the Project would be minimal. The Project would emit regulated pollutants from maintenance activities (light duty tailpipe emissions and combustion emissions from small propane heaters used for personal warmth) and fugitive emissions from valves and flanges.

Emissions from pipeline maintenance would be primarily from on-highway mobile source travel to various locations along the pipeline route. There would also be emissions associated with aircraft use for aerial surveillance of the pipeline, which would occur one to two times per month. Internal combustion engine emissions would consist of emissions of CO, SO_2, NOx, $PM_{10}/PM_{2.5}$, and VOCs.

Localized, periodic, and temporary use of access roads during operations would result in infrequent and minor impacts on air quality associated with fugitive dust. GHGs, which include CO_2, CH_4, and N_2O, would also be produced from infrequent on-road mobile source travel, but would be subject to federal emissions standards.

A summary of the criteria air pollutants and GHGs emitted during operation of the pipeline is provided in table 2.12.2-3.

TABLE 2.12.2-3

Criteria Air Pollutants and Greenhouse Gas Emissions During Operation of the Vantage Pipeline Project

Source	CO (tons/year)	NO_x (tons/year)	SO_2 (tons/year)	CH_4 (tons/year)	N_2O (tons/year)	CO_2 (tons/year)	CO_2e (tons/year)
On-road vehicles	0.76	0.06	0.0004	0.04	0.002	-	25
Aerial Surveillance	0.00	0.04	-	0.01	0.001	7.43	8
Totals	0.76	0.10	0.0004	0.05	0.003	7.43	33

Note: On-road criteria pollutant emissions and CO_2 emissions calculated based on emission factors from MOBILE6C and Transport Canada. Aerial emission factors sourced from International Civil Aviation Organization on Aviation Environmental Protection and Environment Canada.

In a traditional natural gas pipeline, blowdown events or upset conditions may emit VOCs and the GHG CH_4. However, the Project would transport only ethane gas and, therefore, VOC or CH_4 emissions would not occur, and thus, no criteria pollutants would be released from the pipeline if a leak occurred. While ethane is a GHG with a 100-year Global-warming potential (GWP) of 5.5, this impact is considerably less than methane with a GWP of 25.

The emissions summarized above are well below major source permitting thresholds and are generally insignificant. As such, operation of the Project is not expected to impact the local area attainment status.

The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8). In addition to the mitigation measures proposed by Vantage, it would also be required to comply with any special conditions of the NDPSC listed in the Certificate of Corridor Compatibility and Route Permit applicable to air quality.

Also, as discussed in section 1.8.2.2, the EPA has the responsibility to review and comment in writing on the EA consistent with CEQ's Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500 to 1508). The proposed Project would be located within EPA Region 8. Prior to issuance of the EA, the DOS and its independent third-party contractor solicited comments on the EA from Region 8 of the EPA. The EPA's comments on issues related to wetlands (see section 2.4) and air quality have been incorporated into this EA. In addition, the DOS consulted with the EPA's Office of NEPA Compliance in Washington D.C., which reviewed and approved the comments that were submitted by Region 8.

Connected Action

In order for any gas plant to produce ethane of a sufficient quality to be transported by a pipeline, additional processing equipment would need to be added to the plants' designs and operations. The Tioga Gas Plant is the origin of the Project and where the pipeline would initially obtain ethane to transport to Canada. As discussed in section 1.5, Hess is expanding its existing gas processing plant in Tioga, North Dakota. Following completion of the project, Hess would continue to combine ethane with the natural gas (i.e., ethane rejection) or would be able to separate the ethane from the gas stream (i.e., ethane recover). One component of the Hess facility modification is specifically related to allowing for ethane recovery required for Vantage's Project: the operation of a heater. The heater is required to provide heat to the gas plant process to upgrade the ethane into specification ethane and would only be used during the ethane recovery process.

Vantage completed an analysis of the incremental emissions generated by operation of the heater at the Hess Gas Plant to upgrade the ethane in the natural gas stream into specification ethane that would be delivered to the Project, as listed in table 2.12.2-4.

TABLE 2.12.2-4

Criteria Air Pollutants and Greenhouse Gas Emissions from Operation of the Tioga Gas Plant Heater

Emissions Source	CO (tons/year)	NO_x (tons/year)	CH_4 (tons/year)	N_2O (tons/year)	CO_2 (tons/year)	CO_2e (tons/year)
Heater	20.45	34.09	0.56	0.16	29,220	29,280

Regarding the connected action, the total incremental emissions from the Tioga Gas Plant would equate to 29,280 tons per year (26,570 megagrams per year) of GHG emissions (in carbon dioxide equivalent units). This equates to a 26 percent increase in GHG emissions from the Tioga Gas Plant over 2010 emissions. The total incremental carbon dioxide emissions increase from the Tioga Gas Plant and Project would equate to 29,717 tons per year (26,966 megagrams per year), which is a 0.055 percent of the carbon dioxide emissions generated in North Dakota. The total incremental emissions increase for the Tioga Gas Plant and the Project would be well below major source permitting thresholds, which are 75,000 tons per year or 68,039 megagrams per year for modifications to existing sources. This is equivalent to the average annual GHG emissions from 5,186 U.S. passenger vehicles. As such, it is anticipated that operation of the connected action and the Project would not significantly impact the local area attainment status.

2.13 NOISE

2.13.1 Environmental Setting

The ambient sound level of a region is defined by the total noise generated within the specific environment and is usually comprised of natural and man-made sounds. At any location, both the

magnitude and frequency of environmental noise may vary considerably over the course of a day and throughout the week. This variation is caused in part by changing weather conditions and the effect of seasonal vegetative cover.

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. Late night and early morning (10 PM to 7 AM) noise exposures are penalized by adding 10 decibels when calculating the L_{dn} to account for people's greater sensitivity to sound during nighttime hours.

In 1974, the EPA published its *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* This document provides information for state and local governments to use in developing their own ambient noise standards. The EPA has indicated that an L_{dn} of 55 decibels on the A-weighted scale (dBA) protects the public from indoor and outdoor activity interference. Generally this 55 dBA noise guideline is applied to operational noise sources (i.e., sources that operate continuously for long periods of time) in the form of an L_{dn} noise limit. For construction noise that is continuous for some time (e.g., horizontal directional drilling for several days straight), some federal agencies apply a 55 dBA limit to nighttime noise (L_n).

2.13.2 Construction and Operation Impacts and Mitigation

The construction activities associated with the Project would be temporary, intermittent, and vary over time. Construction noise would be limited to daylight hours and any horizontal bores for the Project are anticipated to be completed within one day between 7 AM and 10 PM. As such the construction activities would not exceed an L_n of 55 dBA, because the equipment would not operate between 10 PM and 7 AM.

During the daylight hours, construction noise would result in increased noise levels in close proximity of the construction activities but they may attenuate rapidly with distance depending on ground cover and geography of the area between the construction equipment and the closest noise-sensitive area (NSA). However, there are no permanent residences within 500 feet of the Project.

Table 2.13.2-1 summarizes the typical noise levels generated by construction equipment that may be used for the Project and demonstrates the rate of noise attenuation assuming no noise mitigation from ground cover.

As shown in table 2.13.2-1, the noise generated by the construction activities could exceed 55 dBA at more than 500 feet; however, the EPA 55 dBA noise level is a general guideline and not typically applied to construction activities that occur only during daylight hours. Further, the noise impacts would be temporary, intermittent, and short term. Therefore, no significant impact resulting from construction-related noise is anticipated.

TABLE 2.13.2-1

Construction Noise from Typical Pipeline Construction Equipment Activities [a]

Equipment	Reference dBA at 50 feet	Number of devices	Usage (percent)	Estimated Noise Level (dba) at the Specified Distance from the Source (feet)					
				50	100	250	500	1,000	2,500
3-Ton truck	84	1	40	80	74	66	60	54	46
Dump truck	84	1	40	80	74	66	60	54	46
Concrete truck	85	1	40	81	75	67	61	55	47
Fuel truck	84	1	40	80	74	66	60	54	46
Backhoe	80	1	40	76	70	62	56	50	42
Trenching machine	85	1	40	81	75	67	61	55	47
Crane	85	1	16	77	71	63	57	51	43
Front end loader	80	1	40	76	70	62	56	50	42
Bulldozer	85	1	40	81	75	67	61	55	47
Sideboom	85	1	16	77	71	63	57	51	43
Boring machine	85	1	20	78	72	64	58	52	44
Padding machine	85	1	40	81	75	67	61	55	47
Farm tractor	84	1	40	87	74	66	60	54	46
Mulching machine	86	1	40	82	76	68	62	56	48
Air compressor	80	1	40	76	70	62	56	50	42
Generator/ light plant	82	1	50	79	73	65	59	53	45
Water pump	77	1	50	74	68	60	54	48	40
Water truck	84	1	40	80	74	66	60	54	46
Welding machine	73	1	40	69	63	55	49	43	35
Welding truck	55	1	40	51	45	37	31	25	17
X-ray truck	55	1	40	51	45	37	31	25	17

[a] Derived by adding the individual equipment noise levels logarithmically using the following formula: Leq total =10log(Σ(10Leq/10)).

The Project does not include the installation of pump stations or other significant above-ground noise generating facilities. The Project does, however, include MLBVs that would be located above ground. The MLBVs are expected to generate approximately 52 dBA of noise at the fenceline of the valve sites. A review of aerial imagery around the MLBV sites indicates the closest NSA to be about 1,500 feet from a site. Therefore, the noise attributable to MLBV valve sites at the closest NSAs would be about 0 dBA based on natural hemispheric attenuation. Therefore, the noise attributable to the MLBV sites would be below 55 dBA L_{dn}.

The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8). In addition to the mitigation measures proposed by Vantage, it would also be required to comply with any special conditions of the NDPSC listed in the Certificate of Corridor Compatibility and Route Permit applicable to noise.

2.14 RELIABILITY AND SAFETY

Transportation of liquid ethane by pipeline involves some risk to the public and the environment in the event of an accident or release. Ethane is a colorless, odorless, flammable gas with a vapor pressure of 540 pounds per square inch gauge at 70 degrees Fahrenheit (°F) and boiling point of minus 128°F. Contact with the liquid may cause frostbite. Vaporized ethane is slightly heavier than air and typically dissipates rapidly into air, but still could form pockets of oxygen deficient atmosphere in low-lying areas. In high vapor concentrations, it can act as a simple asphyxiant, possessing a slight inhalation hazard. If inhaled in high concentration, oxygen deficiency can result in serious injury or death.

2.14.1 Pipeline Compliance and Safety Standards

The main causes of pipeline incidents in the United States are corrosion, excavation damage, pipe or weld failure, incorrect operations, or natural causes (e.g., floods). To avoid pipeline incidents, the federal government has established minimum pipeline safety standards under the 49 CFR 190–199. The OPS, PHMSA, within the DOT, is the primary federal enforcement agency that regulates the safety of hazardous liquid and gas pipelines within the United States. The North Dakota Pipeline Authority (NDPA), within the Industrial Commission of North Dakota, is the jurisdictional state agency responsible for assisting operators with the development of pipeline facilities to support the production, transportation, and utilization of North Dakota energy-related commodities.

The DOT is mandated to regulate pipeline safety under 49 U.S.C. Chapter 601. PHMSA is responsible for protecting the American public and the environment by ensuring the safe and secure movement of hazardous materials to industry and consumers by all transportation modes, including the nation's pipelines. Through PHMSA, the DOT develops and enforces regulations for the safe, reliable, and environmentally sound operation of the nation's 2.3-million-mile pipeline transportation system and the nearly 1 million daily shipments of hazardous materials by land, sea, and air. PHMSA administers the national regulatory program to ensure the safe transportation of hazardous liquids by pipeline. PHMSA develops regulations that address safety in the design, construction, testing, operation, maintenance, and emergency response for hazardous liquid pipelines and related facilities. Many of the regulations are written as performance standards that set the level of safety to be attained and allow the pipeline operators to use various technologies to achieve the required level of safety. PHMSA is responsible for regulations that require safe operations of hazardous liquid pipelines to protect human health and the environment from unplanned pipeline incidents.

The regulations governing pipeline safety are included in 49 CFR 190 through 199. Of those, Parts 190, 194, 195, 198, and 199 are relevant to hazardous liquid pipelines. Highlights of the key PHMSA regulations that apply to the Project include:

- Part 190 describes the procedures for carrying out regulatory duties, including inspection of pipelines and enforcement of the regulations.
- Part 194 contains requirements for spill response plans and emergency response plans intended to reduce the environmental impact of liquid hydrocarbons discharged from onshore pipelines.
- Part 195 prescribes the safety standards and reporting requirements for hazardous liquid pipelines, including detailed requirements on a broad spectrum of areas related to the safety and environmental protection of hazardous liquid pipelines.
- Part 198 prescribe regulations for grants to aid state pipeline safety compliance programs.
- Part 199 requires operators of gas and hazardous liquid pipelines to establish programs for preventing alcohol misuse and to test employees for the presence of alcohol and prohibited drugs.

PHMSA policies also address pipeline safety standards near high consequence areas (HCAs). Agriculture is the predominant land use along the pipeline corridor, comprising about 99 percent of land affected by the Project. The only HCA in the vicinity of the Project is the City of Tioga, North Dakota (population 1,128). The Tioga city limits extend approximately 0.5 mile from the pipeline route at about MP 0.8.

For a new hazardous liquid pipeline, the regulations at 49 CFR 195.452 require that HCAs be identified prior to operation and that a written Integrity Management Plan be in place within 1 year of the start of operation. The HCA regulation also requires that operators of new hazardous liquid pipelines complete baseline assessments by the start date for pipeline operation. Depending on the findings of the assessment, the operator must take preventive and mitigating measures to protect the HCA from the consequences of a pipeline failure. These measures include conducting a risk analysis of the pipeline segment to identify additional actions to enhance public safety or for environmental protection. The ethane proposed to be transported by Vantage is also considered by PHMSA to be a hazardous material and, therefore, would need to comply with all regulatory requirements applicable to such materials.

No Unusually Sensitive Areas, as defined in 49 CFR 195.6, are located adjacent to the Project.

The EPA requires facilities covered by the Emergency Planning and Community Right-to-Know Act to submit an Emergency and Hazardous Chemical Inventory Form to the Local Emergency Planning Committee, the State Emergency Response Commission, and the local fire department annually. Facilities provide either a Tier I or Tier II form. North Dakota requires the Tier II form. Tier II reporting must be performed annually using the appropriate on-line North Dakota emergency and hazardous chemical inventory form(s) for all applicable pipeline chemicals. This information is distributed to the local emergency response services and fire departments. Tier II forms provide the following information for each substance transported through a pipeline:

- the chemical name or the common name as indicated on the Materials Safety Data Sheets;
- an estimate (in ranges) of the maximum amount of the chemical present at any time during the preceding calendar year and the average daily amount;
- a brief description of the hazards and manner of storage of the chemical;
- the location of the chemical at the facility; and
- an indication of whether the owner elects to withhold location information from disclosure to the public.

The PHMSA regulates, inspects, and enforces both intrastate and interstate liquid pipeline safety requirements in North Dakota. Through certification by PHMSA, the State of North Dakota regulates, inspects, and enforces intrastate gas pipeline safety requirements. This work is performed by the Testing and Safety Division of the NDPA.

To ensure safe pipeline construction, operation, and maintenance, the Project would be constructed and maintained to meet or exceed requirements and standards established by the DOT, the PHMSA, and the NDPA, as well as applicable industry standards, including those issued by the American Society of Mechanical Engineers, National Association for Corrosion Engineers, and American Petroleum Institute.

Prior to being placed into operation, Vantage would hydrostatically test all pipeline sections with water to at least 125 percent of the pipeline's maximum allowable operating pressure to ensure the integrity and operational safety of the pipeline. After the welds have passed inspection, a corrosion-resistant protective coating would be applied to the outside of the pipe.

2.14.2 Release Response and Reporting

Most construction-related spills would likely release minor quantities of refined products (e.g., gasoline, diesel, and lubricating and hydraulic fluids). These releases would be subject to the reporting requirements of 40 CFR 110, and would typically result from vehicle and construction equipment fueling and maintenance. Potential spills from construction activities would be addressed by specific preventive and mitigating measures included in the SPCC Plan.

The root cause of pipeline releases is usually from excavation damage, corrosion, or natural forces (e.g., soil settlement or washouts). Although pipeline leak-detection technology could identify a leak and shut down flow quickly, actual response is often delayed due to the remoteness of the release location.

When a release of ethane occurs, the resulting environmental impact(s) depend on a number of factors, including weather conditions. Windy conditions results in dissipation of the volatile ethane to the atmosphere. Conversely, calm days could potentially result in isolated pockets of ethane gas near the ground surface due to its characteristic specific gravity.

Based on modeling work by Hanna and Drivas (1993), the majority of VOCs, including ethane from pipeline releases, would evaporate almost completely within a few hours. In addition, the vapors are usually dissipated below risk levels within a short distance of the source.

If a pipeline release were to occur, emergency response contractors or health and safety personnel would follow their emergency response plans, including wearing the proper personal protective equipment and performance of air monitoring of the ethane vapors. Public access to areas exceeding specified risk levels would be restricted and authorized personnel within the restricted areas would be equipped with and use appropriate personal protective equipment.

Any impacts on air quality related to releases would likely be localized and short term resulting in little or no impact on ecological and physical resources. An estimate of the volume of the release and air emissions would be reported to PHMSA using standard forms, consistent with 49 CFR 195.50.

In addition, consistent with North Dakota law, hazardous materials exceeding reportable quantities must be reported to the North Dakota Emergency Services through the Division of State Radio by calling 800-472-2121. The initial notification requires follow-up reporting using the Hazardous Materials Spill Report Form. Once a release has been mitigated, the owner or operator must provide a spill or release report describing the details of the incident. These procedures would also be implemented by Vantage to reduce the potential for any health and/or safety risks.

To minimize the threat of leaks, the proposed Project would be monitored and controlled 24 hours per day, 365 days per year, from a central control facility (CCF) located in Joffre, Alberta using a state-of-the-art supervisory control and data acquisition (SCADA) system. A leak detection system would continuously monitor the pipeline. This system would report through the SCADA system to the CCF and would provide the CCF operator with enhanced capabilities related to the early detection and location of leaks. Response to a leak indication would be coordinated from the CCF, with resources being supplied from the nearest pipeline maintenance location. In the event any anomaly is detected, MLBVs would automatically shut to isolate that portion of the pipeline. These automated MLBVs would be located approximately every 15 miles along the pipeline (see table 1.4.2-1). A cathodic protection system, including anode beds, rectifiers, and associated facilities would be installed for the pipeline.

Vantage's public awareness program would include annual contact with all residents living within 2,800 feet of either side of the centerline of the pipeline; regular contact and meetings with all the

emergency response personnel that could be responding to a Vantage pipeline emergency; and annual mailings to all landowners, tenants, and lessees located on the Vantage pipeline route.

In addition, Vantage would incorporate regular preventative maintenance programs into the design and operation of the pipeline, such as aerial patrols, internal inspections, and cathodic protection monitoring, along with pipeline markers at roads and pipeline watercourse crossings.

The Project would also require a Certificate of Corridor Compatibility and Route Permit from the NDPSC, which is currently pending (see section 1.8.2.8). In addition to the mitigation measures proposed by Vantage, it would also be required to comply with any special conditions of the NDPSC listed in the Certificate of Corridor Compatibility and Route Permit applicable to state pipeline safety requirements.

2.15 CUMULATIVE IMPACTS

2.15.1 Introduction

The cumulative impacts assessment for the Vantage pipeline focuses on potential changes to the environment and socio-economic conditions caused by the Project, in combination with other projects or activities in the past, present, and/or reasonably foreseeable future. This assessment examines a larger geographic study area and a longer time frame than the environmental effects assessment, and includes the assessment of effects from adjacent and unrelated activities.

Indirect effects are defined as effects "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR 1508.8).

Cumulative impacts are "... [t]he impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR § 1508.7). Cumulative impacts consider not only the localized effect of the construction and operation of the proposed Vantage pipeline, but also past actions.

Cumulative environmental and socio-economic effects were assessed if all three of the following conditions were met:

- the Project results in a residual environmental or socio-economic effect on a component of the biophysical or human environment that can be measured, or can be expected to occur;
- the Project's residual environmental or socio-economic effect on that component does, or is likely to, act in a cumulative fashion with the effects of other past or future projects and activities that are likely to occur; and
- the Project's contribution to cumulative effects can be reasonably expected to affect the viability or sustainability of the resource or a value such as a regulatory 'threshold' or standard.

The assessments were generally based on the known effects from past and recent pipeline construction practices and the adoption of industry-recognized standards.

Three types of past, present, and reasonably foreseeable future projects were identified that would potentially result in a cumulative impact when considered with the Project. These are: 1) facilities associated with construction of the Project but that are not under the jurisdiction of the DOS; 2) other ethane, oil, and/or gas projects; and 3) other projects that are either in place, are under construction in the vicinity of the Project, or are proposed (see table 2.15.1-1). These projects were identified through information provided by the applicant and independent research into the local energy and other development projects in the Project area (e.g., review of NDPSC website, energy developer project plans). Although solicited, no scoping comments related to cumulative impacts were received on the Project (see section 1.3). The potential effects most likely to have a cumulative impact pertain to soils, surface waters, wetlands, fish and fish habitat, vegetation, wildlife and wildlife habitat, and socioeconomics. Not all actions identified in this section would have cumulative impacts in all resource areas.

TABLE 2.15.1-1

Past, Present, and Reasonably Foreseeable Projects or Activities Evaluated for Cumulative Impacts

Project/Activity	Description	Estimated Construction Dates	Location Relative to the Vantage Pipeline Project
North Dakota Oil and Natural Gas Production	Ongoing activities associated with oil and gas drilling and development, and subsequent petroleum production.	Potential 10 to 20 years of drilling and development; additional time for petroleum production.	Majority of nearby development is in the southern half of Williams County, not in the vicinity of the Project.
Ethane Production in Canada	Processing and marketing of the additional ethane that is transported to Red Deer, Alberta, Canada.	Ongoing.	Outside the U.S. Project area, but connected to the larger Vantage Pipeline Project.
Tioga Plant Expansion, Hess Corporation	Expansion to double the current plant capacity to exceed 250 million cubic feet per day (mmcfd) of natural gas; construction of a 120,000 barrel per day oil and natural gas liquid rail loading terminal.	Scheduled in-service at end of 2012.	Tioga, North Dakota near MP 0.0.
ONEOK Stateline Gas Plant	Processing plant designed for 100 mmcfd of natural gas.	Scheduled completion in mid-2012.	Approximately 35 miles south of the southern end of the pipeline route.
ONEOK Garden Creek Plant	Processing plant designed for 100 mmcfd of natural gas.	Construction recently completed.	Approximately 42 miles south of the southern end of the pipeline route.
Hiland Partners Watford City Plant (PU-10-554)	Processing plant designed for 50 mmcfd of natural gas.	Construction recently completed.	Approximately 55 miles southwest of the southern end of the pipeline route.
Plains Bakken North Pipeline	Proposed oil pipeline.	Construction scheduled to occur in 2012.	Approximately 8 miles south of the northern end of the pipeline route.
Enbridge Portal Reversal (Phase 7 Expansion)	Proposed oil pipeline.	Construction recently completed.	Approximately 7 miles from the proposed route.
Bridger Pipeline Four Bears Pipeline Expansion	Proposed oil pipeline.	Construction recently completed.	Approximately 30 miles from the proposed route.
Quintanna Bakken Link Pipeline	Proposed oil pipeline.	Construction schedule undetermined.	Approximately 36 miles from the proposed route.
Rangeland Energy COLT Hub	Proposed oil pipeline.	Scheduled completion in early 2012.	Approximately 8 miles from the proposed route.
Annabelle Homes	Proposed commercial/residential development.	No construction schedule has been established.	Within 0.25 mile of the south end of the pipeline route.

[a] Cumulative impacts associated with the electric transmission lines and interconnections connected action are discussed in section 1.5.2.

2.15.2 Potential Cumulative Impacts of the Proposed Action

Geology

As discussed in section 2.1.1, the proposed Project would cross deposits of petroleum, coal, lignite, trace metal, clay, sand, gravel, scoria, and salt bearing formations. Existing and planned oil and natural gas rights-of-way associated with the projects listed in table 2.15.1-1 would limit the area available for extraction of mineral resources. In areas where existing and planned projects are present within the proposed Project area, there would be a minor cumulative decrease in the access to mineral resources because the proposed Project would limit the extraction of mineral resources in the permanent Project right-of-way. Extraction of oil and gas resources would not be affected by operation of the proposed Project because they are typically found at a depth far below the pipeline trench and installation depth. Overall, the proposed Project would not significantly affect the existing development of mineral resources in the Project area, as described in section 2.1.2. Therefore, construction and operation of the proposed Project, in addition to the other proposed and planned projects listed in table 2.15.1-1, is not anticipated to result in significant cumulative impacts on mineral extraction in the proposed Project cumulative impact corridor.

As discussed in section 2.1.2, the Project right-of-way would be returned to the approximate original topographic contour during restoration activities, as would the pipeline rights-of-way associated with the planned pipeline projects listed in table 2.15.1-1. In addition, Project impacts on bedrock are expected to be nonexistent and, thus, blasting is not anticipated during Project construction and pipeline installation activities. Therefore, construction of the proposed Project, in addition to the other proposed and planned projects listed in table 2.15.1-1, is not anticipated to result in significant cumulative impacts on regional topography in the proposed Project cumulative impact corridor.

During construction of the Project and the projects listed in table 2.15.1-1, damage to or destruction of paleontological resources from excavation and grading activities, or from unauthorized collection of fossils by construction personnel or the public, may occur. Research conducted of the Project area, as discussed in section 2.1.1, has minimized the potential for the proposed Project to impact known scientifically significant paleontological resources. Additionally, Vantage would notify agency personnel if fossils are uncovered. Therefore, construction and operation of the proposed Project, in addition to the other proposed and planned projects listed in table 2.15.1-1, is not anticipated to result in significant cumulative impacts on paleontological resources within the proposed Project cumulative impact corridor.

Soils

Soils along approximately 80 percent of the Vantage pipeline alignment have previously been and are currently being impacted by agricultural activities. The majority of the land area impacted during construction of the Project would be reclaimed as grassland, pasture, or returned to agricultural production. Vantage would implement its EPP as well as other Project-specific plans (e.g., Soil Conditions Contingency Plan) to reduce the impacts of construction on soils. Construction of the projects listed in table 2.15.1-1 would result in impacts on agricultural activities within the Project cumulative impact corridor; however, the DOS expects that the pipeline rights-of-way associated with the planned pipeline projects listed in table 2.15.1-1 would be reclaimed as grassland, pasture, or returned to agricultural product similar to the right-of-way associated with the Vantage pipeline. In addition, the DOS expects that these projects would also be required to implement BMPs to minimize impacts on agricultural activities and, therefore, impacts from construction of the Project, in addition to the other projects in the area, would not result in significant cumulative impacts.

Ongoing development of oil wells, access roads, and pipelines in the area would act cumulatively with effects from the Project. As discussed in section 2.2.2, the majority of the Vantage pipeline right-of-way would be allowed to revert to its previous use; therefore, the long-term area impacted by the Project would be much less than the area impacted by oil well development and access roads, which would result in permanent impacts on soils. The soil stabilization and revegetation requirements in Vantage's EPP would prevent or minimize any indirect impacts. Revegetation of the right-of-way consistent with the EPP would ensure that the disturbed areas are stabilized to prevent erosion. Similarly, the DOS expects that the oil and gas development projects listed in table 2.15.1-1 would also have associated soil stabilization requirements as part of their permit approvals. Construction and restoration activities, as well as operation and maintenance activities, would be monitored through the process to ensure compliance. Consequently, it is anticipated that the proposed Project, in addition to the other projects in the area, would not result in significant cumulative impacts on soils.

Groundwater, Surface Waters, and Wetlands

Project construction could have a minor, temporary, and localized effect on groundwater, surface waters, and wetlands. Groundwater impacts could include increased turbidity, reduced water levels, and contamination, and nearby water wells could also be damaged by construction. The greatest potential impacts of pipeline construction on waterbodies/wetlands would likely result from an increase in sediment loading to waterbodies/wetlands either during active construction within a feature or due to runoff from construction near waterbodies/wetlands.

The level of impact of the Project on waterbodies/wetlands would depend on precipitation events, sediment loads, stream area/velocity, channel integrity, and bed material. As discussed in section 2.4.2, construction and operation of the proposed Project would result in temporary impacts on intermittent and ephemeral drainages classified as wetlands. As discussed in section 2.4.1, the wetlands that were identified during Vantage's field surveys have already been directly impacted by agricultural activities, and approximately 5 percent of the potentially traversed wetlands are within areas already impacted by construction, drilling, and production activities related to oil well development, primarily in Williams County. Potential impacts on wetlands as a result of construction activities associated with the proposed Project would, therefore, overlap with effects from other activities in Divide and Williams Counties (e.g., agriculture, well pad construction and drilling, pipelines, road use and construction).

Vantage would avoid direct and permanent impacts on waterbodies/wetlands by using the horizontal bore method at each crossing. Impacts on waterbodies/wetlands expected from the other proposed pipeline projects in the area, as listed in table 2.15.1-1, would vary and be dependent on the crossing method adopted at each feature. Also, while the proposed Project is not anticipated to act cumulatively with these other proposed construction projects because of Vantage's commitment to avoid direct impacts, the other projects may result in an incremental change in localized natural flow patterns and change of surface water or wetland quality. These residual effects include potential alteration of natural flow patterns and increase in suspended solids during isolated crossings. Construction and operation of the proposed projects listed in table 2.15.1-1 would be subject to review and approval by applicable local, state, and federal agencies. It is anticipated that these approvals would include BMPs to avoid, minimize, or mitigate for impacts on water resources and wetlands; thus, the Project and other projects in the area are not expected to contribute significantly to cumulative impacts on water resources or wetlands.

Fish and Fish Habitat

When projects are constructed in the same general location and time frame, they could have a cumulative impact on local fish and fish habitat communities. As described above, the Project would

cross intermittent and ephemeral drainages, which are predominately dry and not fish-bearing. Construction impacts from the proposed Project and the projects listed in table 2.15.1-1 would vary and be dependent on the crossing method adopted at each feature. Impacts could include potentially impacting downstream fish and fish habitat through increased suspended sediment concentrations.

Vantage has committed to using the horizontal bore method at each crossing. The mitigation measures included in Vantage's EPP that are proposed to control erosion and sediment discharge are, based on past and recent pipeline construction projects, effective methods to minimize potential long-term impacts on fish and fish habitat. Vantage would reduce indirect effects on riparian habitat caused by Project construction by revegetating the right-of-way following construction, thus avoiding long-term or significant impacts.

Construction and operation of the proposed projects listed in table 2.15.1-1 would be subject to review and approval by applicable local, state, and federal agencies. It is anticipated that these approvals would include BMPs to avoid, minimize, or mitigate for impacts on water resources and any supporting fisheries; thus, the Project and other projects in the area are not expected to contribute significantly to cumulative impacts on fish and fish habitats.

Vegetation

Right-of-way clearing and grading and other construction activities associated with the Project would result in the removal of vegetation and other potential secondary effects such as the establishment of invasive plant species. Construction of the Project would temporarily impact about 735 acres of vegetated land, of which about 291 acres would be retained for permanent operation for maintenance. The Project would result in the permanent loss of approximately 0.6 acre of vegetation required for MLBVs and access roads.

When projects are constructed in the same general location and time frame, they could have a cumulative impact on local vegetation. Impacts on vegetation resulting from the proposed Project and other projects identified in table 2.15.1-1 would range from direct, temporary, and short term as a result of construction, to permanent impacts associated with well pads and road installation in vegetated areas. The effects from construction of the proposed pipeline are expected to be primarily temporary and short term as the construction right-of-way would be restored and allowed to return to preconstruction conditions. As indicated in section 2.6, approximately 80 percent of the lands affected by the Project are used for agricultural purposes including the production of cultivated crops, pasture land, and hay production. The remaining 20 percent includes native grasslands and less than 1 percent is wetlands. Vantage would implement construction and restoration measures listed in its EPP to mitigate for direct and indirect impacts on vegetated areas. Vantage would reclaim grasslands with native species and agricultural lands would be returned to production in the growing season following construction. The DOS expects that the other pipeline projects listed in table 2.15.1-1 would also adopt similar construction and right-of-way restoration measures to minimize significant cumulative impacts on vegetated areas.

The Project would result in 0.6 acre of vegetated land permanently removed from use as a result of MLBVs and access roads required for the Project. Aboveground facilities associated with the other projects listed in table 2.15.1-1, as well as oil and gas development activities in the region, would add cumulatively to the loss of available agricultural and native grasslands. Fragmentation of native prairie habitat may also result from the installation of new well sites and related facilities. However, it is estimated that the 0.6-acre loss associated with the Project represents less than 0.0001 percent of the total grassland available in Divide and Williams Counties. As a result, it is anticipated that the Project would not result in a significant cumulative impact on vegetative resources.

Additionally, construction and operation of the proposed projects listed in table 2.15.1-1 would be subject to review and approval by applicable local, state, and federal agencies. It is anticipated that these approvals would include BMPs to avoid, minimize, or mitigate for impacts on vegetation; thus, the Project and other projects in the area are not expected to contribute significantly to cumulative impacts on vegetative resources.

The introduction of invasive species within the Project area could result in a cumulative impact when combined with agricultural activities and future development of oil and gas. More specifically, based on past and recent pipeline construction projects, construction-related disturbances could promote the spread of invasive weed species from disturbed croplands onto native prairie sites. As discussed in section 2.6.1, North Dakota law (North Dakota Century Code § 4.1-47-02) requires every person to do all things necessary and proper to control the spread of noxious weeds and makes it illegal for any person to distribute, sell, or offer for sale within the state a noxious weed. Vantage would implement the measures included in its EPP to control the spread of invasive weed species. The DOS expects that the other projects identified in table 2.15.1-1 would abide by North Dakota's law regarding noxious weeds and would, as necessary, develop weed management plans, as necessary.

Wildlife and Wildlife Habitat

Right-of-way clearing and grading and other construction activities associated with the Project would result in the removal of vegetation; alteration of wildlife habitat; displacement of wildlife; and other potential secondary effects such as increased population stress and predation. The development of the Project and other projects in the area could also result in habitat fragmentation. Cumulative impacts on wildlife and wildlife habitat, including federally and state-listed species, would be similar to those described above for vegetation. Impacts resulting from the proposed Project would primarily be direct and temporary to short term. Vantage would implement construction and restoration measures listed in its EPP to mitigate for direct and indirect impacts on areas supporting wildlife and its habitat. The potential for wildlife habitat fragmentation resulting from the Project would be further reduced because the majority of the disturbed areas would be allowed to return to pre-existing conditions. The DOS expects that the other pipeline projects listed in table 2.15.1-1 would also adopt similar right-of-way restoration measures and/or implement BMPs to minimize significant cumulative impacts on wildlife and its available habitat.

As previously discussed, the Project would permanently impact 0.6 acre of land. While aboveground facilities associated with the other projects listed in table 2.15.1-1 may also result in permanent impacts on land available to wildlife, the proposed Project's impact in combination with these projects would not result in a significant cumulative impact on wildlife and its available habitat. Additionally, construction and operation of the proposed projects listed in table 2.15.1-1 would be subject to review and approval by applicable local, state, and federal agencies. The DOS expects that these approvals would include BMPs to avoid, minimize, or mitigate for impacts on wildlife; thus, the Project and other projects in the area are not expected to contribute significantly to cumulative impacts on wildlife and its habitat.

Land Use and Visual Resources

Construction of the proposed Project could contribute to cumulative impacts in the area of the proposed Project through disruption of agricultural and open land production, which includes cultivated croplands, grasslands, and pasture/hay fields. Short-term contributions could include potential damage to agricultural infrastructure (e.g., drain tiles or irrigation systems) that would diminish agricultural productivity, and construction-related noise and dust that could temporarily impair other land uses. Most acreage disturbed during construction of the proposed Project would be returned to preconstruction uses

after right-of-way restoration and, therefore, would not contribute to long-term alterations in land uses. Generally, based on past and recent pipeline construction projects, disturbed agricultural and open land would become productive within several planting seasons. However, disturbed pastures could require revegetation taking 1 to 5 years to recover to preconstruction levels. Aboveground facilities (i.e., MLBVs) required for operations would convert the land associated with these facilities to an industrial use for the life of the proposed Project. As discussed previously, the contribution of lands committed to industrial uses during the life of the proposed Project would be small in relation to the number of acres available for these land uses. Easement restrictions associated with the proposed Project would contribute to land use restrictions within the proposed Project cumulative impact corridor.

Cumulative impacts on visual resources could occur in areas where past and reasonably foreseeable future projects in addition to the proposed Project remove large swaths of vegetation and where permanent aboveground facilities are installed. Along most of the proposed Project route, the contribution to cumulative visual impacts due to proposed Project construction activities would be limited to the removal of existing vegetation, exposure of bare soils, earthwork and grading scars, and minor landform alterations. Temporary visual impacts would be evident during Project construction due to clearing, grading, and construction activities. After construction, restoration consistent with Vantage's EPP and other permitting agency requirements would promote revegetation of the construction work areas, thereby limiting permanent visual impacts on those areas.

If any of the projects identified in table 2.15.1-1 were to occur concurrently with the proposed Project, cumulative impacts could include temporary contributions to degradation in visual quality as a result of the presence of construction crews, equipment, and dust.

The aboveground components (i.e., MLBVs) associated with the Project would contribute to an intensified industrial character in the region. Other aboveground facilities associated with the projects listed in table 2.15.1-1 would also result in a cumulative impact that could adversely affect the visual quality of the area. The DOS notes that this permanent cumulative impact on the visual character of the landscape would occur; however, the potential impact would be localized in a rural and sparsely populated area, and given the small footprint of the MLBV facilities associated with the proposed Project, the majority of the surrounding landscape would retain its visual character.

Socioeconomics

Overall, construction and operation of the Project would likely have no significant impact on the socioeconomic character of the region in which it lies. The impacts on housing, the local population, employment, and public services resulting from the presence of temporary construction workers would likely be the primary contribution of the proposed Project. Due to the number of temporary worker and the relatively short time frame in which construction would occur, however, the impact on socioeconomic resources would likely be temporary and minor.

More localized, cumulative impacts may be felt in the vicinity of Tioga, North Dakota, where Project construction may coincide with the ongoing construction activities at the Tioga Gas Plant. Construction of the Tioga Gas Plant in Tioga is scheduled to experience peak manpower of around 700 by late 2012. Vantage estimates that, if the Project is approved, its manpower would peak at around 70 in late 2012. To reduce cumulative impacts on the local population, including potential impacts on recreation, food and food services, and accommodations, Vantage would begin construction of the proposed pipeline at the north end of the line near the Canada/U.S. border and move south towards the Tioga Gas Plant. It is anticipated that this would provide the greatest amount of distance between the construction crews at the busiest time during the construction schedule for both Hess' Tioga Gas Plant and Vantage pipeline. As the pipeline construction crews move south towards Hess' Tioga Gas Plant, the

number of construction workers at the Tioga Gas Plant is anticipated to be decreasing. In the event the cumulative impact of the Vantage pipeline construction crews on the local population is unmanageable, Vantage has proposed to use buses to move the Vantage pipeline construction crews from the jobsite to accommodations that are further away from Tioga and surrounding area. It is anticipated that the use of buses to transport construction crews would assist in reducing the cumulative impacts on recreation, food and food services, and accommodations resulting from the Project when combined with other projects in the area.

As discussed in section 2.10.2, the proposed Project is not expected to result in adverse impacts that would fall disproportionately on minority or low-income populations within the Project area. Cumulative impacts on minority and low-income populations related to past and reasonably foreseeable future projects could occur; however, the contribution of the proposed Project to these cumulative impacts would likely be minor given that no significant environmental justice populations are located within the Project area.

Additional short-term contributions to cumulative socioeconomic impacts would result from increased employment opportunities and related labor income benefits, and increased government revenues associated with sales and payroll taxes. Operation of the proposed Project would require relatively few permanent employees; thus, there would be little contribution to long-term cumulative impacts on population, housing, municipal services, or traffic in the proposed Project area. It is anticipated that the other projects listed in table 2.15.1-1 would contribute similarly to the local economy; thus, the Project and other projects in the area would likely result in a minor beneficial, long-term cumulative economic impact.

Cultural Resources

Contribution to cumulative impacts on cultural resources from the proposed Project would include disturbance to aboveground and belowground resources within the designated Project APE. The proposed Project would be constructed consistent with the requirements under Section 106 NHPA and other relevant federal, state, and local regulations. Disturbance to these resources from construction of the proposed Project would be limited primarily through avoidance, and through mitigation when avoidance is not achievable.

The contribution to cumulative impacts on cultural resources that could occur from construction and operation of the proposed Project include damage or destruction of historic properties that cannot be avoided; introduction of visual or audible elements that would diminish the integrity of a historic property's significant historic features; changes to the character of the historic property's use; or changes to physical features within the historic property's setting that contribute to its significance. The proposed Project's contribution to cumulative impacts on cultural resources would be primarily limited through avoidance of adverse effects to historic properties that have been found eligible for listing in the NRHP or that are currently unevaluated. Cultural resource avoidance could be achieved through pipeline route variations to avoid NRHP-eligible properties, or through boring underneath the cultural deposits using the horizontal bore construction method. If any historic properties are to be adversely affected by the proposed Project, mitigation measures would be developed as part of a Treatment Plan to be incorporated into a Programmatic Agreement.

Contribution to cumulative impacts on cultural resources could result from future linear projects or other future developments within the proposed Project cumulative impact corridor that disturb known or currently unidentified archaeological sites and historic properties or degrade in-place mitigation for previously disturbed historical properties. It is anticipated that other project proponents listed in table 2.15.1-1 would be required to conduct cultural resources surveys, consult with the appropriate

agency(ies), and/or adopt mitigation to avoid cultural resources of significance to the extent possible. Known sites identified during proposed Project studies or in past or future cultural resource studies would be avoided or mitigated to the degree practicable as required by Section 106 NHPA during future project implementation.

Air Quality

The Project, the ongoing drilling activities in the Bakken area, and other projects in the area would involve the use of heavy equipment that would generate emissions of air contaminants, fugitive dust, and noise during construction. Because pipeline construction moves through an area quickly, air emissions associated with the pipeline would be intermittent and short term. The majority of these impacts would be minimized further because the construction activities would occur over a large geographical area and, in many cases, construction schedules would not directly overlap. Although these projects would result in short-term construction air emissions, they are not likely to significantly affect long-term air quality in the region.

Operation of the Project, oil and gas drilling activities, and other projects would also contribute cumulatively to existing air emissions. The Project's associated operating emissions would be mitigated by federal, state, and local permits and approvals. It is anticipated that each of the projects would also need to comply with federal, state, and local air regulations, which may require controls to limit the emission of certain criteria pollutants or hazardous air pollutants. Thus, the Project in combination with the other projects listed in table 2.15.1-1 is not anticipated to contribute significantly to the cumulative impact on regional air quality as a result of operation.

Noise

The Project, oil and gas drilling activities, and other projects identified in table 2.15.1-1 would all produce noise during construction; however, this noise would be temporary annoyances to noise receptors in the vicinity of the projects, particularly given the sparsely populated area of the Project. Noise impacts during the construction phase would be localized and would attenuate quickly as the distance from the noise source increases. However, because construction proceeds as a moving assembly line along the proposed pipeline loops, the duration of construction activities, and therefore noise impacts, at any one location would be limited and short term. As discussed in section 2.13.2, the noise attributable to the MLBV sites at the closest NSAs would be about 0 dBA L_{dn}, well below 55 dBA L_{dn} the EPA attributes to public activity interference. Because the impact of noise is highly localized and attenuates quickly as the distance from the noise source increases, it is anticipated that impacts associated with the Project would not result in significant cumulative impacts.

Conclusion

The DOS and its independent third-party contractor identified recently completed, ongoing, and planned projects in the Project area that meet the criteria for inclusion in the cumulative impact analysis study. Due to the implementation of specialized construction techniques, the relatively short construction timeframe in any one location, and resource protection and mitigation plans designed to minimize and control environmental impacts for the Project as a whole (e.g., the EPP, the BA), only small cumulative effects are anticipated when the impacts of Vantage's Project are added to the identified ongoing projects in the immediate area.

2.15.3 Canadian Effects

The Canadian government has conducted its own environmental review of the portion of the Project in Canada. Consistent with EO 12114, the DOS is not preparing any environmental assessment of the impacts of the pipeline in Canada. Nevertheless, as a matter of policy, in addition to its environmental assessment of the Project in the United States, the DOS endeavors to monitor and obtain information, as appropriate, regarding the Project in Canada.

The Canadian process began on September 23, 2010 when Vantage submitted a Project Description to Canada's NEB. On February 8, 2011, Vantage submitted an application to the NEB for a Certificate of Public Convenience and Necessity for the proposed Project pursuant to Section 52 of the National Energy Board Act. On January 19, 2012, the NEB issued its Reasons for Decision and approved the Project.[10]

2.16 SUMMARY OF ASSUMPTIONS

Our preliminary analyses of potential impacts associated with construction and normal operation of the proposed Project on most resources along the proposed Project corridor assume the following:

- Vantage would comply with all applicable laws and regulations;
- Vantage would incorporate the mitigation measures required in permits issued by environmental permitting agencies listed in table 1.10-1 into the construction, operation, and maintenance of the proposed Project;
- Vantage would adopt the timing restrictions and/or adopt the mitigation measures recommended by the FWS to avoid adversely affecting federally listed species or their habitat;
- Vantage would adopt the timing restrictions and/or adopt the mitigation measures recommended by the FWS to avoid adversely affecting species protected by the MBTA and BGEPA, and develop an Agreement in consultation with the FWS;
- Vantage would complete cultural resources surveys and surveys for historic properties of religious and cultural significance to an Indian tribe, and assist the DOS in review consistent with Section 106 of the NHPA;
- Vantage would construct, operate, and maintain the proposed Project as described in the EA; and
- Vantage would implement the measures designed to avoid or reduce impacts described in its application for a Presidential Permit and supplemental filings with the DOS and the EPP and its attachments.

[10] The NEB's Reasons for Decision for the Vantage Pipeline Project is available online at: http://publications.gc.ca/collections/collection_2012/one-neb/NE22-1-2012-2-eng.pdf.

3.0 ALTERNATIVES

Consistent with NEPA, the DOS conducted an analysis of alternatives to the proposed Project. The alternatives were developed based on the objectives of the proposed Project as discussed in section 1.1. The alternatives analysis relied on information provided to agencies in the Presidential Permit application (including supplemental submittals), information and suggestions provided during scoping for the EA, and information obtained through research and analysis conducted by the DOS and its independent third-party contractor. Unless noted otherwise, this analysis used the same assumed land requirement widths and the same desktop sources of information to standardize the comparison between the Project and alternatives. Therefore, some of the information presented in this section relative to the Project may differ from the information presented in section 2.0, which is based on Project-specific sources of information including field surveys and engineered drawings.

The alternatives analysis included a screening process that first considered a range of categories of potential alternatives. The categories of alternatives considered included:

- No Action Alternative (section 3.1) – addresses projected beneficial and adverse environmental, social, and economic impacts that would result if the proposed Project were not implemented;
- System Alternatives (section 3.2) – the use of other pipeline systems or other methods of providing ethane to markets located in Alberta, Canada;
- Route Alternatives and Variations (section 3.3); and
- Alternative Mainline Block Valve Sites (section 3.4).

The criteria used to evaluate potential alternatives included whether they:

- offer a significant environmental advantage over the Project;
- are technically and/or economically feasible and practical;
- are permittable within the same general timeframe of the Project; and
- meet Vantage's stated Project objectives.

It is important to recognize that not all conceivable alternatives are technically or economically feasible or practical. Some alternatives may be impractical because they are unavailable and/or incapable of being implemented after taking into consideration costs, existing technologies, and logistics in light of the overall Project purpose. It is also important to consider the environmental advantages and disadvantages of the proposed action and to focus the analysis on those alternatives that may reduce impacts and/or offer a significant environmental advantage without merely transferring impacts from one area or group of landowners to another.

3.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed Project would not be constructed and operated. Therefore, selection of the No Action Alternative would not require the issuance of a Presidential Permit for construction and operation of the proposed Project. Under the No Action Alternative, the environmental effects specific to the proposed Project described in this EA would not occur. If the No Action Alternative is implemented it is possible that the other methods (e.g., truck) of transporting ethane to the Canadian marketplace could be implemented.

Although it would be purely speculative and beyond the scope of this analysis to attempt to predict what actions might be taken in response to the No Action Alternatives, it is likely that the ethane would continue to be either transported within existing natural gas pipeline systems throughout the United States and extracted elsewhere or burned and released into the atmosphere (also referred to as flared), or, upon completion of the Tioga Gas Plant facility modifications (see section 1.5), the ethane could be extracted at the facility for use by other parties regardless of the Vantage pipeline or flared with the excess gas (i.e., lost).

Also of note is that as technological advances in oil and gas production continues and development of the Bakken area of North Dakota expands, companies are drilling wells into areas that lack natural gas-gathering and processing facilities (North Dakota Department of Mineral Resources, 2009). As a result, the gas production is being burned into the atmosphere (i.e., flared) because there is insufficient infrastructure to accommodate natural gas gathering, compression, and processing. For example, according to the North Dakota Department of Mineral Resources (2009), the state produced over 70 billion cubic feet (bcf) of natural gas in 2007 and nearly 20 percent of that production was flared. According to Energy Information Administration (EIA) data, North Dakota flared 28.5 bcf in 2009 (Industrial Commission of North Dakota, 2011). Based on more recent reports, its estimated that one-third of the North Dakota natural gas produced is flared, which, as of July 2011, has increased 1,200 percent since 2004 (EIA, 2011; Reuters, 2012).

The Industrial Commission of North Dakota, which consists of the Governor, the Attorney General, and the Agriculture Commissioner of the State, has cited that by the end of 2012 natural gas processing capacity is estimated to increase 389 percent from 2006, and that by the end of 2012, North Dakota's natural gas processing plants would have the capacity to process 1 bcf of natural gas per day (Industrial Commission of North Dakota, 2011). The North Dakota Department of Mineral Resources predicts that in 10 to 20 years, nearly 3,750 new oil and gas wells would be installed near Williston and 6,000 new oil and gas wells would be installed near the Ray-Tioga area (North Dakota Department of Mineral Resources, 2010). Oil production, which is an indicator of natural gas resources, is predicted to rise to nearly 450,000 bpd until year 2020, compared to more current rates of about 150,000 to 200,000 bpd (North Dakota Department of Mineral Resources, 2010). Other outlooks predict oil production in North Dakota as a whole to reach 400,000 to 450,000 bpd (Purvin and Gertz, Inc., 2011).

While hard data are lacking, one estimate suggests that flared gas in North Dakota produced 2 million tons of CO_2 last year, which is equivalent to the emissions created by over 350,000 extra cars on the road, and that flared gas cost the State of North Dakota about $110 million in revenue in 2011 (Reuters, 2012). A consequence of the increase in natural gas production discussed above is likely to be further increased CO_2 emissions as well as lost economic benefits.

Ethane comprises about 20 percent of the natural gas currently delivered from the Project area (Purvin and Gertz, Inc., 2011). Use of the cryogenic process at the Tioga Gas Plant can recover about 90 to 95 percent of the ethane originally in the gas stream (NaturalGas.org, 2012). By processing the natural gas to separate out the ethane and installing infrastructure such as a pipeline to transport the ethane extracted, more of the product can be utilized, lowering the incentive to continue flaring.

3.2 SYSTEM ALTERNATIVES

System alternatives to the proposed Project would make use of other existing, modified, proposed, or planned pipeline systems, or other transportation systems to meet the purpose of and need for the proposed Project. With implementation of a system alternative to meet the objectives of the Project, the Project would not be constructed and the impacts described in this EA would not occur.

However, there would still be environmental impacts associated with any system alternative that could be used to meet the objectives of the proposed Project.

No other pipelines currently exist in North Dakota that are capable of transporting ethane from the Tioga Gas Plant in Tioga, North Dakota to markets located in Alberta, Canada to serve the Project's purpose and need. Therefore, there are no viable system alternatives for the Project that would consist of existing or expanded pipeline infrastructure. Further, there are no known proposed or planned pipeline systems in the Project area that could be capable of transporting ethane to meet the Project's objectives.

While ethane can theoretically be transported by rail, truck, or barge, it is historically and primarily transported via pipelines or in combination with other NGLs that are easier to transport in a liquid state. To transport ethane by rail, truck, or barge, it would need to be transported as a liquid. Ethane would need to be kept at a pressure higher than 560 pounds per square inch to keep it in a liquid state at normal ambient temperatures. Safety and weight considerations of the vessel required for the trucks and rails make it prohibitive to transport by these facilities. Overall, rail or truck transport also involves a sufficient economic commitment making it cost prohibitive to transport ethane. Use of barges would require waterbodies of sufficient size and proximity to transport the product. The nearest waterbody to the Project area potentially capable of supporting barge traffic is the Section 10 (i.e., USACE-regulated navigable waterway) Missouri River, which is over 15 miles from the Project and would require subsequent rail or truck. As a result of these considerations, alternative modes of transportation were not considered a reasonable alternative to meeting the Project objectives and would not offer an overall environmental or safety advantage over the proposed Project and, thus, were not further evaluated.

3.3 ROUTE ALTERNATIVES

The DOS and its independent third-party contractor considered potential alternative routes to determine whether or not there are route alternatives that would avoid or reduce impacts on environmentally sensitive resources as compared to the impacts of the proposed Project, while still meeting the objectives of the proposed Project. The analysis of alternatives is based on information provided by Vantage and the DOS and its third-party contractor's review of aerial photographs, USGS topographic maps, and other publicly available information. Also, consideration was given to suggestions received from agencies and the public during the scoping period. In addition, variations to the proposed route were also considered during the route development process by Vantage. Variations are relatively short deviations from a proposed route that are developed to resolve or reduce construction impacts on localized, specific resources such as cultural resource sites, wetlands, recreational lands, residences, and terrain conditions.

This section addresses major route alternatives by segment and route variations in the following subsections:

- Approach (section 3.3.1);
- Route Alternatives (section 3.3.2); and
- Route Variations (section 3.3.3).

The agency preferred route is presented in section 3.3.4. Route alternatives are typically only recommended if the alternative confers a significant advantage over the proposal. Otherwise, such an alternative merely represents a shift in impacts from one area or resource to another.

3.3.1 Approach

The alternatives analysis was conducted as a screening process that involved the following steps:

- establish criteria for screening alternatives;
- identify potential alternatives that meet the criteria;
- determine whether the potential alternatives could meet the purpose and need of the proposed Project and whether or not they would be technically and economically practicable; and
- for those alternatives that could meet the purpose and need of the proposed Project and appear to be technically and economically practicable, determine whether or not an alternative offers an overall environmental advantage over the proposed route. If it was determined that the potential alternative would not offer an overall environmental advantage, it was eliminated from further consideration.

3.3.1.1 Screening Criteria

Control Points Criterion

The control points are locations where alternatives would have to begin and end to meet the Project objectives and/or also are features that must either be crossed or avoided. These fixed control points, which placed geographic constraints on potential alternatives, consisted of the following considerations, which include features in the United States and Canada:

- Source Control Point: Hess Tioga North Dakota Plant, Tioga, North Dakota;
- Delivery Control Point: AEGS, Empress, Alberta, Canada;
- United States/Canada border;
- Town of Cadillac, Saskatchewan, Canada; and
- Great Sand Hills Prairie Farm Rehabilitation Administration Pasture.

Resource Consideration Criterion

The second criterion established was consideration of the following areas to the extent practicable:

- accommodate landowner and government requests, where feasible;
- minimize the pipeline length in order to limit the total area of disturbance. As a general rule, construction of each mile of pipeline would impact approximately 8.5 acres, not including ATWS, access roads, MLBVs, and contractor/pipe yards. Operation of each mile of pipeline would affect approximately 3.6 acres. As a result, there usually are environmental advantages to keeping the length of pipe required to reach the control points as short as possible while considering all other issues of concern;
- follow existing linear disturbances (pipelines, maintained roads, etc.). The rationale for siting a new pipeline parallel to an existing right-of-way is that concentrating linear

facilities in or near existing linear corridors may reduce the impacts on resources that have not previously been disturbed by major linear project construction;

- avoid or minimize:
    - the crossing of steep/moderate slopes;
    - the crossing of sensitive wildlife habitat;
    - impact on wetlands;
    - the crossing of areas of high archeological/paleontological sensitivity;
    - the quantity of waterbody crossings; and
    - close proximity to communities; and

- where watercourses could not be avoided, cross at or near right angles where straight and stable reaches occur and where a successful directionally drilled or bored crossing would be likely.

Although the alternatives identified avoided or minimized crossings of these areas to the extent possible, the extent, shape, and prevalence of many resources (e.g., wetlands, farmland) preclude completely avoiding impacts on them on any selected route.

3.3.1.2 Identification of Route Alternatives

The criteria listed in section 3.3.1.1 were used in the screening process to identify potential alternative routes to the proposed Project route. The routes were evaluated based on technical and economic practicability, and whether the or not the route alternative would meet the purpose of and need for the proposed Project. Alternatives that met those criteria were then evaluated to determine whether or not they offered an overall environmental advantage over the proposed route, particularly with regard to the avoidance criterion. Consistent with 40 CFR 1502.14, the reasons for eliminating alternative routes from further detailed study are provided for each potential alternative in the comparison to the proposed route presented below. Additional information on the proposed Project route is presented throughout section 2.0.

3.3.2 Route Alternatives

Two route alternatives were analyzed. Route alternatives considered would change the international border crossing and locate the pipeline in either Montana or North Dakota. As a result of alternative routing considerations, the routing would also need to change in Canada. This EA focuses on the Project facilities in the United States. Therefore, the route alternatives analysis presented in table 3.3.2-1 below is limited to the impacts that would occur between the Project's source control point (i.e., MP 0.0 at the Tioga Gas Plant) and the U.S./Canada international border (MP 79.8). These alternatives, referred to as Route Alternative 1 and Route Alternative 2, are discussed below and depicted on figure 3.3.2-1. Comparative environmental criteria used in the analysis are presented in table 3.3.2-1.

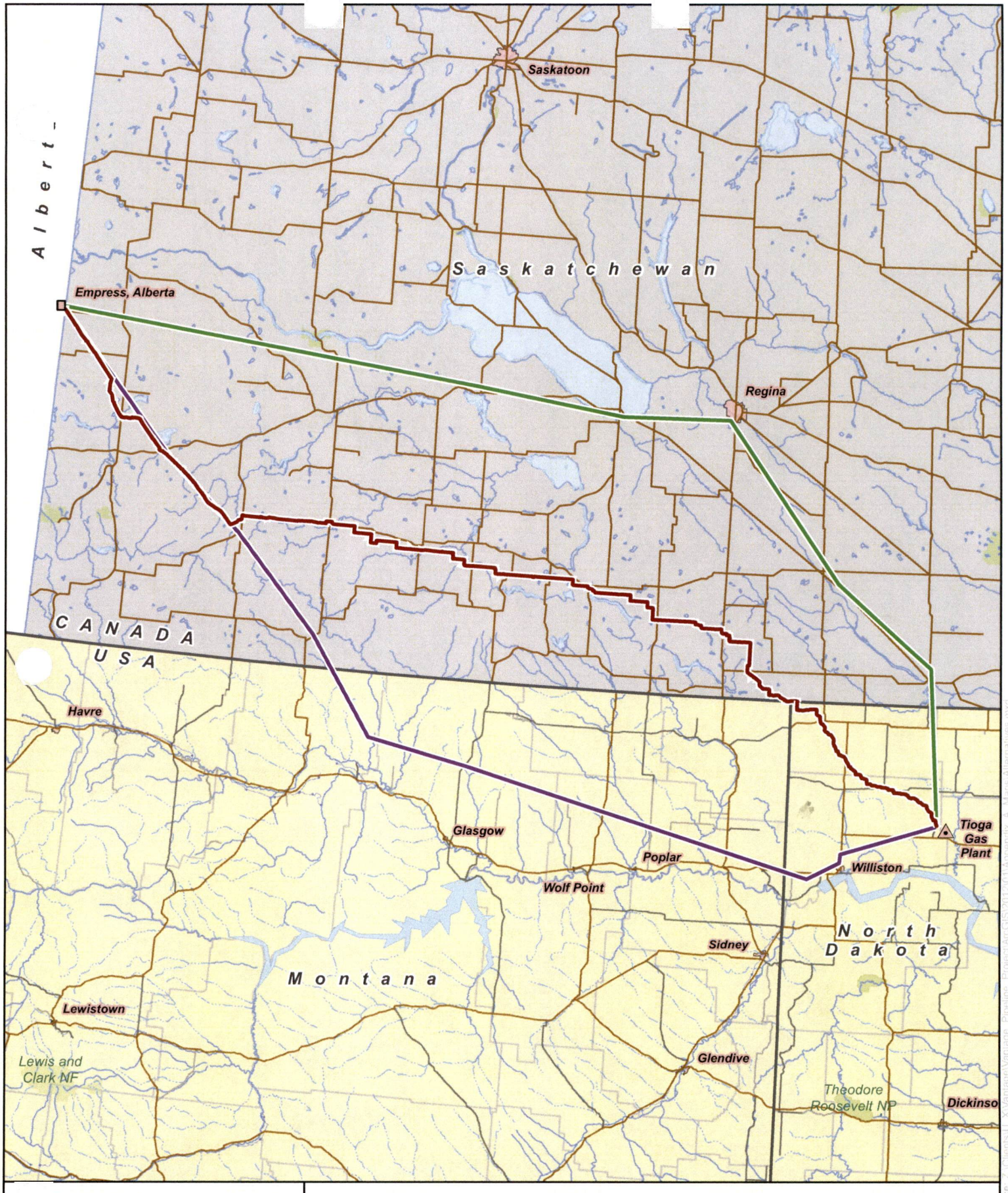

Figure 3.3.2-1

Vantage Pipeline Project

Route Alternatives 1 and 2
Divide and Williams Counties, North Dakota
Saskatchewan, Canada

Source: Z:\Clients\U_X\Vantage\Variante_Pipeline_Project\ArcGIS\2012\01\Appendix_A_Maps\Alternatives.mxd
Date: 3.1.2012

TABLE 3.3.2-1

Comparison of the U.S. Portion of the Proposed Route, Alternative Route 1, and Alternative Route 2

Factor	U.S. Portion of Proposed Route	U.S. Portion of Alternative Route 1	U.S. Portion of Alternative Route 2
Length (miles)	79.8	240.1	41.4
Length adjacent to existing right-of-way (miles/percent)	6.3 (8)	0.0 (0)	0.0 (0)
Construction right-of-way (acres)[a]	677.1	2,037.2	351.3
Permanent right-of-way (acres)[a]	290.2	873.1	150.6
Wetland crossings (no.)	12	118	64
Construction impact on wetlands (acres)	1.1	19.7	10.5
Operation impact on wetlands (acres)	0.0	0.0	0.0
Parcels crossed (no.)	195	640	106
Residences within 50 feet of the construction right-of-way	0	4	0
Road crossings (no.)	100	211	52

[a] Based on a 70-foot-wide temporary construction and a 30-foot-wide permanent right-of-way. Does not include reduced construction or operational right-of-way areas to avoid impacts on wetlands or other resources (e.g., cultural resources sites).

3.3.2.1 Alternative Route 1

Alternative Route 1 was developed to attempt to follow a greater percent of existing rights-of-way in Canada. Alternative Route 1 would begin at MP 0.0 and diverge southwest of the Tioga Gas Plant towards Williston, North Dakota for about 50 miles before turning northwest about 8 miles from the North Dakota/Montana state border.

The U.S. portion of Alternative Route 1 would be approximately 240.1 miles long, 160.3 miles longer than the U.S. portion of the proposed route. Because of its longer length, the alternative would result in a significantly greater land use impacts as a result of construction. The alternative would affect about 1,360.1 acres more during construction and about 582.9 acres more during operation than the U.S. portion of the proposed route. Alternative Route 1 would cross about 118 wetlands compared to 12 wetlands crossed along the proposed route. Alternative Route 1 would also involve crossing a significantly greater number of property parcels, and four residences would be located within 50 feet of the construction right-of-way associated with Alternative Route 1 compared to none along the proposed route. Additionally, Alternative Route 1 would encounter over 100 additional road crossings compared to the U.S. portion of the proposed route.

In addition to the overall greater land use impacts associated with the significantly longer U.S. segment of Alternative Route 1, the alternative would cross additional environmental and engineering features. It is anticipated that most feature crossings would require ATWS, thus resulting in more land use impacts. While Vantage has committed to avoiding wetland impacts by adopting the horizontal bore crossing method, resulting in similar impacts for both the alternative and proposed routes, consideration for ATWS at each crossing would result in greater land use impacts associated with the alternative route. The significantly greater number of road crossings associated with the U.S. segment of the alternative route would also require ATWS at each crossing, thus increasing the overall land use impacts.

The U.S. portion of Alternative Route 1 would also impact a significantly greater number of property owners and require additional regulatory approvals from the State of Montana. Also, due to the greater pipeline length in the U.S. and the DOT's spacing requirements, Alternative Route 1 would require additional permanent aboveground facilities (i.e., MLBVs) compared to the proposed route.

The U.S. portion of Alternative Route 1 would not offer an overall environmental advantage over U.S. portion of the proposed route it would replace. Therefore, Alternative Route 1 was eliminated from further consideration.

Although not a consideration in analyzing the environmental impacts associated with the U.S. portion of the route, we note that Alternative Route 1 would take advantage of following a greater percentage of existing rights-of-way along the Canada segment. It would, however, cross extensive areas of native prairie in southern Saskatchewan, Canada. Additionally, the combined U.S. and Canada portions of the alternative route (about 398 miles) would be longer than the U.S. and Canada portions of the proposed route (about 357 miles), resulting in significantly greater land use impacts.

3.3.2.2 Alternative Route 2

Alternate Route 2 would begin at MP 0.0 and extend north towards the U.S./Canada border for about 41 miles.

The U.S. portion of Alternative Route 2 would be approximately 41.4 miles long, 38.4 miles shorter than the U.S. portion of the proposed route. Because of its shorter length, the alternative would result in fewer land use impacts as a result of construction. The alternative would affect about 325.8 acres less during construction and about 139.6 acres less during operation than the U.S. portion of the proposed route. Alternative Route 2 would cross about 64 wetlands compared to 12 wetlands crossed along the proposed route. Alternative Route 2 would also involve crossing about 89 fewer property parcels than the proposed route. No residences would be located within 50 feet of the construction right-of-way for either the proposed or alternative route. Additionally, Alternative Route 2 would encounter about 48 fewer additional road crossings compared to the U.S. portion of the proposed route.

In addition to the overall fewer land use impacts associated with the shorter U.S. segment of Alternative Route 2, the alternative would cross fewer roads. It would, however, cross over 50 additional wetlands than the proposed route. It is anticipated that most feature crossings would require ATWS, thus resulting in more land use impacts. While Vantage has committed to avoiding wetland impacts by adopting the horizontal bore crossing method, resulting in similar impacts for both the alternative and proposed routes, consideration for ATWS at each crossing would result in greater land use impacts associated with the alternative route.

Based on the analysis, it appears that the shorter Alternative Route 2 could be feasible and may result in less environmental impacts on some resources as compared to the proposed route. However, as noted above, Alternative Route 2 would cross 52 additional wetlands in the United States as compared to the proposed route. While shorter pipeline routes often result in reduced environmental impacts because less land is disturbed in the pipeline construction, in the case of Alternative Route 2, the DOS is aware that reducing the mileage in the United States is accomplished only by significantly increasing the mileage in Canada (and the mileage of the pipeline overall by some 50 miles). Alternative Route 2 would proceed through a sensitive Great Sand Hills Ecological Reserve in southern Saskatchewan, Canada that was avoided by Vantage for significant environmental and Aboriginal traditional land use reasons (NEB, 2012).

3.3.3 Route Variations

Two variations that would avoid crossing North Dakota Land Department lands were analyzed in response to comments concerning potential impacts on state lands. In particular, the State of North Dakota expressed concerns regarding the Project's impacts on the function of School Trust lands, which provide financial support for elementary and secondary schools in North Dakota through the leasing of

the lands for livestock grazing and mineral (e.g., oil and gas) development. These variations, referred to as Route Variation 1 and Route Variation 2, are discussed below and depicted on figures 3.3.1-1 and 3.3.1-2. Comparative environmental criteria used in the analyses are presented in tables 3.3.3-1 and 3.3.3-2. For these analyses, the alternatives are compared to MPs 16.1 to 20.1 (Route Variation 1) and MPs 77.6 to 79.8 (Route Variation 2) of the proposed route.

3.3.3.1 Route Variation 1

Route Variation 1 would diverge from the proposed route at MP 16.1, proceed west for about 2.7 miles, turn northwest for about 1.5 miles, and rejoin the proposed route near MP 20.1. Comparative environmental criteria used in the analysis of Route Variation 1 are presented in table 3.3.3-1.

TABLE 3.3.3-1

Comparison of the Proposed Route and Route Variation 1

Factor	Proposed Route	Route Variation 1
Length (miles)	4.0	4.2
Length adjacent to existing right-of-way (miles/percent)	0.0 (0)	0.0 (0)
State of North Dakota Land crossed (feet)	210	0
Construction right-of-way (acres)[a]	34.1	35.4
Permanent right-of-way (acres)[a]	14.6	15.2
Wetland crossings (no.)	1	0
Construction impact on wetlands (acres)	0.1	0.0
Operation impact on wetlands (acres)	0.0	0.0
Residences within 50 feet of the construction right-of-way	0	0
Road crossings (no.)	3	3

[a] Based on a 70-foot-wide temporary construction and a 30-foot-wide permanent right-of-way. Does not include reduced construction or operational right-of-way areas to avoid impacts on wetlands or other resources (e.g., cultural resources sites).

Route Variation 1 would be approximately 4.2 miles long, or approximately 0.2 mile longer than the corresponding segment of the proposed route. Route Variation 1 would also avoid crossing approximately 210 feet of North Dakota State Land Department land. Due to its greater length, Route Variation 1 would impact about 1.3 acres more during construction and 0.6 acre more during operation than the proposed route. Route Variation 1 would avoid crossing one wetland affected by the proposed route. Road crossings and residences within 50 feet of the construction right-of-way would be similar for both routes.

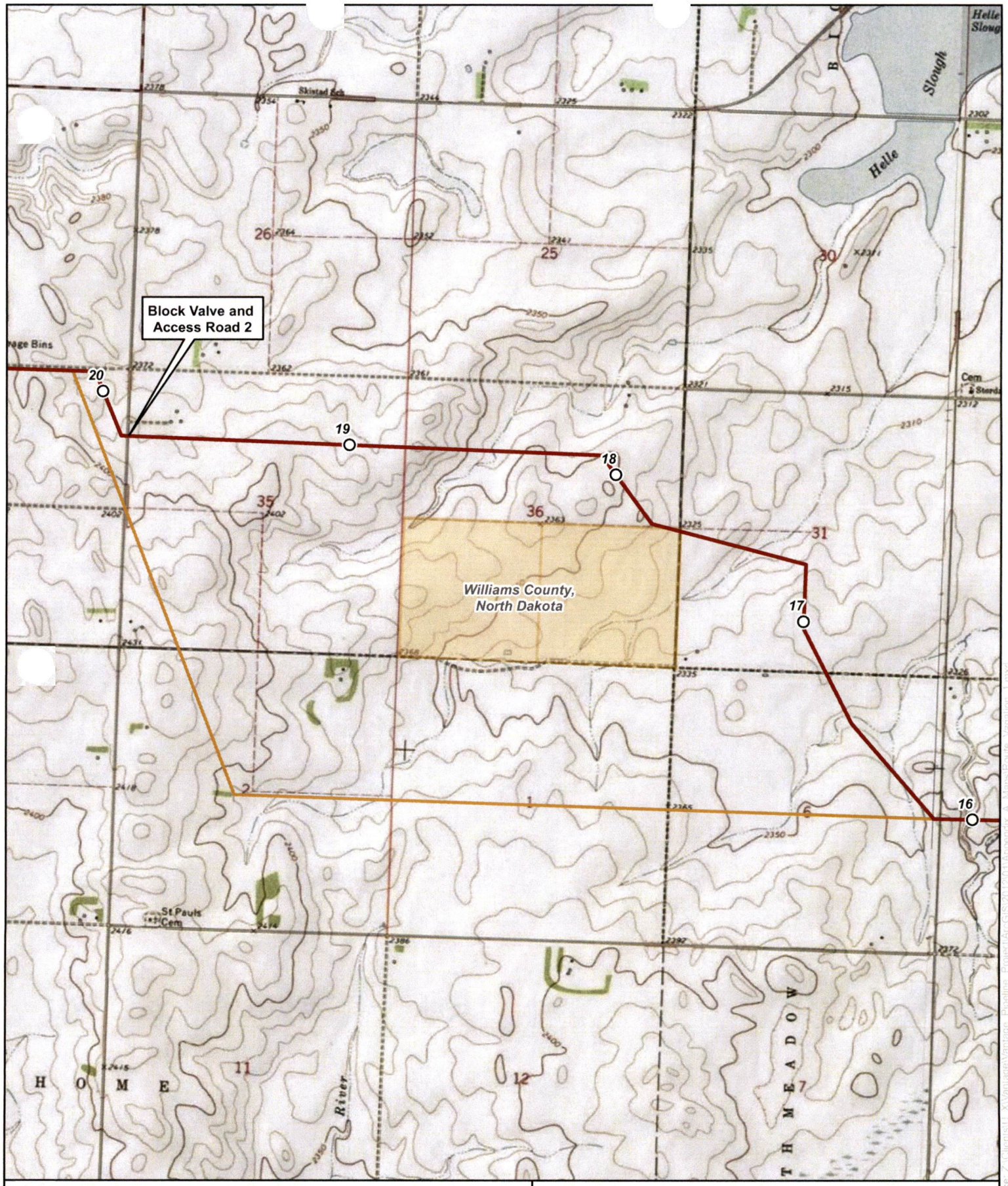

Figure 3.3.3-1
Vantage Pipeline Project
Route Variation 1
Williams County, North Dakota

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Date: 1/26/2012

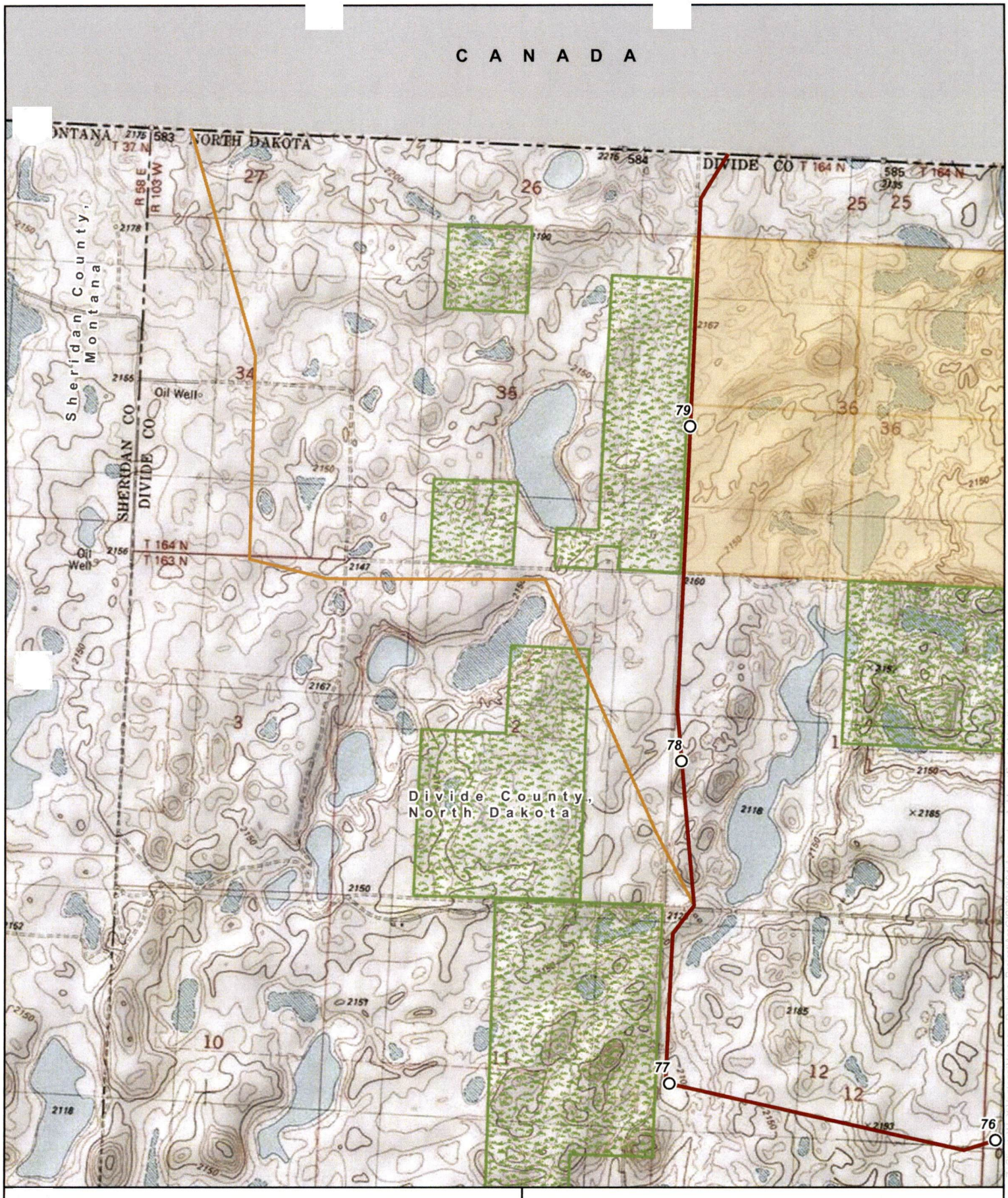

Figure 3.3.3-2
Vantage Pipeline Project
Route Variation 2
Divide County, North Dakota

Route Variation 1 would not cross North Dakota State Land Department land and, therefore, would avoid any potential impact on School Trust land activities. Adoption of the proposed route would result in a minor, temporary impact on any current grazing activities; however, operation of the Vantage pipeline would not preclude existing or future livestock grazing on School Trust lands. Also, due to the limited crossing length (210 feet), it is not anticipated that the pipeline would result in an adverse impact on mineral development at this location. While the proposed route would cross one wetland, Vantage would avoid wetland impacts by adopting the horizontal bore method at each crossing. Further, due to its added length, Route Variation 1 would have a greater construction and operational footprint. The alternative and proposed rights-of-way would both require creating new right-of-way. Additionally, Vantage stated that it was denied access to a number alternative route options northeast and southwest of the current proposed route; the proposed route was selected by Vantage to avoid conflicts with landowners and potential condemnation.

Based on the factors described above, Route Variation 1 would not offer an overall environmental advantage over the segment of the proposed route it would replace. Therefore, Route Variation 1 was eliminated from further consideration.

3.3.3.2 Route Variation 2

Route Variation 2 would diverge from the proposed route at MP 77.6, head northwest for about 1.0 mile, turn west for about 1.0 mile, then turn north-northwest for another 1.3 miles, and rejoin the proposed route near MP 79.8. Comparative environmental criteria used in the analysis of Route Variation 2 are presented in table 3.3.3-2.

TABLE 3.3.3-2

Comparison of the Proposed Route and Route Variation 2

Factor	Proposed Route	Route Variation 2
Length (miles)	2.2	3.3
Length adjacent to existing right-of-way (miles/percent)	1.5 (68)	0.0 (0)
State of North Dakota land crossed (miles)	1.0	0.0
Construction right-of-way (acres)[a]	19.0	27.8
Permanent right-of-way (acres)[a]	8.2	11.9
Wetland crossings (no.)	1	1
Construction impact on wetlands (acres)	<0.1	0.3
Operation impact on wetlands (acres)	0.0	0.0
Residences within 50 feet of the construction right-of-way	0	0
Road crossings (no.)	0	2

[a] Based on a 70-foot-wide temporary construction and a 30-foot-wide permanent right-of-way. Does not include reduced construction or operational right-of-way areas to avoid impacts on wetlands or other resources (e.g., cultural resources sites).

Route Variation 2 would be approximately 3.3 miles long, or approximately 1.1 miles longer than the corresponding segment of the proposed route. Route Variation 1 would also deviate from existing rights-of-way for a greater percent when compared to the proposed rout, but would avoid crossing approximately 1.0 mile of North Dakota State Land Department land. Due to its greater length, Route Variation 2 would impact about 8.8 acres more during construction and 3.7 acres more during operation than the proposed route. Route Variation 2 would require two road crossings compared to none along the corresponding segment of the proposed route. Wetland crossings and residences within 50 feet of the construction right-of-way would be similar for both routes.

Route Variation 2 would not cross North Dakota State Land Department land and, therefore, would avoid any potential impact on School Trust land activities. Conversely, the proposed route is located along the western-most portion of the affected School Trust land section adjacent to a road right-of-way. Adoption of the proposed route would result in a minor, temporary impact on any current grazing activities and operation of the Vantage pipeline would not preclude existing or future livestock grazing on School Trust lands. Future mineral development activities could, however, experience long-term effects as result of the permanent 30-foot-wide right-of-way.

Consultations with the FWS revealed that a number of parcels enrolled in the FWS's Grassland Easement Program[11] exist between the proposed route and Route Variation 2, and would be affected by other alignments in the area. Based on comments received from the FWS during the scoping process, grassland easements are crucial for wildlife habitat and are protected from being disturbed in any manner. It is not expected that construction and operation of an underground pipeline would adversely affect a grassland easement, and that, similar to a 60-foot-long FWS easement being crossed by the Project, the area along Route Variance 2 could be avoided by use of the horizontal bore method.

While the proposed route would cross State Trust lands, potentially affecting future mineral development of the section, it would affect a relatively small portion of the section as the permanent operational right-of-way would be 30-feet-wide and would not preclude the remaining portion of the section from future development. Due to its added length, Route Variation 2 would have a greater construction and operational footprint. The variation would also create about 3.3 miles of new right-of-way; whereas, the proposed route would be collocated with existing road right-of-way for about 68 percent of its corresponding length. Route Variation 2 would cross additional roads when compared to the corresponding segment of the proposed route, resulting in additional land use impacts (i.e., ATWS) at the feature crossings.

Based on the factors described above, Route Variation 2 would not offer an overall environmental advantage over the segment of the proposed route it would replace. Therefore, Route Variation 2 was eliminated from further consideration.

3.3.4 Agency-Preferred Route

Alternatives and variations were developed and assessed based on information provided in the Presidential Permit application and supplemental submittals related to the application, comments received in the scoping process, and information obtained from research of relevant available information conducted by the DOS and its third-party contractor.

For the reasons stated above, based on the assessment of alternatives and variations described above, the DOS-preferred route consists of the route as proposed by Vantage.

3.4 ALTERNATIVE MAINLINE BLOCK VALVE SITES

All MLBVs for the proposed Project would be sited within the permanent right-of-way. As a result, alternate locations for MLBVs were included in general in the assessment of the alternative and proposed pipeline routes discussed in sections 3.3. The locations of MLBVs must be consistent with 49 CFR 195.260. As a result, there is little option to install MLBVs at alternative sites. However, the proposed MLBV locations avoid sensitive environmental resources to the extent practicable while complying with the PHMSA regulatory requirements. As such, no alternative locations were identified.

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[11] A grassland easement is a legal agreement signed with the United States of America, through the FWS, that pays a landowner to permanently retain his/her land in grass (FWS, 2012a).

1.0 INTRODUCTION

The proposed Vantage Pipeline is a high vapor pressure pipeline that would carry ethane from a source near Tioga, North Dakota, United States, extend northwest through Saskatchewan, Canada, and terminate near Empress, Alberta, Canada. The pipeline would link a growing supply of ethane from North Dakota to markets in Alberta. More specifically, the Project would have the capacity to deliver an initial rate of 40,000 barrels per day (bpd), expandable to 60,000 bpd, of liquid ethane from natural gas facilities in North Dakota to the Alberta Ethane Gathering System (AEGS) in Alberta, Canada. The entire proposed Vantage Pipeline in the United States and Canada would be approximately 430 miles long.

In Canada, the proposed system would include the construction of approximately 350 miles of pipeline in Saskatchewan, Canada and approximately 2 miles of pipeline in Alberta, Canada, one pump station located at the midpoint of the pipeline between Lafleche and Assiniboia, Saskatchewan, one pump station located at the terminus near Empress, Alberta, and other associated facilities. Canadian National Energy Board (NEB) approval for the Canadian portion of the Project was granted on January 19, 2012, as discussed in section 1.9.

On November 15, 2010, Vantage Pipeline US LP (Vantage) applied to the U.S. Department of State (DOS) for a Presidential Permit for the construction, operation, and maintenance of pipeline facilities on the United States-Canada border for transportation of ethane from Tioga, North Dakota to the Alberta Ethane Gathering System (AEGS) in Alberta, Canada. The portion of the project in the United States would consist of 79.8 miles of 10-inch-diameter ethane pipeline in Williams and Divide Counties, North Dakota, as well as related aboveground and ancillary facilities, as described in section 1.4. The pipeline and collective facilities are referred to as the Vantage Pipeline Project (Project).

The DOS served as the lead federal agency for the environmental review of the proposed Project consistent with the National Environmental Policy Act (NEPA). The DOS receives and considers applications for Presidential Permits for such pipeline border crossings and associated facilities pursuant to the President's constitutional authority over foreign relations and as Commander-in-Chief, which authority the President delegated to DOS in Executive Order (EO) 13337, as amended (Federal Register [FR], Volume 69, No. 87, page 25299). For liquid hydrocarbon pipelines, such as the proposed ethane pipeline, the President, through EO 13337, directs the Secretary of State to decide whether a project is in the national interest before a Presidential Permit is granted.

The determination of national interest involves consideration of many factors, including energy security; environmental, cultural, and economic impacts; foreign policy; and compliance with relevant federal regulations. Before making a decision, the DOS will consult with the eight federal agencies identified in EO 13337: the Departments of Energy, Defense, Transportation, Homeland Security, Justice, Interior, and Commerce, and the Environmental Protection Agency. The DOS will also solicit public input on the national interest determination by accepting written comments.

DOS authority over the border crossing does not include the legal authority to regulate pipelines within the United States. The U.S. Department of Transportation's (DOT's) Pipelines and Hazardous Materials Safety Administration (PHMSA) is responsible for promulgating regulations regarding issues of pipeline construction, operation, and maintenance. Individual states have the legal authority to approve pipeline construction in their states, including selecting the routes for such pipelines. Different states have made different choices in how or whether to exercise that authority. In preparation of this document, the DOS has consulted with those federal and state agencies that possess regulatory authority over ethane pipelines, as well as federal, state, local, and tribal agencies that have jurisdiction with particular expertise regarding evaluating potential impacts of the proposed Project. In North Dakota, the

agency responsible for issuing a Certificate of Corridor Compatibility and Route Permit is the North Dakota Public Service Commission (NDPSC).

The DOS, as the lead federal agency, has prepared this Environmental Assessment (EA) providing sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impacts (FONSI) consistent with the National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] 4321 et seq.) and its implementing regulations.[3]

This document provides an assessment of the latest available information of the U.S. portion of the proposed Project on the existing environment along the proposed pipeline route; an analysis of human and environmental impacts that could potentially result from pipeline right-of-way preparation, construction, operation, and maintenance of the proposed pipeline facilities; and a summary of the protection and restoration measures to be implemented to avoid and/or minimize environmental impacts.

1.1 PROJECT PURPOSE AND NEED

Vantage's stated purpose of the Project is to transport ethane from the existing Tioga Gas Plant in the Williston Basin of North Dakota to meet the market created by the petrochemical industry in Alberta, Canada. Vantage's stated need for the Project is dictated by the increasing ethane supplies in the Williston Basin and demonstrated interest from the petrochemical industry in Alberta, Canada to purchase these increased supplies.

The need for the Project is supported by existing ethane supply and demand, as well as forecasted supply and demand, in Canada and the United States. Ethane is a colorless, odorless, flammable gas whose vapors are heavier than air. Ethane is a natural gas liquid (NGL). Nearly all NGLs are derived from rich natural gas and include, in addition to ethane, propane, isobutane, and butane, among others. Natural gas is generally discovered along with crude oil supplies. Therefore, ethane supply is directly related to natural gas and crude oil exploration and production activities.

A market for the sale of ethane as a feedstock does not exist in North Dakota; however, ethane is currently used as a feedstock by the petrochemical industry in Alberta, Canada. These petrochemical facilities convert ethane to ethylene, which is the building block for a wide range of consumer and industrial products, such as plastics, antifreeze, rubber, detergents, and solvents. Because of its use as a feedstock, a market and demand for ethane exists in Alberta. Ethane is currently transported to/distributed amongst the Alberta petrochemical industry by way of the existing AEGS ethane pipeline infrastructure, which has been in operation since 1978. Construction of the Vantage pipeline would provide North Dakota natural gas producers with access to the AEGS, thereby making it economically feasible to begin extracting ethane from processed natural gas.

Canada's ethane market in recent years has been constrained due to declining oil and gas production. All economically available ethane is already being produced from existing gas supplies and some supply (e.g., Alliance) is exported to the United States, thus reducing the availability of ethane to Canada. Between 2007 and 2009, ethane consumption was at approximately 250,000 barrels per day (bpd); however, the ethane supply was at approximately 232,400 bpd, resulting in a 17,600 bpd shortfall (Purvin and Gertz, Inc., 2011). Projections of ethane consumption and supply through 2024 indicate that the shortfall would continue to increase, with a 102,800 bpd shortfall projected for 2024 (Purvin and

[3] For more information on NEPA see "A Citizen's Guide to NEPA" Council on Environmental Quality (December 2007), which can be downloaded at http://www.ceq.hss.doe.gov.

Gertz, Inc., 2011). The proposed Project is expected to initially supply up to 40,000 bpd of ethane, significantly reducing the shortfall gap.

Despite incentives associated with Alberta's Incremental Ethane Extraction Policy, no large-scale projects have been developed to address the ethane supply shortfall. Potential smaller-scale projects to address the ethane shortfall in Alberta include projects by Williams Energy (Canada) Inc. and AuxSable Canada LP (Purvin and Gertz, Inc., 2011). However, forecasts of ethane supply from these projects are anticipated to be relatively small and would not fill the projected ethane consumption needs in Canada.

The Williston Basin in western North Dakota and eastern Montana has been a hotbed of oil and natural gas production in recent years due to economic factors and technological advances such as multi-step fracturing. Oil and natural gas production is anticipated to peak between 2015 and 2025, resulting in an associated supply of NGLs, including ethane (Purvin and Gertz, Inc., 2011). While NGLs are produced at 14 processing plants in North Dakota, nearly all of the ethane produced with the natural gas is left in the gas stream and must be eventually extracted.

As discussed in section 1.5, Hess Corporation (Hess) is expanding its existing Tioga Gas Plant in Tioga, North Dakota to accommodate ethane production. It is estimated that Hess' Tioga Gas Plant would produce 25,000 to 30,000 bpd of ethane. Vantage has signed a contract with Hess and NOVA Chemicals Corporation (NOVA) to purchase and transport ethane from Hess' Tioga Gas Plant to NOVA's Joffre Petrochemical Complex in Alberta under a long-term agreement.

Vantage also states that the Project would provide the oil and gas producing Bakken Formation region of North Dakota with access to the existing ethane AEGS infrastructure and market in Alberta. Currently no market exists for petrochemical grade (also known as "specification" or "pure grade") ethane in North Dakota; however, construction of the Project would make it feasible to extract the ethane byproduct from North Dakota-produced natural gas and export it for use in the Canadian petrochemical industry. Therefore, exports from the United States would be increased, which Vantage contends is consistent with the EO for the National Export Initiative (March 11, 2010). The Project would also allow U.S. natural gas producers to recognize additional revenue from an existing resource and is anticipated to contribute to the national economy in terms of jobs and tax payments.

1.2 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT

The topics addressed in this EA include alternatives; geology; soils; groundwater; surface waters; wetlands; vegetation; wildlife and aquatic resources; threatened and endangered species; land use, recreation, special interest areas, and visual resources; socioeconomics (including transportation and traffic); cultural resources; air quality and noise; reliability and safety; and cumulative impacts. The EA describes the affected environment as it currently exists, discusses the environmental consequences of the proposed Project, and compares the Project's potential impact with that of various alternatives.

The environmental consequences of constructing and operating the proposed Project would vary in duration and significance. Using criteria recognized by other federal and state agencies such as the Federal Energy Regulatory Commission and Bureau of Land Management, four levels of impact duration were considered: temporary, short-term, long-term, and permanent. Temporary impact generally occurs during construction with the resource returning to preconstruction condition immediately after restoration or within a few months. Short-term impact could continue for up to 3 years following construction. Impact was considered long-term if the resource would require more than 3 years to recover. A permanent impact could occur as a result of any activity that modifies a resource to the extent that it would not return to preconstruction conditions during the life of the Project, such as the construction of aboveground facilities. An impact would be considered significant if it would result in a substantial adverse change in the physical environment.

1.3 PUBLIC REVIEW AND COMMENT

Vantage initiated consultation with federal and state agencies in June 2010 regarding the proposed Project. Consultations have been ongoing during the course of environmental review for the Project. Additionally, Vantage initiated preliminary outreach with landowners and local, county, state, and federal elected officials along the proposed pipeline route beginning in August 2010.

In November 2010, Vantage met with the DOS to begin discussions regarding a potential pipeline project and subsequently applied to the DOS for a Presidential Permit for the construction, operation, and maintenance of pipeline facilities on the United States-Canada border for the transportation of ethane. In March 2011, Vantage submitted to the DOS an environmental report in support of its application for a Presidential Permit for the United States-Canada international border crossing associated with the Project's pipeline.

The DOS has issued several documents announcing and providing a description of the Project, as well as solicited public comments for consideration in establishing the scope and content of the Project EA. For this Project, these documents included the *Notice of Receipt of Application for a Presidential Permit to Construct, Operate and Maintain Pipeline Facilities on the Border of the United States*, which was issued in the FR (Volume 76, No. 7, page 1659), and the *Notice of Intent to Prepare an Environmental Assessment and Request for Comments on Environmental Issues, and to Initiate Consultation Under Section 106 of the National Historic Preservation Act for the Proposed Vantage Pipeline Project* (NOI), which was issued to all parties on the environmental mailing list and issued in the FR (Volume 76, No. 239, page 77583).

Written and electronic comments in response to the NOI were received in letters and emails submitted to DOS. A summary of the public comments received by the DOS and related to the scope of the EA is presented in table 1.3-1 along with the EA section that addresses the concern. Figure 1.3-1 provides an overview of the DOS's environmental review process for the Project.

TABLE 1.3-1

Comments Received on Environmental Issues during the Public Scoping Process for the Vantage Pipeline Project

Issue	Comment	Section Where Comment/ Issue Addressed in EA
Project Description	Project sponsor's responsibility to contact approvals, permits, and easements from federal, state, and local agencies.	1.10
	Dispose of waste properly (not in floodway areas).	1.6.1.1
	Pipeline construction methods.	1.6.1.1, 1.6.1.2
	Permanent easement.	1.4.1, 1.12
	Collocation with existing rights-of-way.	1.4.1
Soils	Soil conditions affected during construction.	2.2.1, 2.2.2
Groundwater	There are no designated sole-source aquifers in North Dakota.	2.3.1.1
Wetlands and Waterbodies	Project should not affect floodplain areas.	2.4.2
	Avoid or mitigate impacts on wetlands.	2.4.2
Wildlife	Identify protective measures and/or plans to avoid impacts on migratory birds and bald and/or golden eagles.	2.7.2.2
Threatened and Endangered Species	Avoid impacts on or minimize adverse effects on federally listed species and/or critical habitat.	2.8.1.2
Land Use	Easement negotiations and compensation.	2.9.2
Alternatives	Avoid disturbance on grassland easements.	3.3.3
	Avoid current or future development of School Trust lands.	3.3.3
Reliability and Safety	Safety of pipeline and depth of cover.	1.6.1.1, 2.14.2

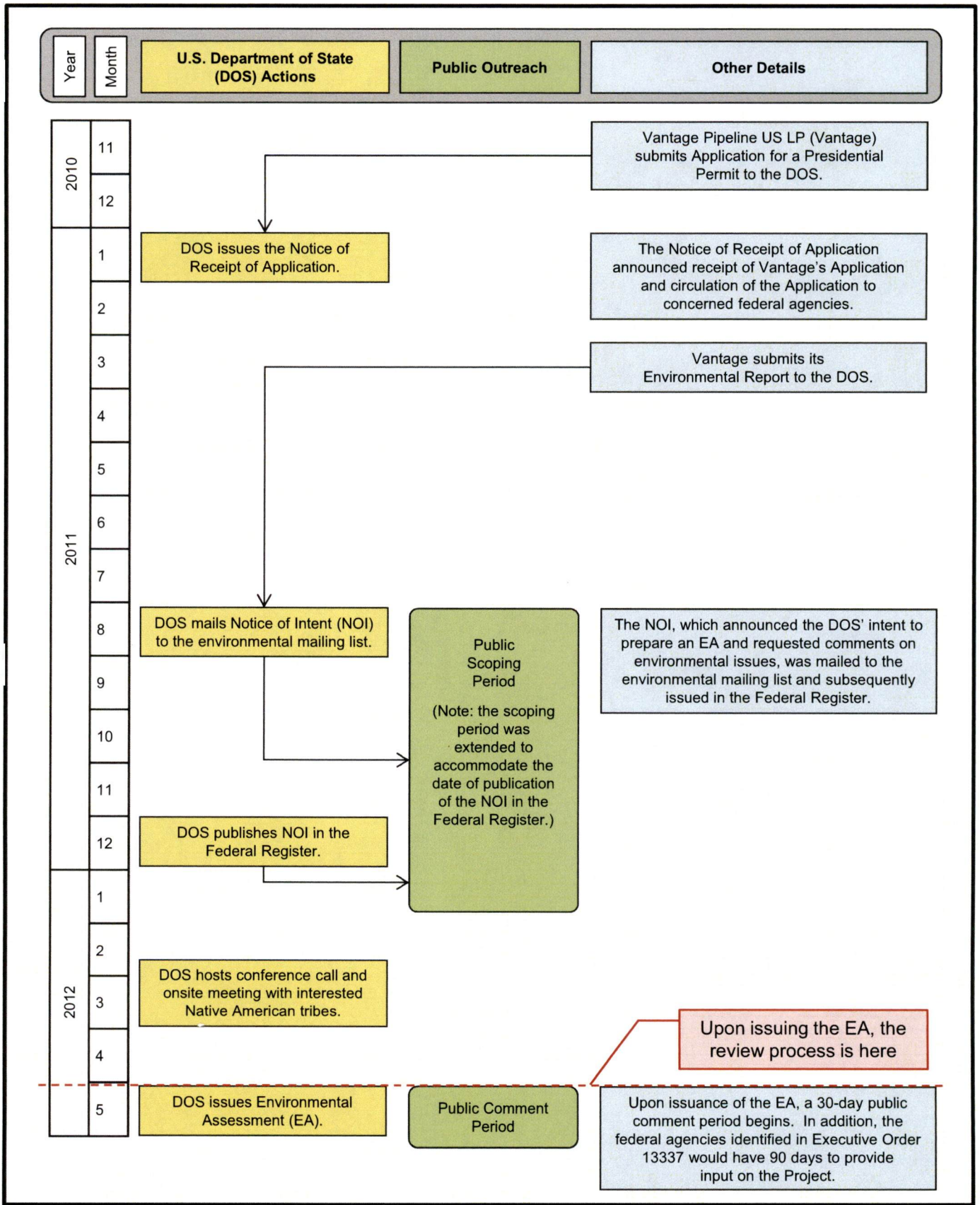

Figure 1.3-1
Vantage Pipeline Project
U.S. Department of State Environmental Review Process

After publication of the EA, the federal agencies identified in EO 13337 (see section 1.8.1) would have 90 days to provide their input on whether or not approving the proposed Project would be in the national interest. Additionally, the DOS will solicit public comments on determination of national interest during a public comment period after publication of this EA.

1.4 PROPOSED FACILITIES

This document analyzes the impacts associated with the U.S. portion of the Project. In the United States, Vantage proposes to construct and operate an ethane pipeline and related facilities from near Tioga, North Dakota in the United States to an international border crossing near Beaubier, Saskatchewan, Canada.

The Project would consist of the following facilities:

- installation of approximately 79.8 miles of new 10-inch-diameter pipeline in Williams and Divide Counties, North Dakota;
- installation of associated aboveground mainline block valves (MLBVs); and
- use of access roads and pipe storage and contractor yards.

All of the proposed facilities would be owned and operated by Vantage. Figure 1.4-1 shows the general location of the proposed facilities. U.S. Geological Survey (USGS) maps depicting the proposed Project are included in appendix A.

1.4.1 Pipeline Facilities

The proposed pipeline locations by county are listed in table 1.4.1-1. The pipeline would be collocated with existing rights-of-way for 6.3 miles (8 percent) of the proposed 79.8-mile-long total. The remaining 92 percent would be installed outside of existing rights-of-way.

TABLE 1.4.1-1

Pipeline Facilities for the Vantage Pipeline Project

County, State	Milepost		Length (miles) [a]
	Begin	End	
Williams County, North Dakota	0.0	37.5	37.5
Divide County, North Dakota	37.5	79.8	42.3
PROJECT TOTAL			**79.8**

[a] Due to rounding, lengths shown may not total distance obtained by subtracting end milepost from begin milepost.

Vantage proposes to generally use a 70-foot-wide construction right-of-way, consisting of a 25-foot-wide spoil side and 45-foot-wide working side. The permanent right-of-way would typically be 30 feet wide.

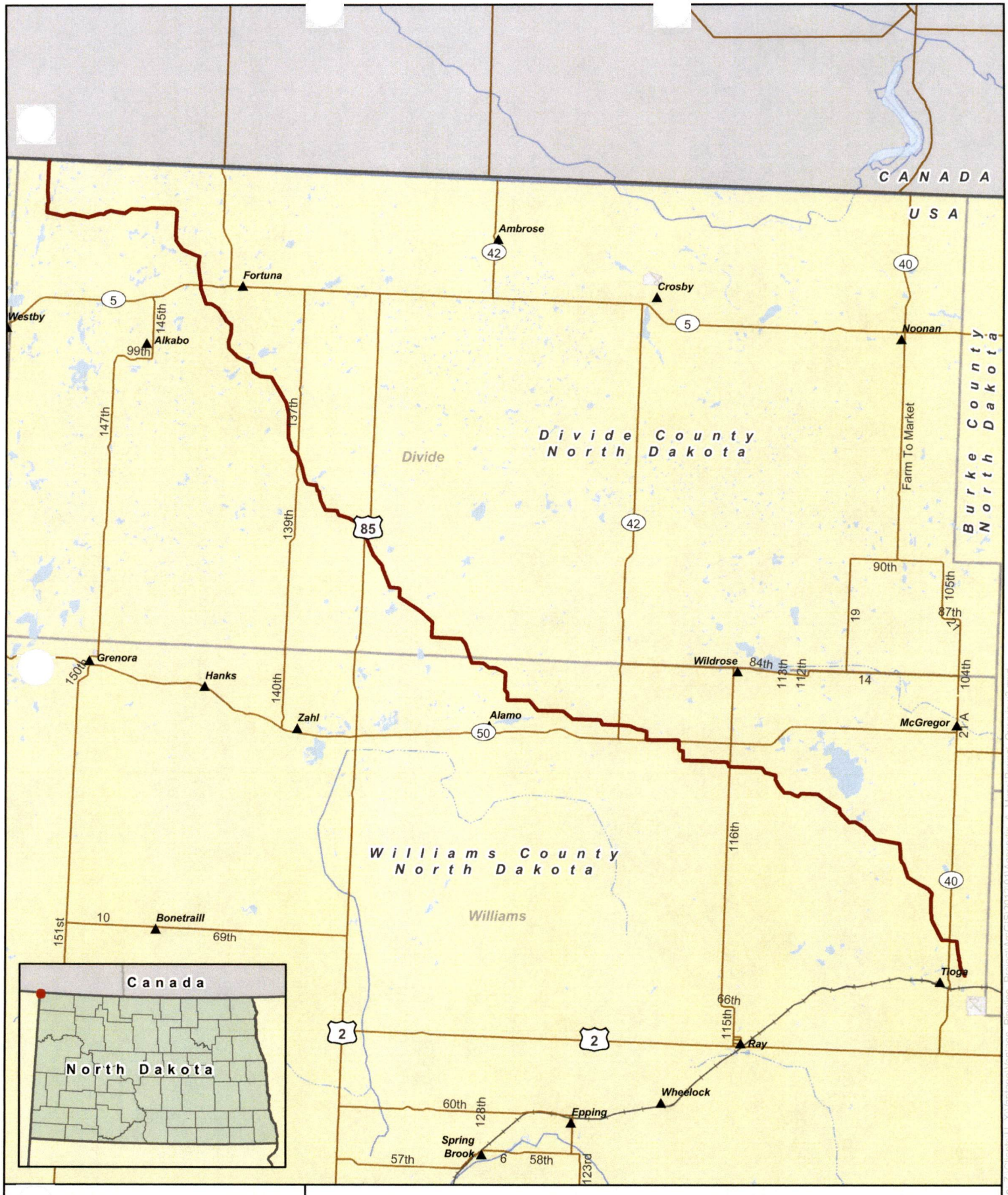

Figure 1.4-1
Vantage Pipeline Project
General Location Map
Divide and Williams Counties, North Dakota

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Date: (4.3.2012)

1.4.2 Aboveground Facilities

Vantage would install new MLBVs along the pipeline at locations listed in table 1.4.2-1. USGS maps depicting the locations of the appurtenant aboveground facilities are included in appendix A.

TABLE 1.4.2-1

Aboveground Facilities Associated with the Vantage Pipeline Project

County, State	Facility	Approximate Milepost
Williams County, North Dakota	Mainline Block Valve 0	0.0
Williams County, North Dakota	Mainline Block Valve 1	7.8
Williams County, North Dakota	Mainline Block Valve 2	19.8
Williams County, North Dakota	Mainline Block Valve 3	37.5
Divide County, North Dakota	Mainline Block Valve 4	52.7
Divide County, North Dakota	Mainline Block Valve 5	59.9
Divide County, North Dakota	Mainline Block Valve 6	65.2
Divide County, North Dakota	Mainline Block Valve 7	71.9

1.4.3 Access Roads

In general, Vantage would use existing public and private roadways to temporarily access the construction right-of-way. New permanent access roads to seven of the MLBVs would be constructed and permanently maintained following construction (see table 1.4.3-1). Access roads to the MLBVs would follow the 30-foot-wide permanent right-of-way. The locations of permanent access roads required for the Project are shown on the USGS maps in appendix A.

TABLE 1.4.3-1

Access Roads Associated with the Vantage Pipeline Project

Access Road ID	Approx. Milepost [a]	County	Need	Road Type	Existing Land Use	Length (feet)	Affected Area (acres) [b]
BV-1	7.8	Williams	Access to MLBV site	Gravel; Permanent	Grassland	148	0.1
BV-2	19.8	Williams	Access to MLBV site	Gravel; Permanent	Cultivated Crops	66	<0.1
BV-3	37.5	Divide	Access to MLBV site	Gravel; Permanent	Cultivated Crops	37	<0.1
BV-4	52.7	Divide	Access to MLBV site	Gravel; Permanent	Grassland	125	0.1
BV-5	59.9	Divide	Access to MLBV site	Gravel; Permanent	Cultivated Crops	42	<0.1
BV-6	65.2	Divide	Access to MLBV site	Gravel; Permanent	Cultivated Crops	40	<0.1
BV-7	71.9	Divide	Access to MLBV site	Gravel; Permanent	Cultivated Crops	20	<0.1

[a] Milepost is nearest point where access road connects to the pipeline right-of-way.

[b] Reflects the estimated disturbance that could occur if the access road were modified to a width of 20 feet.

No other new or existing access roads requiring improvements have been identified by Vantage. If any private access roads, modifications to existing non-private roads, and construction of any new access roads would be needed, Vantage would be required to obtain landowner permission, conduct environmental surveys, and, if necessary, obtain the appropriate permits prior to use.

1.4.4 Contractor and Pipe Yards

In addition to the construction right-of-way, Vantage would require four areas for equipment parking, construction staging, and pipe and material storage. Each of these contractor/pipe yards would

be located outside of the pipeline construction right-of-way. Two yards would be required in Williams County, North Dakota and two yards would be required in Divide County, North Dakota. The locations of proposed contractor and pipe yards are shown on the USGS maps in appendix A.

1.5 CONNECTED ACTIONS

1.5.1 Heater

Hess is expanding its existing Tioga Gas Plant in Tioga, North Dakota by installing a new, 21-acre gas processing plant adjacent to the existing gas processing plant on land owned by Hess. As described in Hess' permit application materials to the North Dakota Public Service Commission (NDPSC) (discussed further below), the existing Tioga Gas Plant has been operational since the 1950s and primarily serves to separate out NGLs and other impurities from methane collected from production wells in the Tioga, North Dakota area before it can be used as a fuel. Once all of the impurities are removed, the resulting purified methane is transported via existing pipelines to markets in the east and south.

The current gas processing technique conducted at Hess' Tioga Gas Plant is called a refrigerated lean oil fractionation. Hess has proposed to change the processing technique from lean oil fractionation to a cryogenic turboexpander process. To accommodate the conversion, Hess would expand the existing gas plant footprint and construct new underground piping and above-ground gas processing facilities. The proposed gas plant expansion would produce the same products as it currently does, including pipeline grade natural gas, propane, butane, natural gasoline, and molten sulfur. Ethane would be an additional product that is either separated during ethane recovery or would be combined with the natural gas during ethane rejection. In addition to the processing plant expansion, approximately 4 miles of four pipelines (one 8-inch-diameter and three 6-inch-diameter) would also be constructed by Hess from the plant to a rail terminal currently in construction. The rail terminal is located on the west side of Tioga, North Dakota. The rail terminal would be designed to load 1.3 million gallons of liquefied product per day.

Activities at the Tioga Gas Plant are under the jurisdiction of the NDPSC. On April 13, 2010, Hess filed with the NDPSC a letter of intent to construct an addition to the existing Tioga Gas Plant and, on June 25, 2010, Hess filed its application for a Certificate of Site Compatibility for the Tioga Gas Plant Expansion Project. The application included a summary of biological field surveys (e.g., wetlands, wildlife), threatened and endangered species review, and consultations with state and federal agencies. As committed to in its Certificate of Site Compatibility, Hess would obtain the necessary licenses and permits. On September 8, 2010, the NDPSC released its Finding of Facts, Conclusions of Law, and Order, which approved of the plant expansion and ordered issuance of a Certificate of Site Compatibility. Expansion of the existing plant has been on-going since October 2010 and the new expanded facilities are expected to be in service by the end of 2012.

The DOS has determined that the Tioga Gas Plant modifications would be an independent action and the only component of the Hess facility modification that is specifically related to allowing for ethane recovery required for Vantage's Project is the operation of a heater. Therefore, the impacts resulting from operation of the heater are a connected action for the purposes of this review consistent with NEPA and 40 CFR 1508.25(a)1. Section 2.12 of the EA describes the connected action (i.e., heater) and the associated additional air and carbon dioxide (CO_2) emissions. Any other significant impact resulting from the proposed Project in addition to the ongoing Hess activities has been summarized in the cumulative impacts discussion (see section 2.15).

1.5.2 Electric Transmission Lines and Interconnections

Electrical service requirements for the proposed Project include utilizing existing electric transmission lines and constructing new electric transmission interconnections to the MLBVs. Because local electrical power providers, not Vantage, would be constructing and operating the electric transmission lines, the local utilities (Mountrail Williams and Burke Divide Electric) would be responsible for obtaining any necessary approvals or authorizations from federal, state, and local governments. While the permitting for the electrical facilities is independent from the Presidential Permit process, the construction and operation of these electric transmission lines are considered connected actions consistent with NEPA and, therefore, are evaluated within this EA for the proposed Project.

Vantage anticipates that the new interconnections would be constructed below ground, and that electric power requirements for eight MLBVs would be approximately 10 kilowatts per MLBV site and may be supplied from distribution service interconnects from proximate existing distribution lines (i.e., distribution lines with voltage ranging between 12.5 kilovolts to 25 kilovolts). Vantage has attempted to locate the proposed MLBVs near existing electric power lines. Accordingly, the length of these proposed new below-ground interconnections would range in length between approximately 25 feet to 1 mile. Each of these new interconnecting lines would require the installation of new underground transmission cable. The new electric transmission interconnection lines would be located entirely on private land.

In the event power cannot be provided to an individual MLBV by the local power companies or is uneconomic, Vantage would use solar photo-voltaic panel technology at the MLBVs that would eliminate the need for electric transmission interconnections at these MLBV sites.

The transmission interconnection facilities would be installed below ground and, thus, the construction process would be broadly similar to that of pipeline construction: right-of-way acquisition; right-of-way clearing; construction, including excavating a narrow trench, installing the electric transmission line, and backfilling; and site restoration and cleanup. Utilities installing the transmission lines would be expected to restore the work area as required on completion of the new interconnect consistent with local standards. The soil in the disturbed areas would be reshaped and contoured to its original condition. Reseeding would follow landowner requirements. All construction debris and other remaining materials would be removed from the construction areas and properly disposed. The construction right-of-way width for these facilities is currently unknown and actual electrical line construction procedures would be developed by each local electric utility to address site-specific conditions. The electric utilities would obtain any necessary easements and permits required to install the facilities.

Construction and operation impacts on soils, vegetation, and land uses associated with the interconnects are expected to be temporary, minor, and comparable to those associated with supplying electricity to the average home or farm. Although the construction right-of-way width for these facilities is currently unknown, it is anticipated that the construction and operation impacts on soils, vegetation, and land uses associated with these facilities would be lesser than those associated with pipeline construction described in this EA because the interconnects would have a narrow diameter, can be installed with minor disturbance to the land, and would affect a smaller area than that required for pipeline installation. Construction of the interconnects would have a temporary and relatively minor impact on agricultural land or grassland, and these land uses would be allowed to revert to previous conditions following construction. Based on the proximity of the proposed MLBV sites to existing electric power lines, it is anticipated that no wetlands or waterbodies would be affected by new electric transmission line construction and operation. Further, because the electrical lines would be installed underground, there would be no potential flight collision risks to birds and other wildlife (e.g., bats). While the new electric transmission interconnections would overlap in space and time with the Project,

and could act cumulatively with the other activities in the area, the amount of surface disturbance caused by powerline construction is anticipated to be negligible compared to other development projects discussed in section 2.15. Further, it is anticipated that the electric utilities would use best management practices (BMPs) to install the facilities and be subject to permits requirements that would, if necessary, mitigate for potential impacts on environmental resources.

1.6 CONSTRUCTION PROCEDURES

Standard pipeline construction is composed of specific activities that make up a linear construction sequence. This section describes the general procedures proposed by Vantage for the construction of the pipeline facilities. Vantage would construct, restore, and maintain the Project consistent with its *Environmental Protection Plan* (EPP).[4] Vantage's EPP includes measures that would avoid or minimize environmental impacts resulting from construction and operation of the Project, for example:

- installation of erosion control devices;
- topsoil segregation;
- wetlands and waterbody crossing methods;
- revegetation and restoration specifications;
- spill prevention and control; and
- post-construction maintenance requirements.

As part of the EPP, Vantage would implement several contingency plans, including:

- Spill Contingency Plan Guidelines;
- Fire Contingency Plan;
- Soil Conditions Contingency Plan;
- Soil Erosion Contingency Plan;
- Instream Boring Fluids Mud Release Contingency Plan;
- Water Crossing Sediment Contingency Plan;
- Winter or Frozen Conditions Contingency Plan;
- Sensitive Plants Contingency Plan;
- Wildlife Contingency Plan; and
- Cultural Resources Contingency Plan.

Vantage proposes to begin construction in the summer of 2012 and anticipates that the Project would go into service on or before April 1, 2013.

1.6.1 Pipeline Facilities

1.6.1.1 General Pipeline Sequence

Vantage would construct the ethane pipeline using typical construction techniques as described below. Figure 1.6.1-1 shows the typical steps of cross-country pipeline construction. Before construction, Vantage crews would survey and stake the centerline and exterior boundaries of the construction right-of-way. The exterior boundary stakes would mark the limit of approved disturbance areas that would be maintained throughout the construction period. Clearing crews would then cut shrubs

[4] The EPP has not been included as an attachment to this EA. However, a draft copy provided by Vantage is available for review on the DOS's website for the Project at: http://www.vantagepipeline.state.gov/. See Vantage Documents and "Environmental Data Provided by Vantage in Support of an Application for a Presidential Permit (March 2011)."

and trees from the construction right-of-way and additional temporary workspace (ATWS). Clearing crews would typically mow, chip, mulch, and/or haul off all non-merchantable timber, and burning of non-merchantable wood may be allowed if the necessary permits and approvals are obtained. After clearing, grading crews would grade the ground surface as necessary to provide a smooth working surface and a safe working area. Environmental crews would install temporary erosion controls, where necessary, to minimize erosion and would maintain these controls throughout construction. Next, topsoil would be stripped and segregated along the pipeline route consistent with the EPP. Before excavating the pipeline trench, individual joints of pipe would be strung along the construction right-of-way by small portable cranes and/or side-boom tractors. Individual joints of pipe would be bent by a mechanical pipe-bending machine to accommodate natural ground contours or pipeline alignment. After stringing and bending, the pipe sections would be aligned, welded together, and placed on temporary supports along the edge of the trench. The welds would be inspected, both visually and radiographically, and coating sleeves would be applied at the welded joints and then the coating would be electronically inspected before the pipe is lowered into the trench.

Trenching crews would use backhoes and/or ditching machines to excavate the pipeline trench consistent with DOT regulations, which stipulates a minimum 4 feet of cover for normal excavations and 18 to 30 inches of cover in rocky areas. The trench walls would generally be kept vertical to the extent practicable and the trenches would typically be 2 feet wide at the base of the trench. In unstable and saturated soils, trenches may be wider. Next, crews would dewater the trench as necessary consistent with the requirements of applicable permits. After welding and coating are completed and the trench is excavated, construction crews would lower the pipe into the trench using side-boom tractors. Bladed equipment or a specially designed backfilling machine would be used to backfill the trench to the approximate ground surface elevation. In areas where topsoil has been segregated, subsoil would be replaced first, and topsoil would be spread uniformly on top. Directly above the pipeline, an excess of soil or "crown" would be placed to allow for future settling. Construction debris, including wooden supports, welding rods, containers, brush, trees, or refuse of any kind, would not be permitted in the backfill. If an excessive amount of rocks are present in the backfill, the pipeline would be protected with rock shielding or similar protective coating and/or backfilled with clean padding prior to backfilling with the rocky material.

All construction garbage and debris would be collected and disposed of weekly at an approved facility. Waste containers would accompany each working unit. All construction personnel would be required to follow guidelines established in a Project waste management plan.

After backfilling and before placing the Project in service, Vantage would hydrostatically test[5] the pipeline consistent with the regulations of the Office of Pipeline Safety (OPS) within the DOT's PHMSA to ensure that there are no leaks in the pipeline and that the system is capable of operating at the design pressure. The testing process would involve filling a segment of the pipeline with water and maintaining a prescribed pressure for a specified amount of time. Vantage would then grade and restore work areas as nearly as practicable to their original contours. Permanent erosion controls would be installed and disturbed areas would be revegetated consistent with the EPP, other permit requirements, and site-specific landowner requests.

[5] Hydrostatic testing is a process used to test pipelines for leaks by pressurizing them inside with a liquid, typically consisting of water.

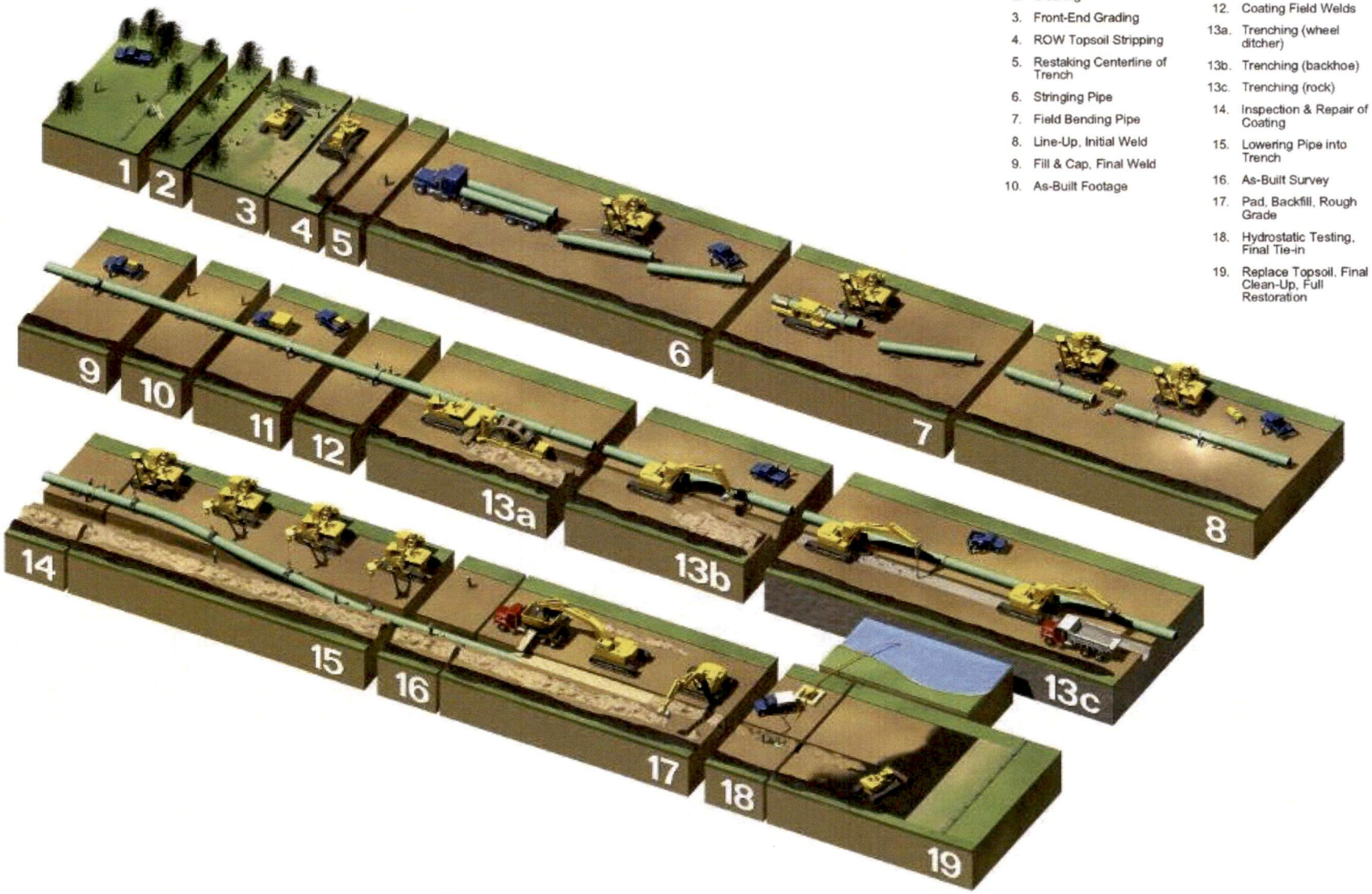

Figure 1.6.1-1

Vantage Pipeline Project

Typical Pipeline Construction Sequence

1.6.1.2 Special Construction Procedures

Waterbody and Wetland Crossings

Although the Project avoids crossing perennial waterbodies, it would cross ephemeral or intermittent streams that are more closely associated with wetlands. Vantage would construct the proposed pipeline across waterbodies/wetlands consistent with the methods described in its EPP and state and federal permit requirements. If the drainages are dry at the time of construction, Vantage would use conventional upland construction methods to cross the waterbody/wetland feature. However, for the majority of waterbody/wetland features where water is present, Vantage would use the directional boring method to cross waterbodies/wetlands.

During the directional boring method, a directional bore machine would push a bore head, connected to hollow drill pipe, into the ground at an angle to excavate the pilot borehole. As each joint of drill pipe is pushed into the ground, a new one would be added behind. Non-hazardous drilling fluid, composed of a mixture of bentonite clay and water, may used for drilling lubrication. Once the bit reaches the exit point, it would be replaced with a reamer and the hole would be enlarged by operating the drill in the reverse direction. After enlarging the bore, the product pipe would be pulled from the exit point back to the boring machine. Once the pipe is installed, the exit and entry points would be excavated with connections, or tie-ins, made as needed.

The primary impact that could occur as a result of a horizontal bore is an inadvertent release of drilling mud (frac-out) directly or indirectly into a waterbody or wetland. Although drilling mud is a mix of naturally occurring nontoxic materials, such as bentonite clay and water, in larger quantities the release of drilling mud into a waterbody or wetland could affect aquatic organisms by settling in and temporarily inundating the habitats used by these species. Vantage would implement the measures discussed in its EPP that describe how each horizontal bore would be conducted to minimize the potential for an inadvertent release of drilling mud to occur, and the procedures to follow and the North Dakota Health Department (NDHD) personnel to contact in the event of a drilling fluid release.

If necessary, Vantage would clear existing vegetation from the construction right-of-way at the crossings and would maintain a 10-foot buffer of undisturbed non-woody and woody vegetation less than 4 inches in diameter at breast height on the streambanks. Grading would be directed away from the waterbody to reduce the potential for material to enter the waterbody. Temporary erosion control measures (e.g., silt fences, straw bales) would be installed consistent with Vantage's EPP. ATWS at waterbody/wetland crossings would typically be set back 50 feet from the water's edge where topographic and other site conditions permit.

Figures depicting the typical boring under a waterbody and wetland are included in Vantage's EPP. Additional information regarding waterbodies and wetlands affected by the Project is discussed in section 2.4.

Road, Highway, and Railroad Crossings

Vantage would cross paved roadways and railroads using the bore method, which involves installing the pipeline beneath the transportation corridor, thereby avoiding disruptions to vehicular or railcar movement and physical impacts on road/railroad beds.

Vantage would cross unpaved roadways using the bore method (described above) or the open-cut method. The open-cut method could temporarily disrupt road traffic as the pipe trench is excavated across the roadway. Therefore, to minimize traffic delays, Vantage would establish traffic detours before

excavating the roadbed. If no reasonable detours are feasible, Vantage would maintain at least one traffic lane, except for brief periods when road closure is essential to install the pipeline. Vantage would minimize the duration of open-cut crossings and in most cases would complete these road crossings in one day or less.

Vantage would obtain road and railroad crossing permits from the North Dakota Department of Transportation (NDDOT) for state road crossings and the applicable county for county road crossings, and would be subject to compliance with the permit stipulations associated with these road crossings. For private roads, Vantage would request landowner permission to cross or use the road. Railroad crossings would be subject to authorization from the private railroad company. Vantage would notify local authorities prior to open-cut road closures. Vantage's EPP also notes that it would develop a landowner notification and coordination approach, and that its land agents would be available at all times during construction for landowner coordination. Vantage would attempt to avoid closing roads during peak traffic hours.

Steep Terrain

Steep slopes may require additional grading to create a working surface that allows for safe operation of construction equipment and to accommodate pipe-bending limitations. In such areas, the slopes would be excavated prior to pipeline installation and reconstructed to their original contours during restoration.

In areas where the proposed pipeline route would cross laterally along the side of a slope, cut-and-fill grading may be required to obtain a safe, flat work terrace. Temporary sediment barriers such as silt fence and straw bales would be installed during clearing to prevent the movement of disturbed soil into wetlands, waterbodies, or other environmentally sensitive areas in steep terrain. Temporary slope breakers consisting of mounded and compacted soil would be installed across the right-of-way during grading. Topsoil would be stripped from the entire right-of-way and stockpiled prior to cut-and-fill grading on steep terrain. Generally, on steep side-slopes, soil from the high side of the right-of-way would be excavated and moved to the low side of the right-of-way to create the level work terrace. After the pipeline is installed, the soil from the low side of the right-of-way would be returned to the high side and the slope's original contours would be restored. Following construction, seed would be applied to steep slopes. Seed would consist of diverse, local genotyped, and weed free certified native prairie seed mixes in grasslands, and other mixes as listed in the EPP. Certification is provided by the seed supplier and transferred through a chain of custody to the grower. Weed free certification is regulated by the U.S. Department of Agriculture (USDA) and State of North Dakota. The right-of-way would be mulched with hay or non-brittle straw or covered with erosion control fabric. Sediment barriers would be maintained across the right-of-way until permanent vegetation is established.

Fences and Grazing

Prior to cutting fences for pipeline construction, Vantage would brace and secure each fence to prevent slacking. To prevent the passage of livestock, each fence line opening would be temporarily closed when construction crews leave the area. If gaps in natural barriers used for livestock control are created by pipeline construction, the gaps would be fenced according to the landowner's requirements. Vantage would maintain all existing improvements, such as fences, gates, irrigation ditches, cattle guards, and reservoirs during construction and would repair the features to pre-construction conditions or better following construction.

1.6.2 Additional Temporary Workspace, Access Roads, and Contractor and Pipe Yards

Vantage would require the use of ATWS along the pipeline rights-of-way for various road, railroad, wetland, and waterbody crossings and for specialized construction technique areas (e.g., steep side slopes). Use of ATWS would involve the same general steps as pipeline construction (e.g., clearing, grading as necessary).

Vantage would use existing public and private roads to the greatest extent practical, thereby reducing environmental impacts associated with new road construction or improvements to existing roads. Vantage would require construction and operation of seven new permanent roads as part of the Project. Construction of new roads would generally include clearing of existing vegetation, grading, and placement of gravel. A list of access roads associated with the Project is included in table 1.4.3-1.

Four areas are proposed for use as pipe storage/contractor yards (as discussed in section 1.4.4). Vantage intends to use pipe storage/contractor yards located on previously disturbed land cover that would not require grading or other land disturbance.

1.6.3 Aboveground Facilities

MLBV construction would include excavating topsoil; grading; installing concrete or steel pipe supports and building supports; positioning above ground piping and welding to underground piping; installing a valve assembly; building housing communications equipment; installing electrical and instrumentation; cleanup, painting, and final grading; and installing a security fence, gate, and signage.

1.7 LAND REQUIREMENTS

Construction of the Project would impact a total of approximately 734.8 acres of land, including the pipeline construction right-of-way, ATWS, aboveground facility sites, access roads, and pipe storage/contractor yards. Following construction, Vantage would allow a total of about 443.6 acres of land to revert to previous conditions. Vantage would retain the remaining 291.2 acres of land for aboveground facilities, permanent access roads, and the maintained pipeline right-of-way. Table 1.7-1 identifies the land requirements for each Project facility.

TABLE 1.7-1

Summary of Land Requirements Associated with the Vantage Pipeline Project

Facility	Land Affected During Construction (acres)	Land Affected During Operation (acres)
Pipeline Right-of-Way	674.6	290.6
Additional Temporary Workspace	51.6	0.0
Aboveground Facilities	0.4	0.4
Access Roads	0.2	0.2
Pipe Storage/Contractor	8.0	0.0
PROJECT TOTAL	**734.8**	**291.2**

Note: The totals shown in this table may not equal the sum of addends due to rounding.

1.8 AGENCY PARTICIPATION

The DOS, as the lead federal agency, has determined that issuance of a Presidential Permit for the proposed Project would necessitate the preparation of an EA and, as such, is acting consistent with the requirements of NEPA. A number of other federal agencies have permitting, environmental review, and

regulatory roles with respect to the Project, and are summarized below. State and local agencies were also consulted to identify issues arising during their permitting reviews. These issues are addressed in this EA.

1.8.1 Federal Lead Agency – U.S. Department of State

Vantage seeks a Presidential Permit for that portion of the Vantage pipeline from the northern-most MLBV to the U.S.-Canada border. Therefore, the DOS is the lead agency for review consistent with the NEPA and Section 106 of the National Historic Preservation Act (NHPA) process for the proposed Project. As the lead agency, the DOS directed the preparation of the EA for the proposed Project consistent with NEPA and also directed the Section 106 process consistent with the NHPA (16 U.S.C. 470 et seq.). As the lead federal agency, the DOS initiated informal consultation with the U.S. Fish and Wildlife Service (FWS) under Section 7 of the Endangered Species Act (ESA; 16 U.S.C. 1536 et seq.) to determine the likelihood of effects on listed species. The DOS in consultation with its third-party contractor also confirmed that the Project would be located outside of areas under the jurisdiction of the Coastal Zone Management Act of 1972 (National Oceanic and Atmospheric Administration, 2012; North Dakota RUS Bulletin, 2007).

The DOS coordinated with the assisting agencies to ensure compliance with laws and regulations within their authority as well as to ensure compliance with the following executive orders:

- EO 11988 – Floodplain Management;
- EO 11990 – Protection of Wetlands;
- EO 12114 – Environmental Effects Abroad of Major Federal Actions;
- EO 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations;
- EO 13007 – Indian Sacred Sites;
- EO 13112 – Invasive Species;
- EO 13175 – Consultation and Coordination with Indian Tribal Governments;
- EO 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds;
- EO 13212 – Actions to Expedite Energy-Related Projects; and
- EO 13337, as amended (FR, Volume 69, No. 87, page 25299) – governs the DOS issuance of Presidential Permits that authorize construction of pipelines carrying petroleum, petroleum products, and other liquids across U.S. international borders. Upon receipt of a Presidential Permit application for a cross-border pipeline, the DOS is required to request the views of the Secretary of Defense, the Attorney General, the Secretary of the Interior, the Secretary of Commerce, the Secretary of Transportation, the Secretary of Energy, the Secretary of Homeland Security, the Administrator of the U.S. Environmental Protection Agency (EPA), and other government department and agency heads as the Secretary of State deems appropriate. If in the Secretary of State's judgment it is in the national interest to do so, the DOS shall prepare a permit for the Project, in such form and with such terms and conditions as the national interest may require.

1.8.2 Other Federal and State Agencies

1.8.2.1 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) has jurisdictional authority pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344), which governs the discharge of dredged or fill material into waters of the United States (Section 404), and Section 10 of the Rivers and Harbors Act (33 U.S.C. 403), which regulates any work or structures that potentially affect the navigable capacity of a waterbody. The Project would be under the jurisdiction of the Omaha District of the USACE.

As an element of its review, the USACE must consider whether a proposed project avoids, minimizes, and compensates for impacts on existing aquatic resources, including wetlands, to achieve a goal of no net loss of values and functions. This EA addresses environmental impacts associated with the proposed Project as it relates to Section 404 of the CWA and Section 10 of the Rivers and Harbors Act.

The USACE authorizes several classes of construction projects through a Nationwide Permit (NWP) program if the project has minimal environmental impact and if the project can meet certain environmental compliance objectives. The USACE NWP 12 is specially geared to the construction of utility lines, such as pipelines, which do not result in the permanent loss of greater than 0.5 acre of waters (wetlands and waterbodies) of the United States, and would apply to the Project. Construction and operation of the Project would result in no loss of waters of the United States.

Waterbody and wetland impacts, including NWP 12, associated with the Project are discussed in section 2.4 of this EA.

1.8.2.2 U.S. Environmental Protection Agency

Under Section 402 of the CWA, the EPA has jurisdiction over the discharge of pollutants from a point source into waters of the United States. Administration of permit programs for point-source discharges that require a National Pollutant Discharge Elimination System (NPDES) permit has been delegated to the State of North Dakota; however, the EPA maintains oversight of the delegated authority. Regulated discharges include, but are not limited to, sanitary and domestic wastewater, gravel pit and construction dewatering, hydrostatic test water, and storm water (40 CFR 122).

Under Section 404 of the CWA, the EPA reviews and comments on USACE Section 404 permit applications for compliance with the Section 404(b)(1) guidelines and other statutes and authorities within its jurisdiction (40 CFR 230). Specific to the Project area, the EPA has delegated its NPDES program to the State of North Dakota.

Under Section 309 of the Clean Air Act (CAA; 42 U.S.C. 7401 et seq.), the EPA has the responsibility to review and comment in writing on the EA consist with the Council on Environmental Quality's (CEQ's) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500 to 1508).

Under Sections 3001 through 3019 of the Resource Conservation and Recovery Act (RCRA; 42 U.S.C. 3251 et seq.), the EPA establishes criteria governing the management of hazardous waste. Consistent with 40 CFR 261.4(b)(5), any hazardous waste generated in conjunction with construction or operation of the proposed Project would be subject to the hazardous waste regulations.

The proposed Project would be located within EPA Region 8. Prior to issuance of the EA, the DOS solicited comments on the EA from Region 8 of the EPA. The EPA's comments have been

incorporated into this EA. Issues related to the CWA, CAA, and RCRA are addressed in sections 2.4, 2.12, and 2.9.6, respectively, of this EA.

1.8.2.3 U.S. Fish and Wildlife Service

The FWS is responsible for ensuring compliance with the ESA. Section 7 of the ESA, as amended, states that any project authorized, funded, or conducted by any federal agencies should not "...jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined...to be critical..." (16 U.S.C. 1536[a][2]). The FWS also reviews project plans and provides comments regarding protection of fish and wildlife resources under the provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). The FWS is responsible for the implementation of the provisions of the Migratory Bird Treaty Act (MBTA; 16 U.S.C. 703) and the Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. 688). Easements are protected under the National Wildlife Refuge Systems Administration Act (16 U.S.C. 668dd[c]). The FWS of North Dakota has purchased many wetland and grassland easements in the Project area.

Section 7 of the ESA, as amended, 16 U.S.C. 1531 et seq., requires identification of and consultation on aspects of any federal action that may have effects on federally listed species, species proposed for federal listing, and their habitat. The ultimate responsibility for compliance with Section 7 remains with the lead federal agency (i.e., DOS for this Project). However, to expedite the review and approval process, and consistent with 50 CFR 402.08, which states that "a Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment by giving written notice to the Director of such designation," in a letter to the FWS dated December 16, 2011, the DOS designated Vantage and its consultant as its delegated non-federal agent to consult with the FWS to determine whether any federally listed or proposed endangered or threatened species or their designated critical habitat occur in the vicinity of the proposed Project.

A Biological Assessment (BA), assessing this information, has been prepared by the DOS and its independent third-party contractor for the Project. The BA was prepared with DOS guidance and supervision, and the DOS and its independent third-party contractor reviewed and evaluated the scope and contents of the BA. The BA has been submitted to the FWS for comment on the findings and is included as appendix B. Further discussion regarding threatened and endangered species potentially affected by the Project is included in section 2.8 of this EA. Project impacts on species protected by MBTA and BGEPA are discussed in section 2.7 of this EA.

The proposed Project would be located within the FWS Mountain-Prairie Region. Prior to issuance of the EA, the DOS solicited comments on the EA from the FWS North Dakota Field Office in the FWS Mountain-Prairie Region. The FWS's comments have been incorporated into this EA.

1.8.2.4 Advisory Council on Historic Preservation

Section 106 of the NHPA, as amended, requires the lead federal agency to take into account the effects of its undertakings on historic properties or historic resources that are listed in, or eligible for listing in, the National Register of Historic Places (NRHP), and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment if there would be adverse effects on NRHP-eligible properties. Historic properties are defined as prehistoric or historic districts, sites, buildings, structures, objects, or properties of traditional religious or cultural importance, which are listed or eligible for listing in the NRHP, including artifacts, records, and material remains related to such a property or resource.

The DOS, as the lead federal agency, is responsible for the review consistent with Section 106 of the NHPA as it relates to both public and private lands affected by the Project. Consistent with 36 CFR 800.2(a)(3), the DOS requested the services of Vantage and its consultant to prepare information, analyses, and recommendations specific to cultural resources for the Project. In a letter dated December 16, 2011, the DOS authorized Vantage as its delegated non-federal agent to initiate consultation with the North Dakota State Historic Preservation Office (SHPO) to determine site eligibility for the NRHP and the Project's effects on historic properties within the Area of Potential Effect (APE). Section 101(b)(3) of the NHPA provides each SHPO a prominent role in advising the responsible federal agencies and ACHP. A Class III cultural resources inventory report has been submitted to and commented on by the North Dakota SHPO, who concurred with the Class III cultural resources inventory report's "no historic properties affected" and "no significant sites affected" determinations.

The DOS, as the lead federal agency, is also responsible for reviewing compliance with Section 101(d) of the NHPA and the American Indian Religious Freedom Act. Compliance involves contacting Native American groups with an interest in the lands affected by the Project and ensuring that the requirements of the Native American Graves Protection and Repatriation Act are met. As discussed in section 2.11.3, the DOS has initiated contact and would continue to consult with several Native American groups with historic ties to the Project area. Regarding Native American Graves Protection and Repatriation Act, the excavation and inadvertent discovery provisions of the act apply only to federal and tribal lands (i.e., lands (including private lands) within the exterior boundaries of an Indian reservation) (National Park Service, 2012). Specific to the Project, no federally owned or federally designated tribal lands are anticipated to be affected.

Further discussions regarding cultural resources and tribal consultations are included in sections 2.11.2 and 2.11.3, respectively, of this EA.

1.8.2.5 Pipeline and Hazardous Materials Safety Administration

The PHMSA is responsible for protecting the American public and the environment by ensuring the safe and secure movement of hazardous materials to industry and consumers by all transportation modes, including the nation's pipelines. Through PHMSA, the DOT develops and enforces regulations for the safe, reliable, and environmentally sound operation of the nation's 2.3-million-mile pipeline transportation system and the nearly 1 million daily shipments of hazardous materials by land, sea, and air. Within PHMSA, the OPS has the safety authority for the nation's natural gas and hazardous liquid pipelines. For those pipelines, PHMSA identifies and evaluates risks; develops and enforces standards for design, construction, operations, and maintenance of pipelines; responds to accidents/incidents; educates operators and the public; conducts research on promising technologies; provides grants to states in support of their pipeline safety programs; and reviews oil spill response plans, with a special focus on protecting unusually sensitive areas. The regulations for Transportation of Hazardous Liquids by Pipeline are presented in 49 CFR 195.

Reliability and safety issues related to the Project are discussed in section 2.14 of this EA.

1.8.2.6 Natural Resources Conservation Services

The Natural Resources Conservation Service (NRCS) administers the Wetlands Reserve Program (WRP) (16 U.S.C. 3837 et seq.), under which it purchases conservation easements and provides cost share to landowners for the purposes of restoring and protecting wetlands. Under the WRP, the United States may purchase 30-year or permanent easements. Land eligibility for the WRP is based on NRCS's determination that the land is farmed or converted wetland, that enrollment maximizes wildlife benefits and wetland values, and that the likelihood of successful restoration merits inclusion into the program.

Lands under WRP easement are subject to development and other use restrictions to ensure protection of wetland and wildlife conservation values. NRCS also administers the Emergency Watershed Protection Program (Floodplain Easements) and the Healthy Forests Reserve Program, and shares management of the Grasslands Reserve Program (GRP) with the Farm Service Agency (FSA). NRCS is also responsible for the Farmland Protection Policy Act (7 CFR 658), including protection of prime and unique agricultural lands.

As proposed, the Project would not cross land currently enrolled in the WRP, Emergency Watershed Protection Program, Healthy Forests Reserve Program, or GRP.

1.8.2.7 Farm Service Agency

The FSA is a unit of the USDA and administers several land conservation programs, including the Conservation Reserve Program (CRP), the Conservation Reserve Enhancement Program (CREP), the Farmable Wetlands Program, and the GRP. These programs provide annual rental payments and cost-share assistance to establish long-term resource conservation measures on eligible farmland. The terms of rental agreements are from 10 to 30 years, during which most agricultural uses of the affected lands are prohibited. The GRP is managed jointly with NRCS and includes provisions for rental agreements up to 30 years, 30-year-easements, and permanent easements.

As proposed, the Project would not cross land currently enrolled in the CREP or Farmable Wetlands Program but would cross lands currently enrolled in the CRP (see section 2.6.1).

1.8.2.8 North Dakota Public Service Commission

The NDPSC has statutory responsibilities concerning pipelines in North Dakota that include establishment and enforcement of rates or charges and regulations by common pipeline carriers for receiving, gathering, transporting, loading, delivering, and incident storing of crude petroleum, coal, or gas purchased or sold in North Dakota; and enforcement of safety requirements for intrastate distribution and transmission of natural gas (NDPSC, 2012). North Dakota Rules, Article 69-06, Chapter 69-06-02.1 require that a utility planning to construct an energy conversion or transmission facility request a jurisdictional determination from the NDPSC. As such, the Project requires a Certificate of Corridor Compatibility and Route Permit from the NDPSC.

While the DOS could issue a Presidential Permit that would apply from the northern-most MLBV (i.e., MP 71.9) to the U.S.-Canada border (MP 79.8), NDPSC authorization is required for the entire Project in North Dakota.

Vantage submitted its application for a Certificate of Corridor Compatibility and Route Permit to the NDPSC in January 2012. On March 21, 2012, the NDPSC deemed the permit application complete and public hearings are pending.

1.8.2.9 Other State Agencies

During Project planning and preparation of this EA, other state agencies were consulted with by Vantage and/or the DOS. As listed in table 1.10-1 below, these other state agencies have responsibilities for state and local permits and authorizations. These include the NDHD, North Dakota Department of Game and Fish (NDGF), and the North Dakota SHPO. The NDHD would review and issue permits related to the hydrostatic testing, water quality, and construction stormwater activities associated with the Project. The NDGF was consulted to identify state-listed species of concern. The North Dakota SHPO was consulted to assist the DOS during the Section 106 process.

1.8.3 Indian Tribe Consultation

In its NOI to prepare an EA for the proposed Project, the DOS also presented its intent to conduct a parallel Section 106 consultation consistent with the NHPA. The DOS's NOI was issued on August 19, 2011 to known potentially affected Indian tribes to determine whether the tribes were interested in reviewing the proposed Project consistent with Section 106. Subsequently, the DOS issued government-to-government consultation letters to known potentially affected Indian tribes on December 16, 2011 to solicit comments on the Project and to request assistance in identifying properties or resources of traditional, religious, or cultural importance. In March 2012, the DOS hosted a conference call with interested tribes and hosted a meeting in North Dakota with interested tribes. As the lead federal agency for the proposed Project, the DOS is continuing to engage in consultation with identified consulting parties, including federal agencies, state agencies, North Dakota SHPO, the ACHP, and interested federally recognized Indian tribes (FR Volume 70, No. 226, page 71194) in the vicinity of the proposed Project.

Further discussion regarding tribal consultations is included in section 2.11.3.

1.9 ENVIRONMENTAL REVIEW OF CANADIAN PORTION OF THE PROJECT

The Canadian government has conducted its own environmental review of the portion of the Project in Canada. Consistent with EO 12114, the DOS is not preparing any environmental assessment of the impacts of the pipeline in Canada. Nevertheless, as a matter of policy, in addition to its environmental assessment of the Project in the United States, the DOS endeavors to monitor and obtain information, as appropriate, regarding the Project in Canada.

The Canadian process began on September 23, 2010 when Vantage submitted a Project Description to Canada's NEB. On February 8, 2011, Vantage submitted an application to the NEB for a Certificate of Public Convenience and Necessity for the proposed Project pursuant to Section 52 of the National Energy Board Act. On January 19, 2012, the NEB issued its Reasons for Decision for the Project and approved the Project.

1.10 PERMITS, APPROVALS, AND REGULATORY REQUIREMENTS

Table 1.10-1 lists the major permits, licenses, approvals, authorizations, and consultation requirements for the Project that would be required by federal, state, and local agencies prior to implementation of the Project.

1.11 ENVIRONMENTAL COMPLIANCE AND MITIGATION MONITORING

Vantage would be required to comply with the mitigation measures identified in its permit applications, as well as additional requirements of federal, state, and local agencies. Vantage would have two environmental inspectors (EIs) working during construction of the Project. It is anticipated that one EI would monitor general environmental issues and another EI would monitor for cultural resources, particularly during initial right-of-way stripping and trenching activities when the potential to encounter unanticipated cultural resources is possible. The EIs would be trained with respect to applicable guidelines such as wetland and waterbody construction and mitigation procedures.

Vantage would also provide for a Native American monitor during the excavation phases of pipeline construction and a wildlife biologist that would be onsite during critical time periods to address potential impacts on ground nesting birds and during whooping crane migration.

TABLE 1.10-1

Permits, Licenses, Approvals, and Consultation Requirements for the Vantage Pipeline Project

Agency	Permit or Consultation/Authority	Agency Action
FEDERAL		
U.S. Department of State	Presidential Permit, Executive Order 13337 of April 30, 2004 (69 Federal Register. 25299, et seq.)	Considers approval of cross-border facilities.
	National Environmental Policy Act	Lead federal agency for the environmental review of major projects considered for Presidential Permits.
	Section 106 of the National Historic Preservation Act (NHPA)	Supervises and coordinates compliance with Section 106 of NHPA and consultation with interested Tribal agencies.
U.S. Army Corps of Engineers	Section 404, Clean Water Act (CWA) - Nationwide Permit 12	Considers issuance of permits for the placement of dredge or fill material in Waters of the U.S., including wetlands.
U.S. Fish and Wildlife Service	Endangered Species Act, Section 7 Consultation	Considers lead agency findings of an impact of federally listed or proposed species; reviews Biological Assessment and, if the proposed Project is likely to adversely affect federally listed or proposed species or their habitats, Biological Opinion.
U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety	49 Code of Federal Regulations 195 – Transportation of Hazardous Liquids by Pipeline	Reviews design, construction, operations, maintenance, and emergency operations plan, inspection of pipeline projects, including Integrity Management Programs and identifying high consequence areas prior to installation.
U.S. Environmental Protection Agency, Region 8	Section 402, CWA, National Pollutant Discharge Elimination System (NPDES)	Has delegated its NPDES Program to the State of North Dakota.
Advisory Council on Historic Preservation	Consultation	Advises federal agencies during the Section 106 consultation process.
STATE OF NORTH DAKOTA		
Public Service Commission	Certificate of Corridor Compatibility and Route Permit	Considers the construction, operation, and maintenance impacts of a project.
Department of Health-Division of Water Quality	Pollution Discharge Elimination System General Permit for Temporary Dewatering, Hydrotest Water Discharge	Reviews and issues NPDES permit for the discharge of hydrostatic test water. Considers the potential for contribution to a violation of a water quality standard or potential for significant contribution of pollutants to Waters of the State.
	Pollution Discharge Elimination System General Permit for Temporary Dewatering, Trench and Well Point Dewatering Discharge	Considers the potential for contribution to a violation of a water quality standard or potential for significant contribution of pollutants to Waters of the State.
	General Permit for Construction Stormwater Discharge	Reviews and issues permit for the discharge of construction stormwater. Considers the potential for contribution to a violation of a water quality standard or potential for significant contribution of pollutants to Waters of the State.
North Dakota Department of Transportation	State Highway Crossing Permit	Reviews and authorizes the crossing of state highways.
BNSF Railway, Canadian Pacific Railroad	Railroad Crossing Permit	Reviews and authorizes the crossing of a railroad.
Department of Game and Fish	Endangered and threatened species consultation	Maintains list of Species of Conservation Priority, or those in greatest need of conservation in the state.
State Historical Preservation Office	Section 106 NHPA Consultation	Assists federal agencies during the Section 106 consultation process through identification, evaluation, protection, preservation, and development and/or mitigation efforts.
COUNTIES – NORTH DAKOTA		
Divide County	County Road Crossings	Reviews and authorizes the crossing of county roads.
Williams County	County Road Crossings	Reviews and authorizes the crossing of county roads.

Vantage would provide the EIs with copies of its final approved EPP and detailed alignment sheets. As discussed in section 1.6, the EPP includes mitigation plans for spill contingency, fire contingency, soil conditions, soil erosion, in-stream boring mud release, frozen conditions, sensitive plants, wildlife, wetland and water crossings, and cultural resources. The alignment sheets would identify locations of areas requiring specific mitigation measures and avoidance areas such as wetlands or cultural sites. The EIs would be provided copies of the Project-specific Stormwater Pollution Prevention Plan (SWPPP), Spill Prevention, Control and Countermeasure (SPCC) Plan, Emergency Response Plan, Cultural Resources Contingency Plan, stipulations resulting from Section 7 consultation, and other permitting requirements.

Vantage would also provide copies of its final approved EPP to its pipeline representatives and selected contractors, of whom the primary construction contractor would be responsible for implementing and following the requirements of the EPP, including all associated plans (see section 1.6). Vantage would also provide a construction line list to the contractor. The line list describes special pipeline construction requirements (e.g., soil salvage, seeding, road crossings, restoration measures, fencing requirements) and permit requirements and landowner stipulations.

The EI would have the authority to stop work to address issues related to environmental compliance. The EIs role and responsibilities would include environmental compliance inspection and reporting. The EI would be responsible to ensure that the requirements of the EPP are implemented. The EI would identify site-specific locations where implementation of mitigation measures identified in the EPP is required. In addition, the construction contractor would be required to comply with the EPP, permit stipulations, and requirements included in the line list, or take all appropriate precautions to protect livestock and crops affected by construction. It would be the contractor's role to implement any required corrective actions identified by the EI. Additionally, the contractor would not be provided the authority to make agreements with a landowner without approval from Vantage.

After construction, Vantage would conduct follow-up inspections of disturbed areas. For example, Vantage would conduct a post-construction soils assessment to visually inspect for vegetation issues such as invasive weed infestations, poor vegetation establishment, and reduced crop growth along the right-of-way. Vantage would also inspect waterbody crossings during post-construction reclamation soil and vegetation assessments to monitor for stability, erosion, invasive weed infestations, and vegetation cover.

Vantage's land reclamation and environmental impact monitoring would continue through 2013.

1.12 OPERATION, MAINTENANCE, AND SAFETY CONTROLS

Vantage's pipeline facilities would be operated and maintained consistent with minimum federal safety standards, 49 CFR 195. Operation and maintenance of the Project facilities would be performed by or at the direction of Vantage. Vantage anticipates that operation of the pipeline would require two to three new permanent employees.

The pipeline would be inspected periodically from the air and on foot as operating conditions permit, but no less frequently than as required by applicable regulatory requirements. These surveillance activities would provide information on possible encroachments and nearby construction activities, erosion, exposed pipe, and other potential concerns that may affect the safety and operation of the pipeline.

Vantage employees would undergo safety training and access to aboveground facilities would be maintained to prevent unauthorized access. Accessibility to the right-of-way to accommodate pipeline

integrity surveys would be accomplished by periodically clearing woody vegetation along the pipeline right-of-way. Cultivated croplands (such as wheat, peas, and sunflowers) would be allowed to grow in the permanent right-of-way; however, large trees would be removed from the permanent right-of-way.

As required by PHMSA and federal regulations (49 CFR 195), Vantage would develop an Emergency Response Plan detailing the actions to be taken in an emergency response in order to minimize health and safety risks in the event a rupture were to occur.

1.13 FUTURE PLANS AND ABANDONMENT

Vantage has not announced any plans for future facilities or facility abandonment. If Vantage were to construct new or additional facilities, or abandon the Project, these facilities would be subject to applicable federal, state, and local regulations.

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APPENDIX A

FACILITY LOCATION MAPS


Milepost
Proposed Vantage Pipeline
Proposed Contractor Yard
0
1,000
2,000
Feet
1 inch = 2,000 feet
N
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Vantage Pipeline Project
Williams County
North Dakota
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Block Valve 0
Tioga
(BM 2238)
Williams County,
North Dakota
Tioga Dam
Bakken Cem
Gravel Pit
Hospital
Substation
Gas Processing Plant
Flowing Well
Park
Eastside Cem
Hillside Cem
United Cem
Sew Disp Pond
Municipal Airport
PIPELINE
BURLINGTON
NORTHERN
WILLIAMS CO
MOUNTRAIL CO
WHITEARTH



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Vantage Pipeline Project
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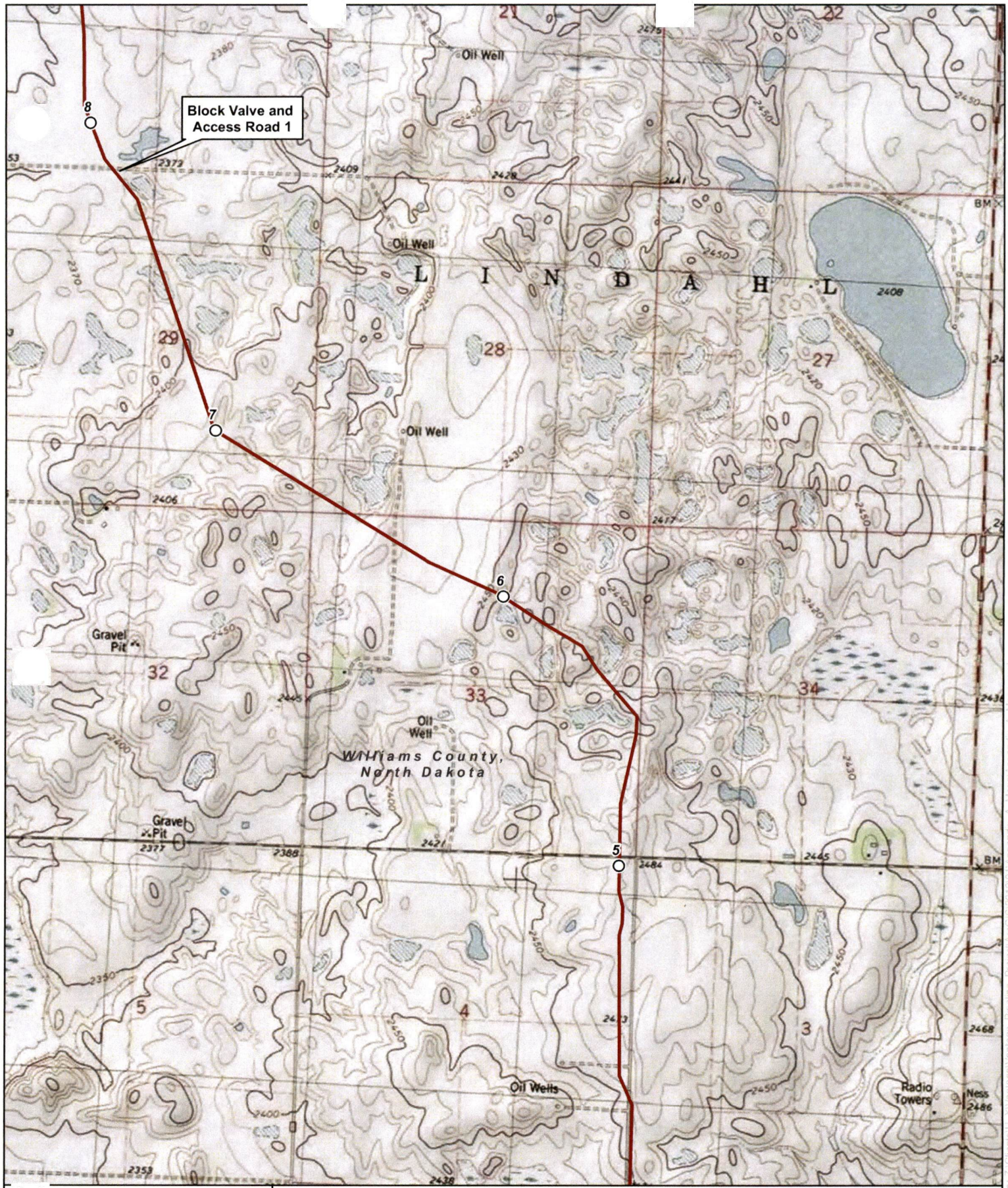

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Vantage Pipeline Project

Williams County
North Dakota

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Date: 1/26/2012



Milepost

Proposed Vantage Pipeline

Proposed Contractor Yard

0 1,000 2,000 Feet

1 inch = 2,000 feet

N

Appendix A

Vantage Pipeline Project

Williams County

North Dakota

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Milepost
Proposed Vantage Pipeline
Proposed Contractor Yard

0 1,000 2,000 Feet
1 inch = 2,000 feet

Appendix A
Vantage Pipeline Project
Williams County
North Dakota

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Vantage Pipeline Project
Williams County
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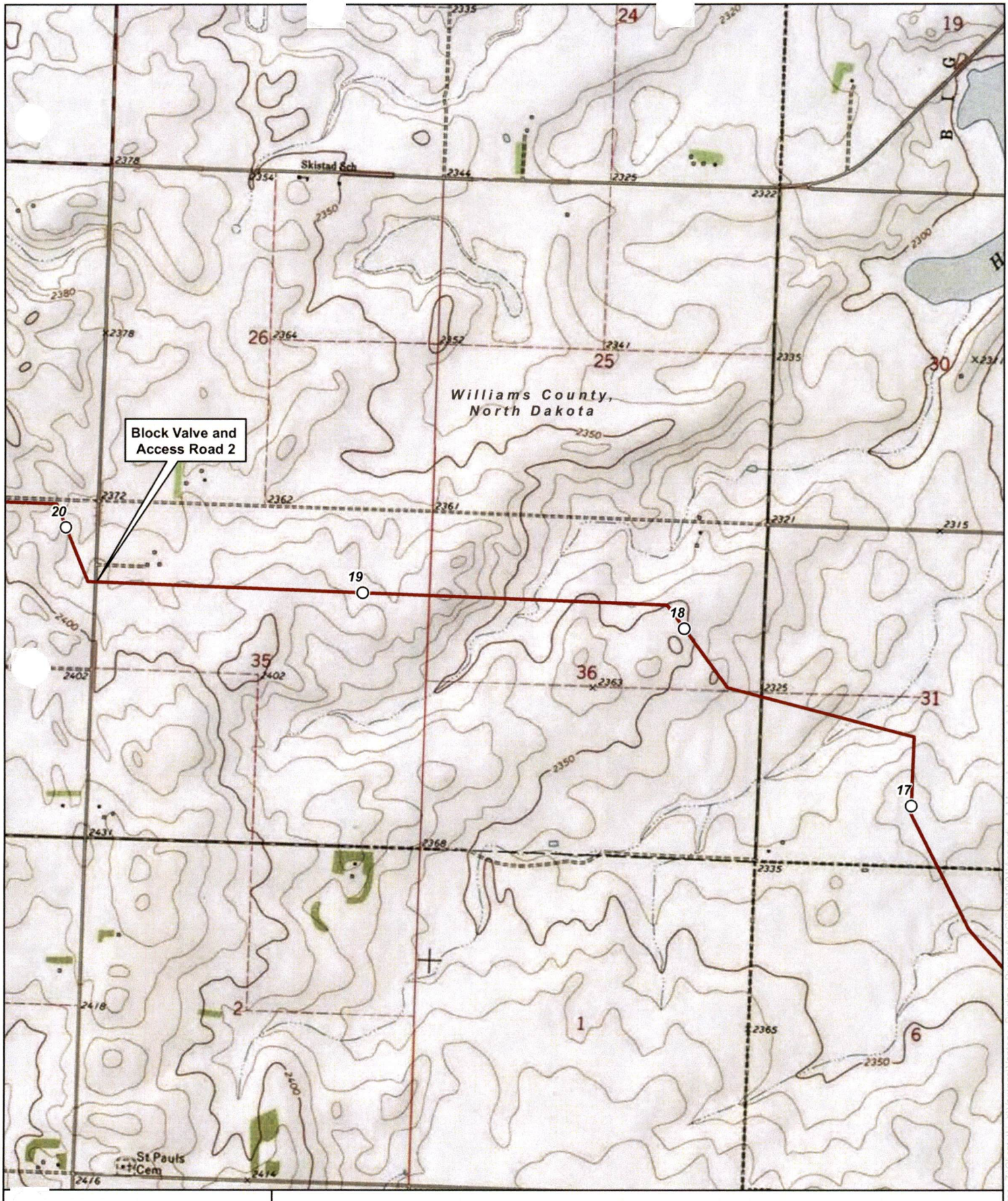

Appendix A
Vantage Pipeline Project
Williams County
North Dakota

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Vantage Pipeline Project
Williams County
North Dakota



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Milepost

Proposed Vantage Pipeline

Proposed Contractor Yard

0 1,000 2,000 Feet

1 inch = 2,000 feet

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Vantage Pipeline Project

Williams County

North Dakota

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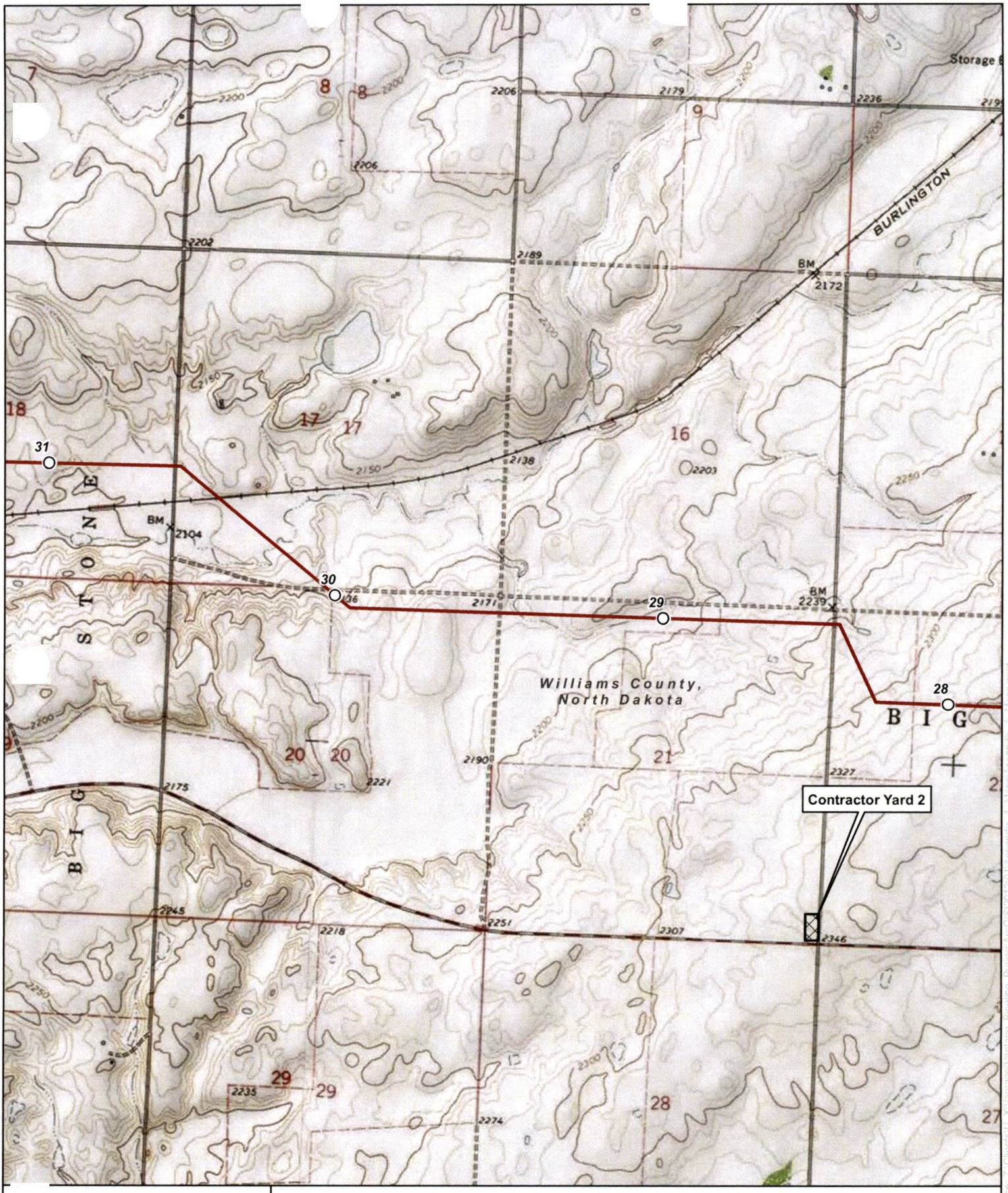

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North Dakota

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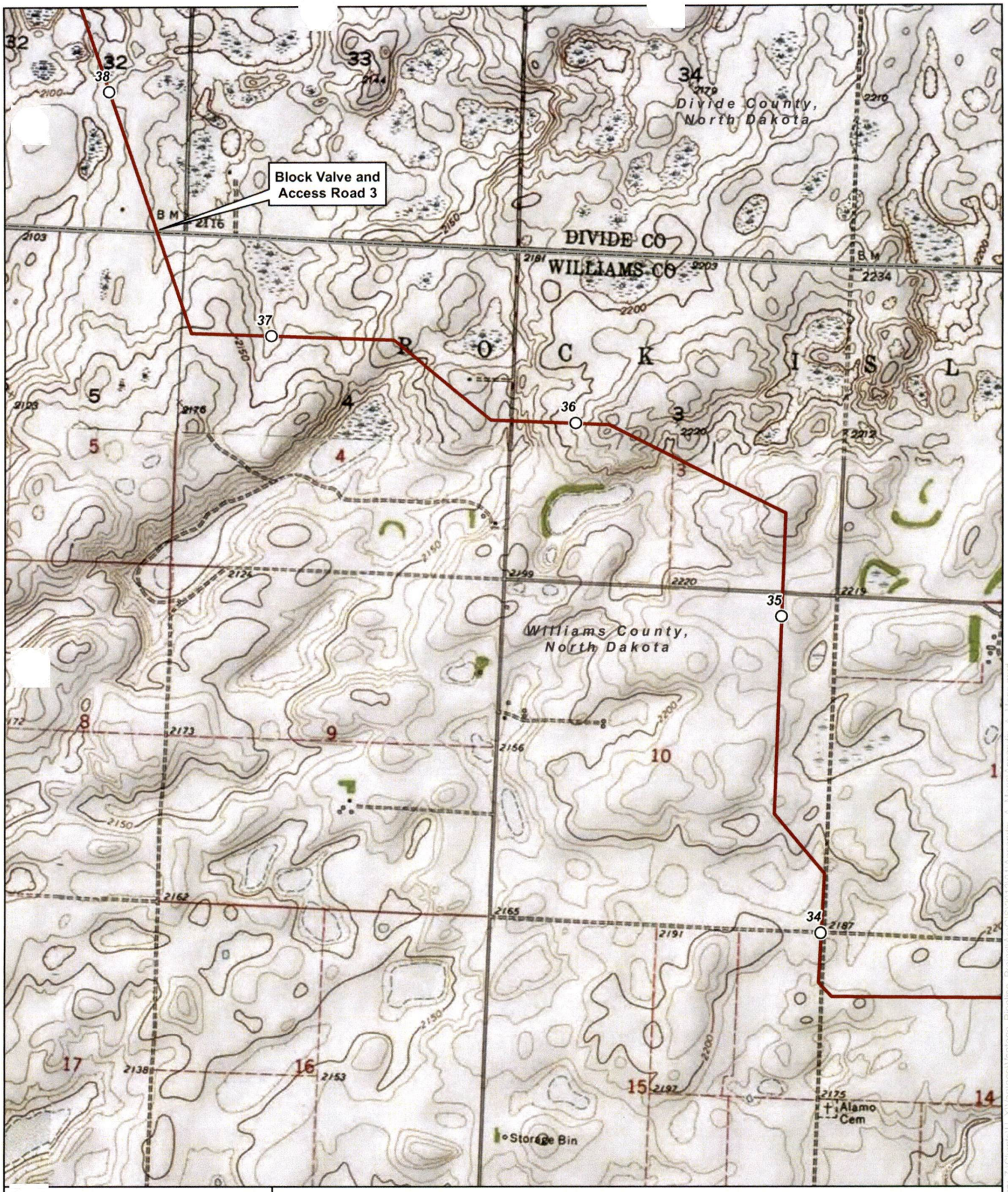

Appendix A

Vantage Pipeline Project

Williams and Divide Counties
North Dakota

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Vantage Pipeline Project

Williams and Divide Counties
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Date: 1/26/2012



Milepost

Proposed Vantage Pipeline

Proposed Contractor Yard

N

0 1,000 2,000 Feet

1 inch = 2,000 feet

Appendix A

Vantage Pipeline Project

Divide County

North Dakota

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Milepost
Proposed Vantage Pipeline
Proposed Contractor Yard
0 1,000 2,000
Feet
1 inch = 2,000 feet
N
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Contractor Yard 4
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CLINTON
Divide County,
North Dakota
Trailer Park
Water Tank
Well
LINE
SOO



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Appendix A

Vantage Pipeline Project

Divide County
North Dakota

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Date: 1/26/2012

APPENDIX B

BIOLOGICAL ASSESSMENT
(INCLUDING WETLAND ASSESSMENT REPORT)

Biological Assessment

for the

Vantage Pipeline Project

Date: May 3, 2012

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EXECUTIVE SUMMARY

This Biological Assessment (BA) has been prepared for the Vantage Pipeline Project (Project) consistent with the federal Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 *et seq.*), in particular consistent with Section 7 of the Act requiring that federal agencies ensure that any actions authorized, funded, or carried out by them is not likely to jeopardize the continued existence of listed species or their critical habitats. The BA was prepared under the advisement and direction of the North Dakota Ecological Services Field Office of the U.S. Fish and Wildlife Service (FWS) Mountain-Prairie Region (Region 6), and in response to a FWS letter to the U.S. Department of State (DOS) dated September 22, 2011 requesting that the DOS, as the lead federal agency, or its designated non-federal agent, make a determination of the proposed projects' effects on listed species, including whether there is anticipated destruction or adverse modification of designated critical habitat, and identify these determinations in a BA of effects to federally listed species. In a letter dated December 16, 2011, the DOS requested that the FWS recognize Vantage Pipeline US LP (Vantage) and its consultants as the DOS's designated non-federal representatives for informal Section 7 consultation for the Project. Since that time, the DOS, FWS, and Vantage have worked together to finalize the BA. This BA has been reviewed and revised substantially by the DOS in response to discussions, additional reviews, and comments from the FWS and Vantage consistent with Section 7(c) of the ESA.

The analyses provided in the BA address occurrences of federally threatened, endangered, candidate species, and critical habitat. Analysis typically involved consultation with the FWS and North Dakota Game and Fish Department (NDGF), field surveys and assessments, and siting-related planning to avoid impacts on these resources. This BA addresses the results of the analyses and FWS consultation, the condition of the species or resource, and anticipated Project effects on resources, species, and habitats. Proposed mitigation measures are also addressed. The following species listed under the ESA are known to potentially occur in the Project area based on DOS and Vantage's informal consultations with the FWS, along with each species' status and recommended Project determinations:

Species: Common name - *scientific name*	Federal Status	Effect Determination
Piping plover - *Charadrius melodus* (Great Plains population)	Threatened	"may affect, but not likely to adversely affect" (MANLAA)
Whooping crane - *Grus americana*	Endangered	MANLAA
Gray wolf - *Canis lupus*	Endangered	MANLAA
Pallid sturgeon - *Scaphirhynchus albus*	Endangered	MANLAA
Interior least tern - *Sterna antillarum athaloassos*	Endangered	MANLAA
Sprague's pipit - *Anthus spragueii*	Candidate	MANLAA
Critical Habitat for the piping plover	Endangered	MANLAA

As a result of the analyses, informal consultation between the DOS, FWS, and Vantage, and Vantage's proposed mitigation, a *"may affect, but not likely to adversely affect"* determination is recommended for the federally listed piping plover, whooping crane, gray wolf, pallid sturgeon, least interior tern, Sprague's pipit, and designated piping plover Critical Habitat. This recommendation is based on an assessment of the resource, the biology of the species, the impact avoidance and minimization measures, and construction and operations mitigation measures proposed by Vantage.

1.0 INTRODUCTION

1.1 Background

This Biological Assessment (BA) has been prepared for the Vantage Pipeline Project (Project) consistent with the federal Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 *et seq.*), in particular consistent with Section 7 of the Act requiring that federal agencies ensure that any actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of listed species or their critical habitats. The BA was prepared in consultation with and under the advisement and direction of the North Dakota Ecological Services Field Office of the U.S. Fish and Wildlife Service (FWS) Mountain-Prairie Region (Region 6).

In late 2011, Vantage Pipeline US LP (Vantage) applied to the Department of State (DOS) for a Presidential Permit for the construction, operation, and maintenance of a pipeline facility on the United States-Canada border. The DOS considers applications for Presidential Permits for facilities such as pipelines pursuant to the authority delegated to it by the President of the United States under Executive Order 13337, as amended (69 Federal Register 25299). As designated by Executive Order 13337, the DOS is the lead federal agency for the Project consistent with the requirements of the National Environmental Policy Act (NEPA). The DOS has determined that issuance of a Presidential Permit for the proposed Project would necessitate the preparation of an Environmental Assessment (EA) for the United States portion of the project providing sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact consistent with NEPA (42 U.S.C. 4321 et seq.). As such, the DOS consulted with federal, state, and local agencies, Native American tribes, landowners, and other parties to identify issues during their NEPA review of the Project.

In a letter to the DOS dated September 22, 2011, the FWS requested that the DOS, as the lead federal agency, or its designated non-federal agent, make a determination of the proposed Project's effects on listed species, including whether there is anticipated destruction or adverse modification of designated critical habitat, and identify these determinations in a BA of effects to federally listed species. In a letter dated December 16, 2011, the DOS requested that the FWS recognize Vantage and its consultants (i.e., KC Harvey) as the DOS's designated non-federal representatives for informal Section 7 consultation for the Project. Since that time, the DOS, FWS, and Vantage have worked together to finalize the BA. This BA has been reviewed and revised substantially by the DOS in response to discussions, additional reviews, and comments from the FWS and Vantage consistent with Section 7(c) of the ESA.

In addition to the DOS's activities, Vantage conducted early agency coordination with the FWS and other federal and state agencies at a kick-off meeting in Bismarck, North Dakota in August 2010. The agency meeting was attended by the representatives from: Vantage, KC Harvey Environmental LLC, Ethnoscience Incorporated, the North Dakota Ecological Field Office of the FWS, the North Dakota Regulatory Office of the U.S. Army Corps of Engineers (USACE), the North Dakota Game and Fish Department (NDGF), North Dakota Health Department, and the North Dakota State Historic Preservation Office. Soon after, the FWS provided a comment letter dated October 1, 2010, addressing its jurisdictional involvement and coordination for the Project, including for the ESA. Attached to the letter was a listing of federally threatened, endangered, and candidate species, as well as any critical habitat occurrences in the two Project counties (Williams and Divide). The species listed in this letter were also included in a letter to DOS dated September 22, 2011 from the FWS and were verified by the DOS as potentially occurring in the Project area based on a review of the FWS's website (FWS, 2012). Numerous phone contacts with the FWS were also conducted by Vantage during Project planning in regards to FWS wetland easements and refuge parcels, migratory birds, and listed species.

The information presented in this BA is specific to impacts on federally listed species. It is supported by information presented in the EA, which is referenced throughout. The EA provides a detailed discussion of the Project, alternatives, and Project-related impacts on other environmental resources.

1.2 Project Purpose and Need

The purpose of the Project is to transport liquid ethane from the Hess Corporation's (Hess) natural gas processing plant in Tioga, North Dakota, to the Alberta Ethane Gathering System (AEGS) in Alberta, Canada. Vantage submits that the Project would benefit the nation by providing the oil and gas producing Bakken Formation region of North Dakota with access to the existing ethane AEGS infrastructure and market in Alberta. Currently no market exists for petrochemical grade (also known as "specification" or "pure grade") ethane in North Dakota; however, the construction of the Project would make it feasible to extract the ethane byproduct from North Dakota-produced natural gas and export it for use in the Canadian petrochemical industry. Vantage maintains that the pipeline would enhance exports from the United States, consistent with national policy, and allow U.S. natural gas producers to recognize additional revenue from an existing resource, and contribute to the national economy in terms of jobs and tax payments.

1.3 Project Description and Location

Vantage Pipeline Canada, ULC and Vantage is proposing the construction of a new pipeline in North Dakota, United States, and Saskatchewan and Alberta, Canada to transport ethane from the Williston Basin in North Dakota to the petrochemical industry in Alberta. The U.S. segment of the Project is shown on **Figure 1**. The overall Vantage pipeline would transport ethane from Hess's existing Tioga Gas Plant near Tioga, North Dakota to an existing pipeline, the AEGS, near Empress Alberta. AEGS would transport the ethane to NOVA's Joffre Petrochemical Complex. The proposed Vantage pipeline in Canada and the United States would require construction and operation of:

- approximately 79.8 miles of new 10-inch-diameter underground high vapor pressure (HVP) pipeline on Vantage right-of-way from near Tioga, North Dakota to an international border crossing near Beaubier, Saskatchewan;
- approximately 350 miles of new 10-inch-diameter underground HVP pipeline on Vantage right-of-way from the United States-Canada border extending northwest near the junction of the North Dakota-Montana-Canada borders through Saskatchewan to the Saskatchewan-Alberta border;
- approximately 2 miles of new 10-inch-diameter underground HVP pipeline on Vantage Pipeline right-of-way from the Saskatchewan-Alberta border to an area near McNeil, Alberta;
- two new pump stations: one located at the midpoint of the pipeline between Lafleche and Assiniboia, Saskatchewan, and a second located near Empress, Alberta;
- mainline valve (MLBV) sites, which would include eight locations along the U.S. portion of the pipeline route as listed in table 1.4.2-1 in the EA;
- in-line inspection facilities;
- a cathodic protection system;

- a supervisory control and data acquisition (SCADA) system; and
- associated miscellaneous works such as pipeline warning signs and markers.

Canadian National Energy Board approval for the Canadian portion of the Vantage pipeline was granted on January 19, 2012.

This BA is specific to the U.S. portion of the Project, which would cross portions of Williams and Divide Counties, North Dakota as listed in **Table 1**.

Table 1. Location and Length of the Vantage Pipeline Route

County, State	Mileposts	Pipeline Length (miles)
Williams County, ND	0 to 37.5	37.5
Divide County, ND	37.5 to 79.8	42.3

1.3.1 Connected Actions

Heater

Hess Corporation (Hess) is expanding its existing Tioga Gas Plant in Tioga, North Dakota by installing a new, 21-acre gas processing plant adjacent to the existing gas processing plant on land owned by Hess. As described in Hess' permit application materials to the North Dakota Public Service Commission (NDPSC) (discussed further below), the existing Tioga Gas Plant has been operational since the 1950s and primarily serves to separate out natural gas liquids and other impurities from methane collected from production wells in the Tioga, North Dakota area before it can be used as a fuel. Once all of the impurities are removed, the resulting purified methane is transported via existing pipelines to markets in the east and south.

The current gas processing technique conducted at Hess' Tioga Gas Plant is called a refrigerated lean oil fractionation. Hess has proposed to change the processing technique from lean oil fractionation to a cryogenic turboexpander process. To accommodate the conversion, Hess would expand the existing gas plant footprint and construct new underground piping and above-ground gas processing facilities. The proposed gas plant expansion would produce the same products as it currently does, including pipeline grade natural gas, propane, butane, natural gasoline, and molten sulfur. Ethane would be an additional product that is either separated during ethane recovery or would be combined with the natural gas during ethane rejection. In addition to the processing plant expansion, approximately 4 miles of four pipelines (one 8-inch-diameter and three 6-inch-diameter) would also be constructed by Hess from the plant to a rail terminal currently in construction. The rail terminal is located on the west side of Tioga, North Dakota. The rail terminal would be designed to load 1.3 million gallons of liquefied product per day.

Activities at the Tioga Gas Plant are under the jurisdiction of the NDPSC. On April 13, 2010, Hess filed with the NDPSC a letter of intent to construct an addition to the existing Tioga Gas Plant and, on June 25, 2010, Hess filed its application for a Certificate of Site Compatibility for the Tioga Gas Plant Expansion Project. The application included a summary of biological field surveys (e.g., wetlands, wildlife), threatened and endangered species review, and consultations with state and federal agencies. As committed to in its Certificate of Site Compatibility, Hess would obtain the necessary licenses and permits. On September 8, 2010, the NDPSC released its Finding of Facts, Conclusions of Law, and Order, which approved of the plant expansion and ordered issuance of a Certificate of Site Compatibility.

Expansion of the existing plant has been on-going since October 2010 and the new expanded facilities are expected to be in service by the end of 2012.

The DOS has determined that the Tioga Gas Plant modifications would be an independent action and the only component of the Hess facility modification that is specifically related to allowing for ethane recovery required for Vantage's Project is the operation of a heater. Therefore, the impacts resulting from operation of the heater are a connected action for the purposes of this review consistent with NEPA and 40 Code of Federal Regulations (CFR) 1508.25(a)(1). Section 2.12 of the EA describes the connected action (i.e., heater) and the associated additional air and carbon dioxide emissions. Any other significant impact resulting from the proposed Project in addition to the ongoing Hess activities has been summarized in section 2.15 of the EA.

Electric Transmission Lines and Interconnections

Electrical service requirements for the proposed Project include utilizing existing electric transmission lines and constructing new electric transmission interconnections to the MLBVs. Because local electrical power providers, not Vantage, would be constructing and operating the electric transmission lines, the local utilities (Mountrail Williams and Burke Divide Electric) would be responsible for obtaining any necessary approvals or authorizations from federal, state, and local governments. While the permitting for the electrical facilities is independent from the Presidential Permit process, the construction and operation of these electric transmission lines are considered connected actions consistent with NEPA and, therefore, are evaluated within the EA for the proposed Project.

Vantage anticipates that the new interconnections would be constructed below ground, and that electric power requirements for eight MLBVs would be approximately 10 kilowatts per MLBV site and may be supplied from distribution service interconnects from proximate existing distribution lines (i.e., distribution lines with voltage ranging between 12.5 kilovolts to 25 kilovolts). Vantage has attempted to locate the proposed MLBVs near existing electric power lines. Accordingly, the length of these proposed new below-ground interconnections would range in length between approximately 25 feet to 1 mile. Each of these new interconnecting lines would require the installation of new underground transmission cable. The new electric transmission interconnection lines would be located entirely on private land.

In the event power cannot be provided to an individual MLBV by the local power companies or is uneconomic, Vantage would use solar photo-voltaic panel technology at the MLBVs that would eliminate the need for electric transmission interconnections at these MLBV sites.

The transmission interconnection facilities would be installed below ground and, thus, the construction process would be broadly similar to that of pipeline construction: right-of-way acquisition; right-of-way clearing; construction, including excavating a narrow trench, installing the electric transmission line, and backfilling; and site restoration and cleanup. Utilities installing the transmission lines would be expected to restore the work area as required on completion of the new interconnect in accordance with local standards. The soil in the disturbed areas would be reshaped and contoured to its original condition. Reseeding would follow landowner requirements. All construction debris and other remaining materials would be removed from the construction areas and properly disposed. The construction right-of-way width for these facilities is currently unknown and actual electrical line construction procedures would be developed by each local electric utility to address site-specific conditions. The electric utilities would obtain any necessary easements and permits required to install the facilities.

Construction and operation impacts on soils, vegetation, and land uses associated with the interconnects are expected to be temporary, minor, and comparable to those associated with supplying

electricity to the average home or farm. Although the construction right-of-way width for these facilities is currently unknown, it is anticipated that the construction and operation impacts on soils, vegetation, and land uses associated with these facilities would be lesser than those associated with pipeline construction described in this EA because the interconnects would have a narrow diameter, can be installed with minor disturbance to the land, and would affect a smaller area than that required for pipeline installation. Construction of the interconnects would have a temporary and relatively minor impact on agricultural land or grassland, and these land uses would be allowed to revert to previous conditions following construction. Based on the proximity of the proposed MLBV sites to existing electric power lines, it is anticipated that no wetlands or waterbodies would be affected by new electric transmission line construction and operation. Further, because the electrical lines would be installed underground, there would be no potential flight collision risks to birds and other wildlife (e.g., bats). While the new electric transmission interconnections would overlap in space and time with the Project, and could act cumulatively with the other activities in the area, the amount of surface disturbance caused by powerline construction is anticipated to be negligible compared to other development projects discussed in section 2.15 of the EA. Further, it is anticipated that the electric utilities would use best management practices (BMPs) to install the facilities and be subject to permits requirements that would, if necessary, mitigate for potential impacts on environmental resources.

1.4 Alternatives

In developing its pipeline route, Vantage studied a variety of alternatives for routing the proposed pipeline facilities. The DOS further considered the No Action Alternative; System Alternatives; two potential Alternative Routes; two potential Route Variations; and Alternative MLBV Locations based on information provided in Vantage's Presidential Permit application and supplemental submittals related to the application, comments received in the scoping process, and information obtained from research of relevant available information conducted by the DOS and its third-party contractor.

Section 3.0 of the EA provides a more detailed description of the alternatives considered for the Project. The effects and mitigation presented in this BA is relevant to the agency-preferred route (**Figure 2**) identified in the EA.

1.5 Project Construction and Operation

The following sections describe the proposed Project construction and operations for the U.S. portion of the Project.

1.5.1 Project Construction

Vantage proposes to begin construction of the Project in late 2012. Construction would occur over approximately 6 months, with an in-service date of on or before April 1, 2013.

Construction of the proposed pipeline would require a 70-foot-wide construction right-of-way to allow for temporary storage of topsoil and spoil and to accommodate safe operation of construction equipment. The spoil side (i.e., topsoil and ditch spoil stockpile area) would typically be 25 feet wide and generally located partially within the existing maintained right-of-way. The working side (i.e., equipment work area and travel lane) would typically be 45 feet wide and generally located outside the existing maintained right-of-way. Following construction, Vantage would maintain a 30-foot-wide permanent right-of-way for operation of the pipeline.

During construction, Vantage would temporarily use off-right-of-way areas for pipe and materials storage. In addition, construction contractors would require off-right-of-way areas to park equipment and

stage construction activities. To minimize environmental and new right-of-way impacts, these areas would be located within previously developed parcels (i.e., farmsteads).

Public roads would typically be used to gain access to the construction right-of-way. In areas where public roads are limited, existing privately owned roads may be used to provide access to the construction right-of-way. If neither public nor privately owned roads are available, Vantage may need to construct new access roads, which would require landowner permission and environmental surveys prior to construction. To date, Vantage has identified seven new roads to access the MLBVs as necessary for the Project, which are listed in table 1.4.3-1 of the EA

Clearing and Grading

Vantage would clear the 70-foot-wide construction right-of-way and temporary work spaces. The clear width is being narrowed to minimize impacts on sensitive locations in accordance with the Environmental Protection Plan (EPP) that would be established for the Project.[1] Following clearing, grading of the ground surface is proposed to provide a relatively smooth working surface and a safe working area. An undisturbed 10-foot-wide buffer would be at waterbody crossings except where grading is needed for bridge installation.

Following clearing and grading, temporary bridges are proposed at waterbodies, except for drainage ditches, intermittent waterbodies, and other non-fisheries waters to provide temporary access for equipment traveling along the construction right-of-way. In addition, temporary erosion control measures would be installed in accordance with National Pollutant Discharge Elimination System (NPDES) permit requirements and BMPs.

Topsoil Stripping

Topsoil would be stripped and segregated in agricultural areas, cropland, hayfields, pasture, and unavoidable native grasslands. Topsoil stockpiling and replacement would be addressed in the EPP.

Pipe Assembly

Before excavating pipeline trenches, individual joints of pipe would be strung along the construction right-of-way and arranged to be accessible to construction personnel. Small portable cranes and/or side-boom tractors would be used to unload the stringing trucks and place pipe along the right-of-way. After stringing and bending are complete, pipe sections would be aligned, welded together, and placed on temporary supports along the edge of the trench.

Trenching

Backhoes and/or ditching machines would be used to excavate trenches with a minimum 4 feet of cover for normal excavations and 18 to 30 inches of cover in rocky areas. In unstable and saturated soils, trenches may be wider.

Where trench dewatering is needed, water would be discharged in accordance with requirements for the temporary discharge permit issued by the North Dakota Department of Health – Division of Water Quality. NPDES BMPs would be used to mitigate potential for erosion and sediment discharge.

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[1] The EPP has not been included as an attachment to this BA. However, a draft copy provided by Vantage is available for review on the DOS's website for the Project at: http://www.vantagepipeline.state.gov/. See Vantage Documents and "Environmental Data Provided by Vantage in Support of an Application for a Presidential Permit (March 2011)."

Lowering-in and Backfilling

The pipe would be lowered into the trench by side-boom tractors. Backfilling would consist of replacing the material excavated from the trench to the approximate ground surface elevation. In areas where topsoil has been segregated, subsoil would be replaced first, and topsoil would be spread uniformly on top. Directly above the pipeline, an excess of soil or "crown" would be placed to allow for future settling.

Hydrostatic Testing

After backfilling, the pipeline would be hydrostatically tested in accordance with state and federal regulations to ensure that there are no leaks in the pipeline and that the system is capable of operating at the design pressure.

Water withdrawals used to fill and test the pipelines would be consistent with applicable regulations, and would be obtained from municipal or private sources along the pipeline route.

Post-Construction Reclamation and Restoration

After the backfilling is completed, Vantage would re-grade and restore work areas as nearly as practicable to the original contour of the land. Topsoil would be redistributed over areas from which it was originally removed. Permanent soil stabilization efforts would primarily include revegetation of the right-of-way, including with diverse, local genotyped, and weed free certified native prairie seed mixes in grasslands. Certification is provided by the seed supplier and transferred through a chain of custody to the grower. Weed free certification is regulated by the U.S. Department of Agriculture (USDA) and State of North Dakota.

Following installation and final cleanup, original grade and contours would be restored to the extent practicable and permanent erosion controls would be installed. Disturbed areas would be revegetated in accordance with the EPP, other permit requirements, and site-specific landowner requests. As discussed in the EPP, Vantage would visually inspect the right-of-way for vegetation issues such as invasive weed infestations, poor vegetation establishment, and reduced crop growth along the right-of-way following construction. Particular attention would be paid to areas with extensive surface disturbance, moderate to steep slopes, watercourse and wetlands crossings, and areas of terrain instability that may be prone to erosion. Detailed vegetation assessments would be conducted, if warranted, at sites where reclamation problems are identified and Vantage would implement mitigation measures as soon as feasible.

Waterbody Crossings

In Divide and Williams Counties (the entire U.S. portion), the proposed Project would avoid perennial streams and not cross any navigable waters; therefore, a River and Harbors Act Section 10 permit would not be required. Further, the Project would not affect any streams or drainages within 1 stream mile of Lake Sakakawea or the Missouri River. In several locations the alignment would cross ephemeral or intermittent streams. These areas exhibit flow primarily during periods of snowmelt and rainfall, but are more characteristic of wetlands. As such, intermittent and ephemeral drainages affected by the Project were identified as wetlands.

Vantage would clear existing vegetation from the construction right-of-way as necessary to prepare for grading operations. A 10-foot buffer of undisturbed vegetation less would be maintained at streams and approaches to wetlands.

Wetland Construction

Wetlands along the pipeline route were mapped using the National Wetland Inventory (NWI) and field surveying by wetland scientists during the growing season in 2010 and 2011 followed with digitization on a Geographic Information System (GIS) database. Due to the relatively flexible and small diameter of the proposed pipeline, wetlands were avoided to the greatest extent practicable. The NWI was first used during preliminary route planning and alternative analysis, and then followed with further avoidance and minimization through the field survey (see Wetland Assessment Report in **Appendix B**) following the parameters defined *Corps of Engineers Wetland Delineation Manual* (USACE, 1987).

An agency early coordination/kick-off meeting was held with state and federal agencies in August 2010, including with staff from the Regulatory Branch of the Omaha District of the USACE. The USACE informed the Project that given the lack of anticipated permanent dredge and fill impacts (all Project wetland impacts would be temporary) and navigable water crossings, and ease of implementation of wetland impact avoidance and minimization, an Individual Permit would not be required. The Project would be subject to a Nationwide Permit No. 12 (NWP-12) assuming that the Project would not adversely affect federally regulated species, cultural/historic resources, or other federally protected issues. Furthermore, subsequent discussions with the USACE confirmed that the Project does not meet the conditions requiring pre-construction notification under NWP-12.

Approximately 201 wetlands are present within the 500 foot Project corridor study area (see Table 2); however, by implementing minor route realignments of the pipeline within the 500-foot-wide study corridor, Vantage was able to avoid all but 13 wetland areas. To further minimize disturbance to the wetlands, Vantage would install the pipeline beneath the wetland areas using the horizontal bore method, a technique that avoids dredge and fill impacts. Additional measures to protect wetland areas include retaining a buffer of undisturbed vegetative cover between horizontal bore operations and the wetland boundary, and all bore workspaces would be subject to water quality BMPs and erosion control required under the NPDES permit. Workspaces in the upland areas would be restored at the same time as the right-of-way.

Table 2. Wetlands by Type within the Project Area (500-foot Corridor) [a]

CLASSIFICATION		WETLANDS OBSERVED	
Wetlands of the United States, Circular 39[b]	Classification of Wetlands and Deepwater Habitats of the United States[c]	Number	Area (acres)
1	PEMA	25	5.18
1/2	PAMA/B	1	0.50
2	PEMB	101	40.90
2/3	PEMB/C	40	28.10
2/5	PEMB/PUBx	1	0.12
3	PEMC	20	13.21
3/4	PEMC/F	8	8.38
4	PEMF	2	2.10
4/5	PEMF/ PUB	1	0.21
5	PUB	1	3.59
6	PSS1B	1	0.08
Totals		201	102.36

NOTES:

[a] Includes only wetland area within the 500-foot pipeline corridor. Actual wetland boundaries may extend past the Project limits and may be larger than indicated.

[b] *Wetlands of the United States, Circular 39.* (Shaw and Fredine, United States Fish and Wildlife Service, 1956)

[c] *Classification of Wetlands and Deepwater Habitats of the United States.* (Cowardin *et al.*, December 1979)

Inadvertent releases (i.e., leaks or "frac out") of drilling fluid, a mixture of water and non-toxic bentonite clay used in the horizontal bore process, are not expected. Inadvertent releases typically occur where the overburden is thin, unconsolidated or porous. Most of the pothole wetland basins in the region are immediately underlain by clay hardpans and soils in the region are dense glacial tills which reduce the risk for inadvertent leaks. Horizontal borings would be inspected by environmental monitors during construction and after construction following the monitoring and construction protocols established in the EPP. If a leak or "frac out" is detected, the boring operation would cease and evaluated for drilling an alternate boring path at the location to avoid the wetland. If a horizontal bore is not possible, the wetlands would be evaluated for open-cut trenching, which would optimally occur during the winter to reduce impacts.

Open-cut trench wetland soils would be stockpiled and replaced after completion. Open-cut trenched wetlands would be subject to post-construction monitoring for recovery following the terms defined in the EPP. All open-cut trenches in wetlands would be considered temporary impacts and not subject to dredge and fill permitting requirements of Section 404. The above-mentioned Section 404 conditions apply to all open cut trench worse case scenarios where horizontal boring is not possible. According to Vantage, the potential for an open-cut trench in wetlands is very rare as there is little to no near surface bedrock in the Project area. Most of the Project area subsoils are deep glacial tills extending to 500 feet below ground surface.

1.5.2 Operations and Maintenance

Vantage would operate and maintain the Project facilities in accordance with the Pipeline and Hazardous Materials Safety Administration's (PHSMA) regulations applicable to the transportation of hazardous liquids by pipeline found at 49 CFR Part 195, as well as other applicable federal and state regulations. During normal operations and routine maintenance, the pipeline would be inspected periodically from the air and on foot as operating conditions permit but no less frequently than as required by 49 CFR Part 195. These surveillance activities would provide information on possible encroachments and nearby construction activities, erosion, exposed pipe, and other potential concerns that may affect the safety and operation of the pipeline.

Cultivated croplands, pasture lands, and native grassland cover would be allowed to grow in the permanent right-of-way.

In accordance with federal requirements a Health and Safety Plan (HASP) would be developed with emergency contingencies in the case of a pipeline accident.[2] Contingencies in the HASP would include operational and emergency response protocols that would be followed in the case of a pipeline leak, rupture, or failure. The HASP would include Occupational Health and Safety (OSHA) required hazardous materials procedures and risks assessments related to ethane, high pressure, human health, combustion and explosives, natural disasters, and other required items. The HASP would serve as the primary guiding document for addressing risks and response contingencies related to minimizing impacts on federally protected species and their habitats.

This BA includes a discussion of the worst-case scenario impacts on each species and/or critical habitat that may result from an inadvertent leak of the pipeline during operations.

[2] The HASP would be prepared by the construction contractor immediately prior to construction.

1.5.3 Cumulative Effects

The past, present, and reasonably foreseeable Projects or activities evaluated for cumulative impacts are listed in **Table 3**.

Table 3. Past, Present, and Reasonably Foreseeable Projects or Activities Evaluated for Cumulative Impacts [a]

Project/Activity	Description	Estimated Construction Dates	Location Relative to the Vantage Pipeline Project
North Dakota Oil and Natural Gas Production	Ongoing activities associated with oil and gas drilling and development, and subsequent petroleum production.	Potential 10 to 20 years of drilling and development; additional time for petroleum production.	Majority of nearby development is in the southern half of Williams County, not in the vicinity of the Project.
Ethane Production in Canada	Processing and marketing of the additional ethane that is transported to Red Deer, Alberta, Canada.	Ongoing.	Outside the U.S. Project area, but connected to the larger Vantage Pipeline Project.
Tioga Plant Expansion, Hess Corporation	Expansion to double the current plant capacity to exceed 250 million cubic feet per day (mmcfd) of natural gas; construction of a 120,000 barrel per day oil and natural gas liquid rail loading terminal.	Scheduled in-service at end of 2012.	Tioga, North Dakota near MP 0.0.
ONEOK Stateline Gas Plant	Processing plant designed for 100 mmcfd of natural gas.	Scheduled completion in mid-2012.	Approximately 35 miles south of the southern end of the pipeline route.
ONEOK Garden Creek Plant	Processing plant designed for 100 mmcfd of natural gas.	Construction recently completed.	Approximately 42 miles south of the southern end of the pipeline route.
Hiland Partners Watford City Plant (PU-10-554)	Processing plant designed for 50 mmcfd of natural gas.	Construction recently completed.	Approximately 55 miles southwest of the southern end of the pipeline route.
Plains Bakken North Pipeline	Proposed oil pipeline.	Construction scheduled to occur in 2012.	Approximately 8 miles south of the northern end of the pipeline route.
Enbridge Portal Reversal (Phase 7 Expansion)	Proposed oil pipeline.	Construction recently completed.	Approximately 7 miles from the proposed route.
Bridger Pipeline Four Bears Pipeline Expansion	Proposed oil pipeline.	Construction recently completed.	Approximately 30 miles from the proposed route.
Quintanna Bakken Link Pipeline	Proposed oil pipeline.	Construction schedule undetermined.	Approximately 36 miles from the proposed route.
Rangeland Energy COLT Hub	Proposed oil pipeline.	Scheduled completion in early 2012.	Approximately 8 miles from the proposed route.
Annabelle Homes	Proposed commercial/residential development.	No construction schedule has been established.	Within 0.25 mile of the south end of the pipeline route.

NOTES:

[a] Cumulative impacts associated with the connected actions (i.e., heater at Hess' Tioga Gas Plant and electric transmission lines and interconnections) are discussed in section 1.3.1 of this BA and in sections 1.5 and 2.15 of the EA.

A detailed discussion of the cumulative impacts associated with the Project and the projects listed in **Table 2** is included in sections 1.5 and 2.15 of the EA. However, in summary, the Project is not anticipated to contribute significantly to cumulative permanent habitat losses under direct effects. All unavoidable wetlands would be crossed using the horizontal bore method. All native grassland habitats would be subject to temporary disturbance during construction and would be restored using diverse, locally genotyped, and certified weed free native seed mixes, as listed in the EPP. All other areas disturbed by construction, with the exception of permanent access roads and mainline valve sites, would be restored and subject to post construction monitoring and remediation in accordance with Vantage's EPP. Indirect impacts through drainages and temporary work spaces would be subject to permit defined

BMPs and restoration and monitoring of areas disturbed by construction. While the placement of access roads and MLBV sites would result in the permanent loss of vegetation, nearly all are sited on cultivated lands that have already experienced a modification from their original vegetation type.

2.0 ANALYSIS OF EFFECT OF THE ACTION

Based on informal consultation and discussions with the FWS, the following occurrences of listed species and critical habitat are present in the Project action area defined as Divide and Williams Counties:

- Piping plover (*Charadrius melodus*). Status: Threatened in Great Plains. Project location: In Divide and Williams Counties.
- Critical habitat for the piping plover in Divide and Williams Counties.
- Whooping crane (*Grus americana*). Status: Endangered. Project location: In Divide and Williams Counties.
- Sprague's pipit (*Anthus spragueii*). Status: Candidate Species. Project location: In Divide and Williams Counties.
- Interior least tern (*Sterna antillarum athaloassos*). Status: Endangered. Project location: In Williams County.
- Pallid sturgeon (*Scaphirhynchus albus*). Status: Endangered. Project location: In Williams County.
- Gray wolf (*Canis lupus*). Status: Endangered. Project location: In Divide County.

2.1 Piping Plover – Threatened and Critical Habitat

Project Area Biology: North Dakota is the most important state in the U.S. Great Plains for nesting piping plovers (FWS, 1988a, 1988b, 1994), where the bird is associated with the Northern Great Plains population within a disjunct range also comprised of the Atlantic Coast and Northern Great Lakes populations.

In the Project area, unvegetated gravelly shorelines of alkali lakes provide two-thirds to three-fourths of the successful nesting habitat with a slight preference for relatively smaller lake basins (Haig and Plissner, 1993; Plissner and Haig, 2000) while large river channel features provide the remaining nesting habitat. The breeding period is May to June with significant variation in reproductive success (Murphy et al., 2000) attributed to depredation, weather, and high water. Nesting habitats in the Project area are typically encircled with an undisturbed grassland buffer.

Breeding activities, including courtship flights, nest bowl scraping, territorial interactions, egg laying, incubating, and chick rearing, can occur throughout the summer. Nests are shallow scrapes and are often lined with shell fragments, pebbles, or small sticks. Egg laying begins the second or third week of May. Females lay an egg every other day until a four-egg clutch is complete. Both sexes share incubation duties. Incubation lasts 27 to 31 days. The precocial young hatch one-half or 1 day apart and are able to feed within hours. Broods typically remain on nesting territories but may expand their movements as they mature or are disturbed. Chicks fledge at 18 to 25 days of age (FWS, 1988c).

Piping plover breeding habitat consists of open, sparsely vegetated areas with alkali or unconsolidated substrates. For these alkali lakes and wetlands, nesting sites are generally wide, gravelly, salt encrusted beaches with minimal vegetation (Prindiville, Gaines, and Ryan, 1988). Breeding site fidelity for piping plovers varies considerably. Conditions for nesting are also highly variable in the

Great Plains from year to year and, therefore, nesting success may depend on the availability of alternative habitat types (Plissner and Haig, 1997).

Observations in northern Minnesota indicate that breeding adults start departing the nesting grounds as early as mid-July, and the majority of the adults migrate by early August. However, adult males in Manitoba have been observed with their broods until after fledging and were frequently seen with nonbreeding flocks. Juveniles depart the nesting grounds later than the adults. All piping plovers typically migrate to the wintering grounds by the end of August.

Alkali lakes in the Project area are typically permanent to semi-permanently flooded (Cowardin et. al 1979) or shallow Type 4 of Type 5 (Shaw and Fredine, 1956) eusaline or hypersaline wetland basins that are characterized with low emergent vegetative cover, fringe vegetative communities comprised of halophytes, and salt encrusted gravelly shorelines and beaches that provide optimal nesting surfaces. The FWS has mapped the North Dakota alkali lakes and wetlands where breeding piping plovers have been observed in more than 1 year for the period of 1987 to 2001 survey record (Federal Register, Volume 67, No. 176, pages 57637-57717). The survey period encompassed both wet and dry cycles and reflects the dynamic nature of prairie alkali lakes and wetlands, and the resulting shift in use by piping plovers of different habitat types. All alkali lakes and wetlands mapped exhibit one or more of the primary constituent elements. In these surveys, the FWS did not include many areas that exhibited all of the primary constituent elements but breeding piping plovers were only observed once or were never observed (Federal Register, Volume 67, No. 176, pages 57637-57717).

Plovers in the Project area forage on margins of both breeding alkali lakes and neighboring wetlands where they prey on microinvertebrates (FWS, 2010). Breeding piping plovers in the Project area overwinter on the Texas and Mexico coast.

Limiting Factors for Recovery: Limiting factors include the availability and abundance of breeding habitat and the level of anthropogenic disturbance during nesting, sheltering, brood-rearing, foraging, roosting, and migration. Breeding habitat quality can further serve as a limiting factor when habitats are diminished by surrounding development, lack of a buffer, encroaching vegetation, or water elevations. The narrow range of variables that comprise suitable breeding habitats often leads to a patchy, infrequent distribution of habitats within the breeding range of this species.

Relationship between Habitat in Area and Biological Requirements: North Dakota's alkali lakes and wetlands provide a complex of various wetland types that are essential in providing habitat for plovers to feed, nest, and brood in most years, as site availability changes due to variations in the water cycle.

Project Area Occurrences and Findings: Two designated critical habitat areas for the piping plover are found in proximity to the Project alignment and are addressed below. Additional potential breeding habitat exists throughout the Project area including a known recent breeding occurrence on Hapet Lake, which is located outside of the established critical habitat boundaries (Carol Aron, FWS, *pers. comm.*, 2011) (**Figure 3**).

A survey for breeding birds and potential habitats along a 1.5-mile-wide corridor based on the centerline of the proposed pipeline route was planned for the breeding season of 2011; however, the planned Project survey was cancelled in 2011 due to high water levels and would be deferred until the 2012 breeding season when pre-construction surveys for raptors and other resources would also occur. Record water levels in the region persisted throughout the entire summer of 2011 and inundated the known breeding habitats to the point where piping plover were observed nesting on atypical substrates (e.g., gravel roads) by Lostwood Wildlife Refuge staff who conduct annual plover monitoring (Carol

Aron, FWS, *pers. comm.*, 2011). The 2012 survey team of biologists would coordinate closely with Lostwood Refuge staff to obtain the latest breeding records and share survey results. The results would be used to avoid direct and indirect effects during construction and during operation of the pipeline.

Critical Habitat: FWS-designated critical habitat for piping plovers is located at various locations associated with alkali lakes and wetlands, the Missouri River, and Lake Sakakawea in Williams County. Designated critical habitat is defined in Section 3(5)(A) of the ESA as specific areas within the geographical area occupied by a species on which are found physical or biological features that:

- are essential to the conservation of the species;
- may require special management considerations or protection; and
- consist of specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

The Project would be within 1 mile of two designated critical habitat areas in Divide County (**Figure 4**): Radar Waterfowl Production Area (WPA) and McCone Lake, which are known to provide breeding habitat for the federally threatened piping plover (FWS, 2011). The FWS also identified Hapet Lake, a known wetland used by piping plover (FWS, 2011). While the Project would be about 0.5 mile from McCone Lake, it would be within about 0.25 mile of Radar WPA near milepost (MP) 68 and within about 650 feet of Hapet Lake near MP 52. Critical habitat along Lake Sakakawea is greater than 15 miles from the southern end of the Project.

As recommended during early informal consultation with the FWS to avoid adverse impacts on these two critical habitat areas, Vantage made attempts to locate the Project beyond the recommended 0.5 mile buffer of the critical habitat wetland edge. However, at the Radar WPA attempts to route the pipeline outside the FWS-recommended 0.5-mile-wide buffer were unsuccessful due to landowner constraints on adjacent parcels to the east of the area (**Figure 5**). As a result, the pipeline route would be located at the greatest distance possible, approximately 0.25 mile, from the edge of the critical habitat (i.e., alkali wetland). Furthermore, no isolated wetlands located within the 0.5-mile-wide buffer area would be affected by the route.

Vantage would locate the pipeline beyond the recommended 0.5-mile-wide buffer of the McCone Lake critical habitat (**Figure 6**). Additionally, no isolated wetlands located within the 0.5-mile-wide buffer area would be affected by the pipeline route.

In addition to identified piping plover habitat, the FWS has stated that other wetlands near the Project may not be designated as critical habitat but are also suitable for piping plover nesting and feeding (FWS, 2011).

2.1.1 Direct Effects

Construction Effects: The proposed Project would be located within the FWS-recommended 0.5-mile-wide buffer area of Hapet Lake, and the pipeline alignment in this area cannot be shifted outside of the buffer area due to landowner and engineering constraints.

The Project would avoid wetland impacts on Hapet Lake and on all isolated wetlands with the buffer area. To avoid impacts on the piping plover as recommended by the FWS, no construction would occur during the April 1 – September 1 breeding season where the alignment occurs within the 0.5-mile-

wide buffer area around Hapet Lake or within a 0.5-mile-wide buffer area on other wetlands where breeding piping plovers are observed during the 2012 surveys.

Implementation of the FWS impact avoidance measures is anticipated to result in no direct effects to individual birds or adverse impacts on suitable habitat for the piping plover during construction of the Project. Suitable habitat is defined as nesting, brooding, roosting, and foraging habitat associated with alkaline wetlands. Buffer area is defined as management habitat.

Effects of fuel, hydraulic fluids, and oil spills on the piping plover and its habitat would be reduced by the implementation of a Spill Prevention, Control, and Containment (SPCC) Plan.[3] The SPCC Plan would provide safeguards against spills, and Vantage personnel would be trained to prevent, detect, and promptly respond to spills. The effects of spills and inadvertent releases during construction are considered to be low and the overall effect is considered to be minor.

Operational Effects: The FWS has raised concerns in regard to the potential for pipeline leaks to result in incidental take during operations of the Project. Based on Vantage's Risk Assessment and responses to Canadian Energy Board application inquiries (**Appendix A**), the potential risk for leaks is believed to be very low, as summarized below for a "worst case" leak scenario.

Risk Analysis

The proposed Vantage pipeline is approximately 430 miles with a diameter of 10 inches. The proposed pipeline would be constructed of steel with a maximum operating pressure of 1,440 pounds per square inch. In order to assess the risk posed by a pipeline with these features, historical pipeline incidents were analyzed resulting from similar pipelines.

The Alberta data (1990 – 2005) was used as a historical basis in the frequency analysis to estimate the incident frequency for all diameters of high pressure pipelines. Incidents are defined as:

- Leak – An opening, hole, or crack in the pipeline causing some product to be released, but not immediately impairing the operation of the pipeline.
- Rupture – The instantaneous tearing or fracturing of pipe material, immediately impairing the operation of the pipeline.
- Hit – Striking a buried pipeline during ground disturbance activity resulting in the pipeline or pipeline coating being damaged. A release of product does not necessarily occur.

The pipelines substances are aggregated into groups (crude oil, natural gas, sour gas, water, multiphase, and other). The "other" category consists of products including ethane, a high vapor pressure product.

From 1990 to 2005, the ratio of leaks-to-ruptures for substances combined on 7,872 miles of 2- to 16-inch diameter pipelines were 9-to-1, and there were no hits. More specifically, there were only 2 leaks on a 10-inch diameter pipeline similar to that proposed by Vantage.

Other potential sources for "fugitive emissions" include pipe connections, valves, seals, and compression pumps.

[3] The SPCC Plan would be prepared by the construction contractor immediately prior to construction.

Site Ethane Properties

Ethane has a specific gravity of 1.047 at 60 degrees Fahrenheit with a density greater than ambient air at ground level. Ethane released in a leak scenario would stay low to the ground in calm or mild wind conditions. The U.S. Geological Survey climate data for Crosby, North Dakota (approx. 25 miles west of the nearest Critical Habitat) shows that prevailing wind directions in the Project area are from the south during the piping plover habitat occupancy period (**Table 4).** During most months, the prevailing winds would typically carry emissions towards the north and away from the critical habitats and Hapet Lake (**Figures 3 and 4**).

Table 4. Average Wind Speed and Direction in Crosby, ND		
2011 Month	Average Wind Direction	Average Wind Speed (mph)
April	S	11.0
May	SE	12.9
June	S	10.6
July	S	9.8
August	S	8.8
Source: North Dakota Agricultural Weather Network. Available online: http://ndawn.ndsu.nodak.edu		

Operation activities are not anticipated to contribute to effects on the piping plover or its habitat. Prior to right-of-way maintenance surveys using either all-terrain vehicles or by foot within the 0.5-mile buffer areas, the FWS would be consulted before the onset of the surveys, and activities would be coordinated with the FWS. Additionally, Vantage would consult with the FWS prior to any excavations to expose, visually inspect, or repair the pipeline within the buffer areas to avoid any direct effects on the species.

2.1.2 Indirect Effects

Potential indirect effects include scour and deposition of sediment from Project crossings of drainages and upland areas that outlet to and occur within the watersheds of McClone Lake and Radar WPA, critical habitats, and Hapet Lake (**Figures 4 and 5, Table 5**). Sedimentation from upslope sources can cover nesting and foraging areas; however, the implementation of measures identified the EPP would prevent impacts on plover habitat.

Table 5. Summary of Drainage Intersections at Piping Plover Habitat			
Drainage ID	Pipeline Intersection (ft.)	Construction Impacts	Operational Impacts
H1	70.7	0.11	0.0
R1	85.3	0.14	0.0
Total	156.0	0.25	0.0

Indirect effects under a worse case leak scenario include bird mortality. Mitigation is addressed below under operations related take.

2.1.3 Estimated Take

Construction-Related Take: It is anticipated that application of the FWS-recommended BMPs and impact avoidance measures would not result in ***direct effect***-related take of individuals or habitat, including alkali wetlands, as the result of construction of the Project.

The Project would avoid wetland impacts on both subject wetlands in the Radar WPA and McCone Lake critical habitats. As recommended by the FWS, no construction or vehicle use would occur during the April 1 – September 1 breeding occupancy period where the alignment occurs within the recommended 0.5-mile-wide buffer area around the Radar WPA critical habitat.

The above-mentioned 0.5-mile-wide buffer area and construction occurring outside of the April 1 – September 1 breeding habitat occupancy period would also be implemented on all wetlands where breeding piping plovers are observed during the 2012 survey and on Hapet Lake.

It is anticipated that application of these FWS-recommended BMPs and impact avoidance measures would not result in direct effects to critical habitat for the piping plover as the result of construction of the Project.

Take-related to ***indirect effects*** on Project-related crossings of piping plover habitat drainages would be minimized by:

- horizontal boring under drainages that meet wetland criteria;
- limiting construction to the winter and/or outside of the piping plover habitat occupancy period;
- implementing and monitoring of BMPs and erosion control addressed in the EPP required at all drainage crossings;
- restoring drainage channel contours, vegetative cover, and buffers after construction; and
- post-construction monitoring of restored drainage channels with remediation as needed.

In addition, Vantage, in consultation with the FWS and DOS, has agreed to prepare a Conservation Agreement (Agreement) for the conservation of migratory bird species in furtherance of the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and Executive Order 13186. The Agreement would represent a voluntary effort between Vantage and the FWS, and would be designed to include conservation measures that avoid and minimize potential adverse impacts on migratory birds and their habitats. The Agreement would also provide a list of conservation options that the FWS and Vantage would consider as compensatory mitigation for loss of "habitat services" from the temporary and permanent loss of migratory bird habitat for construction and operation of the Project. The goal of the Agreement would be to aid in the long-term conservation of migratory birds with active management of the species and the habitat on which they depend. A signed Agreement between the FWS and Vantage would be provided to the DOS prior to construction.

Operations-Related Take: The risk of incidental take from operations, in particular pipeline leaks, is considered very low as discussed in **section 2.1.1**. An EPP and HASP developed for the Project would include detailed provisions on the following to minimize the risk of incidental take. To minimize the risk for an inadvertent pipeline leak during operations, Vantage would conduct the following.

1) Regular scheduled monitoring for leaks and fugitive emissions following National Transportation Safety Board (NTSB) requirements, protocols, and BMPs.

2) Pipeline leak monitoring under implementation of a pipeline integrity management and safety program to include and be subject to independent auditing using the following:

- Regular risk assessment updates:
    - Would include items such as identifying factors that increase the risk of a release, identification of maintenance and operation risks, identification of risks due to mechanical damage from excavation, and identify issues relating to product quality risk
- Regular Hazard Identification and Control & Risk Reduction:
    - Would include items such as staff and public quality control on procedures, training, public awareness, slope stability, depth of cover, stream crossings.
- Inspection, Testing, Patrol and Monitoring
    - Would include regularly scheduled visual inspections, recording of operating parameters, cathodic protection surveys, aerial surveys, infrared surveys, sampling, corrosion monitoring and smart pigging.
- Installation of controls in the event of a leak or fugitive emission to include:
    - Block valves upstream of pressure safety devices to allow for services in the event of a leak
    - Also includes extra protection measures including installation of tandem seals on pumps
    - Installation of plugs at open ended devices
    - Inspection of flanges or gaskets prior to installation
    - Regular monitoring and tightening of flange bolts
- Develop and annually update a leak detection and repair program (LDAR) that incorporates the above measures and other required sampling.
- Develop and maintain annual updates of an Emergency Response Plan (ERP) to include notification and response procedures for local authorities, the general public, and the FWS in the case of a leak or rupture.

Under a worst-case scenario of a leak or rupture near the two critical habitats and Hapet Lake, block valves in close proximity would serve as control points (**Figures 3 and 4**) to shut-off ethane flow.

The risk analysis and these standards are developed to assess risk and implement pipeline safety in areas of high human populations where emergency responses are decisive, swift, and risk adverse. Under a "worst case" leak scenario, based on the properties of ethane when exposed to atmosphere and the small 10-inch-diameter pipeline, the risk of incidental take of piping plovers at critical habitat and alkali wetlands is low and further mitigated by the above-referenced contingencies.

2.1.4 Cumulative Effects

The potential cumulative effects of pipeline construction and operation on local waterbodies and wetlands (where plovers primarily occur in the Project area) are expected to be localized, short-term, and reversible in nature. The wetlands that were identified during Vantage's field surveys have already been directly impacted by agricultural activities, and approximately 5 percent of the potentially traversed wetlands are within areas already impacted by construction, drilling, and production activities related to oil well development, primarily in Williams County. Potential impacts on waterbodies and wetlands as a result of construction activities associated with the proposed Project would, therefore, overlap with effects from other activities in Divide and Williams Counties (particularly agriculture, well pad construction and drilling, pipelines, and roads) in terms of both time and space. This would result in the temporary, localized increase of certain effects such as sedimentation, disruption to local wildlife and vegetation, and alteration of surface drainage patterns. However, by adhering to established and successful mitigation practices and reclamation methods, and following a proactive post-construction monitoring program, it is believed that there would be no long-term or permanent cumulative impacts on local wetlands as a result of the proposed Project or other Projects in the area.

Specific to vegetation, future construction related to drilling and production activities during oil well development would act cumulatively with impacts from the proposed Project and past activities in areas where construction occurs within areas consisting of native grassland or pasture. Long-term impacts would occur in locations where well pads and roads are constructed in vegetated areas. The potential residual effects from construction of the proposed Project are expected to be localized, short-term, and, for most locations, reversible in nature. Approximately 80 percent of the lands traversed along the proposed pipeline route are used for agricultural purposes including the production of cultivated crops, pasture land, and hay production. The remaining 20 percent includes native grasslands, and less than 1 percent is wetlands. A small area of 0.7 acre would be required for permanent facilities (e.g., mainline valves) for pipeline operation. Grasslands disturbed during construction would be reclaimed with native species and minimal long-term disturbances would be anticipated. Agricultural lands would be returned to production in the growing season following construction. Introduction of invasive species along the pipeline route and its vicinity could be a cumulative impact with agricultural activities and future development of oil and gas. Construction-related disturbances could promote the spread of invasive weed species from disturbed croplands and their weedy fringes onto native prairie sites. The measures included in Vantage's EPP would minimize potential impacts on grasslands and agricultural lands, and help control the spread of invasive weed species.

The ongoing development of oil and gas in portions of the region may result in the further impacts on agricultural and native grasslands in the area. The new well sites and related facilities may further fragment native prairie features. However, given the small width of the Vantage pipeline right-of-way, trench line, and proposed Project service area, and the successful application of the construction and post-construction measures listed in Vantage's EPP, it is anticipated that the impacts on the regionally representative vegetation would be minimal.

In summary, the Project in addition to the past, present, and reasonably foreseeable Projects or activities identified in the EA are not expected to result in significant adverse cumulative effects to the piping plover and its habitat. The Project would not cause habitat losses to critical habitat, alkali wetlands, or result in wetland impacts. All unavoidable wetlands would be horizontally bored. Similarly, indirect impacts from drainages that outlet to wetlands would be subject to BMPs during construction and post construction restoration and monitoring of areas disturbed by construction.

2.2 Whooping Crane – Endangered

Project Area Biology: The Project area is known as a potential area for feeding and roosting stopover during the annual spring and fall migration of the Aransas Wood Buffalo Population (AWBP) of the endangered whooping crane. The proposed Project is located within the 90-mile-wide corridor that includes approximately 75 percent of all reported whooping crane sightings in North Dakota (**Figures 8 and 9**).

The whooping crane was federally listed as threatened in 1967 and endangered in 1970; both listings were "grandfathered" into the ESA. Critical habitat for the species was designated in 1978.

Whooping cranes occur only in North America within Canada and the United States. Approximately 83 percent of the wild nesting sites occur in Canada and 17 percent occur in the United States in Florida and Wisconsin. Birds currently exist in the wild at three sites and in captivity. In August 2011, the total wild population was estimated to be 474, which includes approximately 315 adults and juveniles in the self-sustaining AWBP of whooping cranes (FWS, 2011). The Aransas-Wood Buffalo Population of whooping cranes typically occurs in North Dakota during the spring and fall migration between breeding and wintering areas.

Whooping cranes typically arrive in the Wood Buffalo National Park in Alberta and Northwest Territories, Canada in late April or early May and nest selection occurs shortly thereafter. The birds demonstrate considerable fidelity to their breeding territories and normally nest in the same general vicinity each year. Several pairs have nested in the same areas for 22 consecutive years. These nesting territories, termed "composite nesting areas," vary considerably in size, but average 2.5 square miles (Kuyt, 1993). Adjoining pairs usually nest at least 0.6 mile apart; however, nests have been recorded as close as 435 yards from each other. From the initiation of egg laying until chicks are a few months of age, the activities of pairs and family groups are restricted to the breeding territory.

Whooping cranes may start nesting as early as 3 years of age; however, the average age of first egg production is 5 years (Kuyt and Goossen, 1987). From the results of color-banding studies in the Aransas-Wood Buffalo Population, 3-year-old whooping cranes have been documented nesting 10 times, including one instance where both members of the pair were 3 years old (Kuyt and Goossen, 1987).

Eggs are normally laid in late April to mid May, and hatching occurs about 1 month later; the typical incubation period is from 29 to 31 days (Kuyt, 1982). Whooping cranes may re-nest if their first clutch is destroyed or lost before mid-incubation (Erickson and Derrickson, 1981; Kuyt, 1981b; Derrickson and Carpenter, 1982). Whooping cranes generally nest annually, but may skip a season when nesting habitat conditions are unsuitable, if they are nutritionally stressed, or for other unidentified reasons (Chavez-Ramirez et al., 1997; Johns, 1998). Whooping cranes usually produce clutches of two eggs laid 48 to 60 hours apart.

Incubation begins with the first egg laid, resulting in asynchronous hatching of the eggs. Whooping crane parents share incubation and brood-rearing duties. Except for brief intervals, one member of the pair remains on the nest at all times. Females tend to incubate at night (Allen, 1952; Walkinshaw, 1973) and take the primary role in feeding and caring for the young (Blankinship, 1976). Chicks are capable of swimming shortly after hatching; however, parents and young return to the nest each night during the first 3 to 4 days after hatching. Later, parents brood their young wherever they are at night or during foul weather. During the first 20 days after hatching, families generally remain within 1 mile of the nest with daily movements averaging about 350 yards. Information on marked individuals suggests that most juveniles and sub-adults spend the summer near their natal area (Kuyt, 1981a).

Sexually immature birds (up to 4 years old) spend the summer as singles, pairs or in small groups of three to five birds. These birds usually occur on the peripheries of territories of nesting pairs.

Autumn migration normally begins in mid-September from the Wood Buffalo National Park, where most of the cranes have staged for 2 to 4 weeks (FWS, 2009). Once migration starts, most birds arrive on the wintering grounds at the Aransas National Wildlife Refuge near Corpus Christ, Texas between late October and mid November. The migration may be completed in a week (Kuyt, 1992); however, occasional stragglers may not arrive until late December.

Whooping cranes migrate in sub-adult, bonded pair, and family groups of three to four. Migration pace and progress are dependent on several variables, including body condition, prevailing weather, drought conditions, and relative food availability. Whooping cranes spend approximately 3 months annually in migration, typically traveling between 200 and 400 miles per day. Thus, their appearance and departure from a specific spot on the landscape can occur suddenly.

During migratory flight, whooping cranes may be blown east or west by strong winds that can carry them off of the migration corridor centerline. This enlarges the corridor, expanding it to approximately 220 miles in width. The proposed Project lies within a 90-mile corridor that includes approximately 75 percent of all reported whooping crane sightings in North Dakota (FWS, 2011).

During migration, the birds use shallow, open-water wetlands and water-covered river sandbars for roosting during the day and night. The birds feed on waste grain in nearby agricultural croplands, as well as on frogs, crayfish, and plant tubers. Habitat characteristics that are preferred include wetlands of various sizes in proximity to areas producing grain. Although no traditional staging or use areas have been identified near the Project, potential whooping crane habitat (i.e., wetlands in association with agricultural grain crop fields) is present throughout the Project area. Additionally, no traditional roosting sites for whooping cranes have been identified in North Dakota, although hundreds of observations have been recorded in the state (Stephen, 1979; Johnson and Temple, 1980; Austin and Richert, 2001). Five of those sightings between 1967 and 2007 have been in Williams and Divide Counties (FWS, 2010).

Limiting Factors for Recovery: Habitat loss, disturbance, low reproduction rates, and a low, vulnerable population are considered limiting factors for recovery of this species. In the 1860s, whooping crane population levels were estimated at 700 to 1,400 individuals. By the 1940s, the population had been decimated by hunting and habitat loss when it was estimated to be 15 individuals (ICF and WIDNR, 2003). Discovery of the breeding habitat on the AWBP and aggressive recovery efforts have brought this species back from the brink of extinction to more than 278 individuals recorded in August 2011.

Relationship between Habitat in Area and the Biological Requirements: Migration feeding and roosting stopover habitats are used during the spring and fall, and are critical habitat elements for the migratory AWBP population. The above-referenced 90-mile-wide corridor demonstrates that these habitats within the migration corridor are used by the migrating birds at some time during migratory flights.

Project Area Occurrences and Findings: Whooping cranes have been observed in the Project area during migration in feeding and roosting wetland stopover habitats (Binkley and Miller, 1983). Stopover habitats are utilized for temporary periods, typically not lasting more than several days (ICF and WIDNR, 2003).

All of the wetlands within the Project area shown in Attachment 2 of the Wetland Assessment Report (**Appendix B)** are considered potential stopover roosting or feeding habitats for whooping cranes.

2.2.1 Direct Effects

Construction Effects: As recommended by the FWS, if birds are observed within a one-mile of the Project area during construction, all work on the right-of-way that is located within the one-mile radius would cease and the FWS would be notified. Environmental monitors would also inspect the Project construction area for listed species and other resources during construction. Construction would be re-initiated after the birds leave the area and at the consent of the FWS.

The small 10-inch-diamater pipe would allow flexibility for routing around and avoidance of most wetlands in the Project area; however, the Project would cross a few wetlands. All of the approximately 13 unavoidable wetlands would be horizontally bored to avoid impacts on potential whooping crane stopover roosting wetlands (**Table 4**). All wetlands in the whooping crane migration corridor are considered potential stopover habitat.

Table 6. Wetlands Horizontally Bored by the Vantage Pipeline Route

ID	County	Start Milepost	End Milepost	NWI Classification	Crossing Width (feet)	Wetland Area Horizontally Bored Under during Construction (acres) [a]	Wetland Area Affected during Operations (acres) [b]
F17	Williams	2.51	2.53	PEMB/C	72.9	0.0	0.1
B104	Williams	9.38	9.40	PEMC/F	67.7	0.0	0.1
A73	Williams	12.82	12.83	PEMB/C	53.1	0.0	<0.1
G2	Williams	14.97	14.98	PEMB	44.0	0.0	<0.1
G3	Williams	16.02	16.03	PEMB	24.5	0.0	<0.1
B77	Williams	18.47	18.48	PEMA	74.6	0.0	0.1
G7/8	Williams	25.51	25.53	PEMB/C	110.4	0.0	0.1
G7/8	Williams	25.93	25.93	PEMB/C	31.4	0.0	0.1
G42	Williams	30.22	30.25	PEMB/C	121.4	0.0	0.1
H1	Divide	43.56	43.63	PEMC	326.7	0.0	0.2
E25	Divide	44.79	44.80	PEMB/C	54.5	0.0	<0.1
E13	Divide	69.52	69.62	PUB	485.1	0.0	0.3
B49	Divide	77.60	77.61	PEMB	51.1	0.0	<0.1
				Total	1517.3	**0.0**	**1.0**

NOTES:

[a] Because the pipeline would be installed using the bore crossing method, direct impacts on wetlands as a result of construction would be reduced.

[b] Assumes a 30-foot- wide permanent right-of-way. However, no wetlands would be filled or permanently lost, and wetlands would retain functionality similar to that of the pre-construction state.

No permanent dredge and fill impacts would occur. Assuming other federal clearances are obtained, the Project would not require a Section 404 Clean Water Act or Section 10 Navigable Waters permit according to the North Dakota Office of the USACE, Omaha District. The Project would fall under the NWP-12, but based on discussions with the USACE, the Project does not meet the conditions requiring pre-construction notification.

Operational Effects: The FWS has raised concerns with regard to the potential for pipeline leaks to result in incidental take during operations of the Project. Contingencies and details related to a worst case leak scenario are addressed above in **section 2.1.1** and are also applicable to the potential for effects on whooping cranes during migration stopovers. All of the proposed electric transmission line interconnections for the seven proposed block valve stations would be constructed entirely below ground to eliminate the risks for bird collisions. There are no other electric transmission lines proposed in association with the Project.

2.2.2 Indirect Effects

Construction Effects: Indirect effects on drainages into potential stopover wetlands would be minimized by:

- horizontal boring under drainages that meet wetland criteria;
- implementing and monitoring of BMPs and erosion control required under the NPDES at all drainage crossings;
- restoring drainage channel contours, vegetative cover, and buffers after construction; and
- post-construction monitoring of restored drainage channels with remediation as needed.

2.2.3 Estimated Take

Construction-Related Take: No take of whooping crane individuals or habitat loss to stopover wetlands would occur as a result of construction and operation of the Project. If birds are observed within a 1-mile radius of the Project during construction, all work within that area would cease and the FWS would be notified. Construction would be resumed only when the birds depart from the area of observation and under FWS consent.

In addition, as discussed in **section 2.1.3**, because the Whooping crane is considered a migratory bird, Vantage, in consultation with the FWS and DOS, has agreed to prepare an Agreement for the conservation of migratory bird species.

Operational-Related Take: The risks of incidental take from operations, in particular pipeline leaks, are considered insignificant and are addressed in detail in **section 2.1**.

2.2.4 Cumulative Effects

Similar to the discussion in **section 2.1.4**, the Project in addition to the past, present, and reasonably foreseeable projects or activities identified in the EA analysis are not expected to result in significant adverse cumulative effects to the whooping crane and its habitat. The Project would not cause permanent habitat losses to stopover wetlands as all unavoidable wetlands would be horizontally bored. Similarly, indirect impacts from drainages that outlet to wetlands would be subject to BMPs during construction and post construction restoration and monitoring of areas disturbed by construction.

2.3 Sprague's pipit – Candidate Species

Project Area Biology: The Sprague's pipit was listed by the FWS as a candidate species in 2010. Candidate species are plants and animals for which the FWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Candidate species receive no statutory protection under the ESA; however, the FWS encourages cooperative conservation efforts for these species because they are, by definition, species that may warrant future protection under the ESA.

Sprague's pipit is listed as a candidate species in Williams and Divide Counties. The birds breed from north central Alberta to central Manitoba, south to Montana and north central South Dakota, and east to northwestern Minnesota. Suitable habitat is native grassland of intermediate height and sparse to

intermediate density. Although the birds would use exotic vegetation, they are significantly more abundant in sparsely vegetated native prairie. Within grazed mixed-grass areas in North Dakota, abundance of Sprague's pipits was positively associated with percent clubmoss (*Selaginella densa*) cover and plant communities dominated by native grass (*Stipa*, *Bouteloua*, *Koeleria*, and *Schizachyrium* spp.). In areas not used by Sprague's pipits, percent grass cover, litter depth, and vegetation density were greater than in areas where Sprague's pipits were present. The strongest vegetational predictors of the presence of Sprague's pipit were decreasing bare ground and decreasing litter depth.

Potential grassland and aspen parkland breeding habitats for the species occur in the Project area as North Dakota is located at the southern end of the breeding range. The wintering range for the Sprague's pipit is located in the southern U.S. and Mexico. Sprague's pipit's prefer at least 72 acre patches of mixed, tall vegetated grassland for breeding and are adverse to human disturbances and features (Jones, 2010). Throughout its breeding range, the species has contracted compared to anecdotal accounts of abundance during European settlement. Specific occurrences of this species in the Project area are not known, but potential breeding habitat is widespread.

Limiting Factors for Recovery: Jones (2010) cites habitat loss, fragmentation, conversion of native grassland to other uses, cowbird parasitism, and human development as limiting factors for recovery of this species.

2.3.1 Direct Effects

Construction Effects: Anticipated effects on the Sprague's pipit and suitable grassland habitat (**Table 7** and **Figures 9 and 10**) is would be minimized through pre-construction monitoring of areas disturbed by construction and implementation of BMPs. Construction, including clearing of vegetative cover, would be timed to occur outside of the breeding season starting on April 1, where possible. Construction activities conducted during the breeding season in potential breeding habitats would be preceded with a field survey for nesting migratory birds, including the Sprague's pipit. These potential habitats would be monitored for nesting activities by the environmental monitor. If nesting birds are observed prior to construction, efforts would be made to avoid direct effects and take until the young have fledged.

Table 7. Land Affected by Construction and Operations of the Vantage Pipeline Project

	Agricultural		Grassland		Pasture/Hay		Wetlands		Total	
Facility	Con[a]	Op[b]	Con	Op	Con	Op	Con	Op	Con	Op
Pipeline Right -of-Way										
Williams County	243.2	0.0	47.4	0.0	26.7	0.0	0.4	0.0	317.6	0.0
Divide County	160.7	0.0	85.5	0.0	110.2	0.0	0.6	0.0	357.0	0.0
Additional Temporary Workspace	30.7	0.0	11.5	0.0	9.3	0.0	0.0	0.0	51.6	0.0
Mainline Valves	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.4	0.4
Access roads	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2
Pipe storage/contractor yards	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	0.0

NOTES:

[a] Construction impacts. Assumes a 70-foot-wide temporary right-of-way and/or the area necessary to install a facility.

[b] Operational impacts. Assumes a 30-foot-wide permanent right-of-way and/or the area necessary to operate the facility. No impacts are associated with operation along the pipeline right-of-way because the area would be allowed to revert to prior uses following construction.

Post-construction restoration would include restoration of the right-of-way and construction areas to pre-construction grade, and Vantage proposes to reseed disturbed native prairie and grassland areas with a native species seed mix (as listed in the EPP) with species diversity that is representative of the

Project area native community and sourced from local sources to the greatest extent practicable to maintain local genotypes. On privately owned grasslands and pastures, landowner consultation and preferences would also apply in advance of reseeding. Seed mixes would be certified weed free by the appropriate certification body prior to construction and approved for use by the affected private landowners. Permanent structures would be limited to eight aboveground MLBVs, with a relatively small total disturbance area of 0.4 acre. Nearly all of the MLBVs are located in actively cultivated fields. Total impact from valve stations and access roads in grassland during operations is approximately 0.2 acre. All other impacts on grassland would be temporary and limited to the time of construction.

Operational Effects: The FWS has raised concerns with regard to the potential for pipeline leaks to result in incidental take during operations of the Project. As discussed in **section 2.1.1**, the potential risk for leaks is anticipated to be very low. Vantage would implement the contingencies addressed in the Project HASP, which include continuous pressure and leak detection monitoring, aerial and foot surveillance, emergency valve closure, and hazardous materials response protocols.

2.3.2 Estimated Take

Construction-Related Take: All reasonable and prudent efforts would be implemented to avoid and minimize construction-related take on the Sprague's pipit during construction of the Project. These efforts include adopting the FWS-recommended mitigation measures, which include, but are not limited to, scheduling land clearing and construction outside of the nesting season to the greatest extent practicable, conducting monitoring of areas disturbed by construction and implementation of BMPs in potential breeding habitat during construction, and restoring native prairie and grasslands to pre-construction conditions. Permanent impacts (habitat loss) to grassland are estimated to be 0.2 acre.

In addition, as discussed in **section 2.1.3**, because the Sprague's pipit is considered a migratory bird, Vantage, in consultation with the FWS and DOS, has agreed to prepare an Agreement for the conservation of migratory bird species.

Operational-Related Take: The risks of incidental take from operations, in particular pipeline leaks is very low. Contingencies and details related to a worst case leak scenario are addressed above in **section 2.1** and are applicable to the potential for effects on the Sprague's pipit. The resulting permanent right-of-way corridor would also result in fragmentation of grassland habitat; however, habitat fragmentation would be minimized to the greatest extent practicable through reseeding with the above-mentioned native grassland seed mix.

2.3.3 Cumulative Effects

As discussed in **section 2.1.4**, future construction related to drilling and production activities during oil well development would act cumulatively with impacts from the proposed Project and past activities in areas where construction occurs within areas consisting of native grassland, home to grassland nesters such as the Sprague's pipit. Long-term impacts would occur in locations where well pads and roads are constructed in vegetated areas. The potential residual effects from construction of the proposed Project are expected to be localized, short-term, and, for most locations, reversible in nature. The amount of Project-related grassland habitat loss is 0.2 acre. Vantage would reclaim grasslands disturbed during construction with native species and minimal long-term disturbances would be anticipated. Introduction of invasive species along the pipeline route and its vicinity could be a cumulative impact with agricultural activities and future development of oil and gas. Construction-related disturbances could promote the spread of invasive weed species from disturbed croplands and their weedy fringes onto native prairie sites. The measures included in Vantage's EPP would minimize potential impacts on grasslands and agricultural lands, and help control the spread of invasive weed species.

The ongoing development of oil and gas in portions of the region may result in the further impacts on Sprague's pipit habitat (i.e., native grasslands) in the area. The new well sites and related facilities may further fragment native prairie features. However, given the small width of the Vantage pipeline right-of-way, trench line, and proposed Project service area, and the successful application of the construction and post-construction measures listed in Vantage's EPP, it is anticipated that the impacts on the regionally representative vegetation would be minimal.

The Project in addition to the past, present, and reasonably foreseeable projects or activities identified in the EA are not expected to result in significant adverse cumulative effects to the Sprague's pipit and its habitat. The resulting permanent right-of-way corridor would also result in fragmentation of grassland habitat; however, habitat fragmentation would be minimized to the greatest extent practicable through reseeding with the above-mentioned native grassland seed mix.

2.4 Least Interior Tern – Endangered

Project Area Biology: The interior least tern is federally listed as endangered in Williams County. The interior population of the species consists of 8,000 birds that breed in the Mississippi, Missouri, and Rio Grande River systems. These birds typically nest on sparsely vegetated sandbars along the river. Eggs are commonly laid in clutches of two from late May through June, and are incubated by both sexes. The young fledge in 19 to 20 days. By late August and early September, least terns depart from the northern breeding grounds to winter habitat along the Gulf of Mexico and on Caribbean Islands.

Williams County is known to have occurrences of the interior least tern, which nests along midstream sandbars of the Missouri and Yellowstone Rivers. The interior population of the least tern has declined due to loss of habitat from dam construction and river channelization on major rivers throughout the Mississippi, Missouri, and Rio Grande River systems. Because of dams, river flows are managed in a non-historic fashion and are not conducive to the creation and maintenance of sandbars with sparse vegetation. Human disturbance is also a problem.

The Project would not cross nor is within close proximity of these or other navigable waters. Furthermore no depletions of downstream waters are anticipated to result from the Project. The interior least tern in North Dakota is known to maintain fidelity to a home range and dispersal limited to its riverine breeding habitats which they also use for foraging. Observations outside of the river corridors are considered rare (FWS, 1990).

Limiting Factors for Recovery: The FWS (1990) recovery plan for the species cites channelization, irrigation, impoundment, and other water flow related factors as the primary limiting factor for the recovery of the interior least tern.

2.4.1 Direct and Indirect Effects

Construction and Operational Effects: Construction and operation effects on the interior least tern are not anticipated due to the location of the proposed Project. Habitat and occurrences of this species are restricted to the Missouri and Yellowstone Rivers, both of which are located over 15 miles from the Project. The Project would also not result in depletions or alterations in water flow associated with these rivers.

2.4.2 Estimated Take

There would be no anticipated take on the interior least tern as a result of construction and operation of the Project.

2.4.3 Cumulative Effects

The Vantage pipeline would not directly or indirectly affect interior least tern habitat. Consequently, the Project in addition to the past, present, and reasonably foreseeable projects or activities identified in the EA would not result in adverse cumulative effects on interior least tern and its habitat.

2.5 Pallid Sturgeon – Endangered

Project Area Biology: The pallid sturgeon is a federally listed endangered fish that occurs in Williams County. The species dates to prehistoric times and can weigh up to 80 pounds. Pallid sturgeons prefer the bottom of large, shallow rivers with sand and gravel bars, and flows with high turbidity without obstructions. Construction of dams and armored bank stabilization has damaged or destroyed its preferred habitat. The preferred habitat has a diversity of depths and velocities formed by braided channels, sandbars, islands, sand flats, and gravel bars.

The pallid sturgeon was relatively common in the Missouri and Yellowstone River systems in North Dakota as late as the 1950s, but biologists believe fewer than 250 of the fish remain. Consequently, the pallid sturgeon was placed on the Endangered Species List in 1990. Historically, pallid sturgeon were found in the Missouri River from Fort Benton, Montana; in the Mississippi River from above St. Louis to the Gulf of Mexico; and in the lower reaches of other large tributaries, including the Yellowstone, Platte, Kansas, Ohio, Arkansas, Red, and Sunflower Rivers; and in the first 60 miles of the Atchafalaya River in Louisiana.

In the Missouri River, the pallid sturgeon populations are currently fragmented by dams. As a result, the pallid sturgeon is scarce in the upper Missouri River above the Ft. Peck Reservoir; in the middle Missouri and lower Yellowstone Rivers between Ft. Peck Dam and Lake Sakakawea; and in the lower Missouri River downstream of Gavins Point Dam at Yankton, South Dakota. It is also scarce in the Mississippi and Atchafalaya Rivers.

No reproduction has been documented in North Dakota in 15 years (FWS, 2010).

2.5.1 Direct and Indirect Effects

Construction and Operational Effects: The proposed Project does not cross the Missouri or Yellowstone Rivers, nor is it in close proximity. No direct or indirect effects on pallid sturgeon or its habitat are anticipated as a result of construction or operations of the pipeline facilities

2.5.2 Estimated Take

The proposed Project does not involve crossings of the Missouri or Yellowstone Rivers. No estimated take is anticipated as a result of construction or operation of the pipeline facilities.

2.5.3 Cumulative Effects

The Project would not directly or indirectly affect the pallid sturgeon or its habitat. Consequently, the Project in addition to the past, present, and reasonably foreseeable projects or activities identified in the EA would not result in adverse cumulative effects on the pallid sturgeon and its habitat.

2.6 Gray Wolf – Endangered

Project Area Biology: Since 1978, the gray wolf has been federally listed as endangered in Williams and Divide Counties; however, gray wolf habitat is sparse and sightings have been concentrated well away from the Project. While having a relatively small pack range, the gray wolf is a species whose individuals are known to travel great distances over a large geographic region (Treves et. al., 2009) and observations in any location in the state are possible. In 2002, a radio collared 2 year old male of the Camp Ripley Minnesota pack travelled over 600 miles over a 9 month time frame throughout eastern Minnesota and Wisconsin only to return to the pack in central Minnesota (Minnesota Department of Natural Resources, 2003).

Thirty-four reports of observations of wolves by the public and agency personnel were recorded by the FWS Ecological Services program from January 1992 to December 1995, but no sightings were recorded in the Project area. According to the FWS (2010), the gray wolf is an occasional visitor to North Dakota and is primarily observed in the Turtle Mountains.

The 579-square-mile Turtle Mountains region is an elevated physiographic feature that supports a deciduous forest ecosystem of paper birch *(Betula papyriera),* quaking aspen *(Populus tremuloides),* and bur oak *(Quercus macrocarpa).* The area is about 90 percent uplands and small wetlands and 10 percent lakes and large wetlands. The uplands are 68 percent forested with the remainder being pasture and cropland. The region also has non-migratory white-tailed deer *(Odocoileus virginianus),* moose *(Alces alces)*, and elk *(Cervus elaphus)* populations.

Of the 34 reported sightings of wolves, 12 occurred in the Turtle Mountains of which 4 were by the USDA, Animal Damage Control (ADC) personnel. ADC personnel reported 17 incidents of wolf tracks in the Turtle Mountains. These tracks included tracks of pups in 1994. During the same period, ADC personnel also reported several possible, although unconfirmed, cases of wolf depredation of livestock. Other reports of wolves, including observations by ADC personnel, came from within 15 miles of the Turtle Mountains, which is located approximately 150 miles east of the Project. The relatively large number of recent reports of wolves from the Turtle Mountains vicinity and the reports that have been received during all seasons suggest that wolves may have established a territory in the area.

The Turtle Mountains appear to be suitable for some level of wolf activity. Studies in Minnesota and Wisconsin suggest that wolves are more likely to survive in forested habitats with low road densities such as is available in the Turtle Mountains region. The data suggest that the presence of wolves in most of North Dakota will remain sporadic and consist of occasional dispersing animals from Minnesota and Manitoba. Although most of North Dakota is sparsely populated, and has low road densities, the mostly wide-open prairie habitat makes wolves vulnerable to being shot, and, therefore, colonization by wolves is unlikely. The exception is the Turtle Mountains region. This region provides marginal habitat that may be able to support a very small non-viable population of territorial wolves.

2.6.1 Direct and Indirect Effects

Construction and Operational Effects: There are no known packs or occurrences of the gray wolf within or in proximity to the Project area. No direct or indirect effects on the gray wolf are anticipated as a result of construction or operation of the pipeline facilities.

2.6.2 Estimated Take

There are no known packs or occurrences of the gray wolf within or in proximity to the Project area; therefore, no estimated take is anticipated as a result of construction or operation of the pipeline facilities.

2.6.3 Cumulative Effects

Due to the transitory nature and historically known preferred habitat of the gray wolf (i.e., outside the Project area), no cumulative effects on the gray wolf or its habitat are anticipated as a result of the Project in addition to the past, present, and reasonably foreseeable projects or activities identified in the EA.

3.0 PLANNING MITIGATION MEASURES

Impact avoidance and minimization measures for federally listed species that were identified during Project planning are described below. The interior least tern, pallid sturgeon, and gray wolf are not addressed as these species are not anticipated to be directly or indirectly affected by the construction and operation of the Project.

The following avoidance and minimization efforts were implemented during planning and design phases of the Project:

- Piping plover
    - Two Critical Habitats in Divide County were avoided and the pipeline route would be located beyond the FWS-recommended 0.5-mile-wide buffer or to the greatest distance possible from the critical wetland habitat boundary.
    - A survey for breeding piping plovers in areas outside of the two critical habitats planned for 2011 was cancelled due to record high water conditions. The survey would be re-initiated in 2012 prior to construction and would include close coordination with Lostwood Refuge staff engaged in regional monitoring of the piping plover.
- Whooping crane
    - The small 10-inch-diameter of the proposed pipeline would allow for siting flexibility to avoid most wetlands in the Project area.
- Sprague's pipit
    - A land use survey was conducted in 2010 to identify suitable grassland habitats for the implementation of construction mitigation measures.

4.0 CONSTRUCTION MITIGATION AND MONITORING

The following mitigation and monitoring measures are proposed for implementation during construction of the Project. These measures are also included in the EPP.

- Piping plover
    - Construction within the FWS's recommended 0.5-mile-wide buffer of Hapet Lake or any other breeding habitat identified in the 2012 surveys or through FWS communications would be conducted outside of the April 1 – September 1 breeding occupancy period.
    - Environmental monitors (trained biologists) would inspect all wetlands within 0.5 mile of the Project where construction is planned during the April 1 – September 1 breeding occupancy period. If birds or active nests are observed, the above restrictions would apply.
    - Unavoidable wetlands would be horizontally bored to avoid direct impacts and habitat loss.
    - Drainages crossed by the Project that outlet into piping plover wetland habitat would be subject to permit-required BMPs, inspection during construction, and post-construction restoration and monitoring of areas disturbed by construction as discussed in the EPP to minimize indirect effects.
- Whooping crane
    - Environmental monitors (trained biologists) would monitor upland areas and wetlands in the vicinity of active construction during the fall whooping crane migration period. The FWS would be consulted to determine the monitoring dates for migration periods.
    - As recommended by the FWS, if birds are observed within 1 mile of the Project during construction, all work within that 1 mile area would cease and the FWS would be notified immediately. Coordination with the FWS would be conducted prior to re-initiating Project-related activities.
    - Unavoidable wetlands would be horizontally bored to avoid direct impacts and habitat loss to stopover wetlands.
    - Drainages discharging into potential stopover wetland habitat crossed by the Project would be subject to permit-required BMPs, inspection during construction, and post construction restoration and monitoring of areas disturbed by construction as discussed in the EPP to minimize indirect effects.
- Sprague's pipit
    - Land clearing of Project work space within potential Sprague's pipit habitat would be implemented to the greatest extent practicable outside of the April 1 – July 15 nesting period.

- If construction occurs during the April 1 – July 15 nesting period in potential Sprague's pipit habitat, these areas would be inspected by environmental monitors prior to the start of work. If observations or evidence of active nesting is detected, construction would be delayed until after July 15 or when the young have fledged, or coordination with the FWS on appropriate nest buffers would occur.

- Permanent grassland habitat loss is limited to 0.2 acre. All other impacts on grassland are temporary and would be restored with original topsoil, seeded with diverse, local genotyped, and certified weed free native mixes, and subject to post-construction monitoring of areas disturbed by construction and maintenance in accordance with Vantage's EPP. Seed mixes would be certified by the producers as required by the USDA and other regulating bodies.

- Habitat fragmentation is anticipated, but would be minimized through the installation of the above-referenced native seed mix and subject to post construction monitoring.

In addition, as discussed in **section 2.1.3**, Vantage, in consultation with the FWS and DOS, has agreed to prepare an Agreement for the conservation of migratory bird species in furtherance of the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and Executive Order 13186. The Agreement would represent a voluntary effort between Vantage and the FWS, and would be designed to include conservation measures that avoid and minimize potential adverse impacts on migratory birds and their habitats. The Agreement would also provide a list of conservation options that the FWS and Vantage would consider as compensatory mitigation for loss of "habitat services" from the temporary and permanent loss of migratory bird habitat for construction and operation of the Project. The goal of the Agreement would be to aid in the long-term conservation of migratory birds with active management of the species and the habitat on which they depend. A signed Agreement between the FWS and Vantage would be provided to the DOS prior to construction.

4.1 Operational Mitigation and Response Contingencies

Risks parameters and contingencies under a worst case leak scenario are addressed in **section 2.1.3**. The potential for wildlife collisions and strikes is believed to be insignificant due to the below ground nature of the pipeline, and habitat fragmentation is anticipated, but would be minimized through the above-mentioned native grassland seed mix. With the exception of about 0.2 acre, all Project permanent right-of-way areas in grassland would be reseeded, restored, and subject to post construction monitoring of areas disturbed by construction and maintenance in accordance with Vantage's EPP.

5.0 CONCLUSIONS

Based on the findings addressed in this BA, a "*may affect, but not likely to adversely affect*" determination is recommended for the piping plover, whooping crane, Sprague's pipit, least interior tern, pallid sturgeon, and gray wolf as summarized below.

Species: Common name - *scientific name*	Federal Status	Effect Determination
Piping plover - *Charadrius melodus* (Great Plains population)	Threatened	"may affect, but not likely to adversely affect" (MANLAA)
Whooping crane - *Grus americana*	Endangered	MANLAA
Gray wolf - *Canis lupus*	Endangered	MANLAA
Pallid sturgeon - Scaphirhynchus albus	Endangered	MANLAA
Interior least tern - Sterna antillarum athaloassos	Endangered	MANLAA
Sprague's pipit - *Anthus spragueii*	Candidate	MANLAA
Critical Habitat for the piping plover	Endangered	MANLAA

The recommendations are based on the following:

- Early informal consultation with the FWS to identify, assess, and avoid/minimize impacts to the greatest extent practicable.
- Lack of habitat and/or occurrences in the Project area for the least interior tern, pallid sturgeon, and gray wolf.
- Migration presence of whooping crane.
- Avoidance of wetland impacts by horizontally boring under wetlands.
- Location of the Project beyond the 0.5-mile-wide buffer at the McCone Lake critical habitat.
- Location of the Project at the farthest distances possible at the Radar WPA critical habitat and Hapet Lake piping plover breeding habitat.
- Minimizing grassland habitat fragmentation through reseeding the permanent right-of-way with a diverse, local genotyped, and weed free native grassland mix.
- Minimizing grassland habitat loss to 0.2 acre.
- Minor to nonexistent cumulative effects on grassland and wetland habitat from the Project in addition to the identified past, present, and reasonably foreseeable projects or activities.
- Preparation of an Agreement for the conservation of migratory bird species in furtherance of the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and Executive Order 13186. The Agreement would represent a voluntary effort between Vantage and the FWS, and would be designed to include conservation measures that avoid and minimize potential adverse impacts on migratory birds and their habitats. The Agreement would also provide a list of conservation options that the FWS and Vantage would consider as compensatory mitigation for loss of "habitat services" from the

temporary and permanent loss of migratory bird habitat for construction and operation of the Project. The goal of the Agreement would be to aid in the long-term conservation of migratory birds with active management of the species and the habitat on which they depend. A signed Agreement between the FWS and Vantage would be provided to the DOS prior to construction.

- Construction measures that include:

  - environmental monitoring by trained, experienced biologists;

  - environmental training would be required for all construction crews prior to construction;

  - timing construction to the greatest extent possible outside of the Sprague's pipit and piping plover breeding season. Delaying construction until after fledging where known occurrences have been identified;

  - no construction within the 0.5-mile-wide buffers of piping plover breeding habitats during the site occupancy season;

  - construction cessation if roosting or foraging whooping cranes are observed within a one-mile of active construction. Construction would resume after the birds have departed from the area where observed with FWS consent;

  - clearing of grassland habitat outside of the Sprague's pipit nesting season to pre-empt nest establishment. The nesting season for the subject construction year will be advised by FWS staff at the Lostwood Refuge Office who are annually monitoring the bird's breeding (prior to construction);

  - if construction progresses into the spring, pre-construction clearing of grassland habitat prior to nesting would be intended to preclude the establishment of nesting in the workspace, a common mitigation practice recommended by the FWS and other resource agencies. The birds would establish nests in the widely available habitat adjacent to the Project workspace;

  - horizontal borings under all unavoidable wetlands to avoid impacts or habitat loss to whooping crane stopover roosting habitat and potential piping plover habitat. Construction measures and vehicular travel restrictions on and around wetlands;

  - topsoil salvage and replacement, reseeding native grassland with a diverse, locally genotyped, and certified weed free native species grassland seed mix, and post-construction monitoring and maintenance in all grassland habitats affected by the temporary and permanent right-of-way; and

  - permit-required BMPs and inspections during construction, and post-construction restoration and monitoring at all drainages, including drainages into piping plover and whooping crane stopover wetlands by Project trained and assigned environmental monitors. Environmental monitors would complete daily inspection reports, summarized in regular reports provided to the FWS and other interested agencies. Monitoring reports would be provided, as requested, to the FWS, landowners, other interested agencies, and stakeholders.

- Operations measures that include:

  - analysis of risk factors and emergency contingencies under a worse cast leak or rupture scenario as addressed in detail in **section 2.1.3;**

  - adoption of emergency leak and rupture contingencies addressed in the EPP, EA, and HASP, which would be developed prior to construction and applicable during operations;

  - post-construction monitoring in accordance with a Project EPP and remediation of temporary impacts on habitats within the temporary and construction right-of-way. A monitoring plan would be included in the EPP, and would include reporting protocols, thresholds, metrics, and follow-up maintenance BMPs. The length of monitoring period would be flexible to account for variation and the time needed to achieve success. Monitoring reports would be provided, as requested, to the FWS, landowners, other interested agencies, and stakeholders . The FWS, landowners, and other agencies would have full authority to conduct follow-up review of monitored areas; and

  - the assumed nature of the Project during operations: a below-ground pipeline with no risk for wildlife collision or conflicts, and minimal habitat loss.

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7.0 LIST OF ACRONYMS

AEGS – Alberta Ethane Gathering System
Agreement – Conservation Agreement
AWBP - Aransas Wood Buffalo Population
BA – Biological Assessment
BMPs – Best Management Practices
CFR – Code of Federal Regulations
CRP – Conservation Reserve Program
DOS – Department of State
EA – Environmental Assessment
EPP – Environmental Protection Plan
GPS – Global positioning unit
HASP – Health and Safety Plan
HVP- High vapor pressure
MANLAA – may affect, but not likely to adversely affect
MLBV – mainline block valve
MOU – Memorandum of Understanding
ND – North Dakota
NDGF – North Dakota Game and Fish Department
NDHD – North Dakota Health Department
NEPA – National Environmental Policy Act
NPDES – National Pollutant Discharge Elimination System
NOI - Notice of Intent
NWP – Nationwide Permit
U.S. – United States
USACE – U.S. Army Corps of Engineers
USDA – U.S. Department of Agriculture
FWS – U.S. Fish and Wildlife Service
USGS – U.S. Geological Service
WPA – Waterfowl Production Area

8.0 LIST OF FIGURES

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Figure 2 – Alternative Routes
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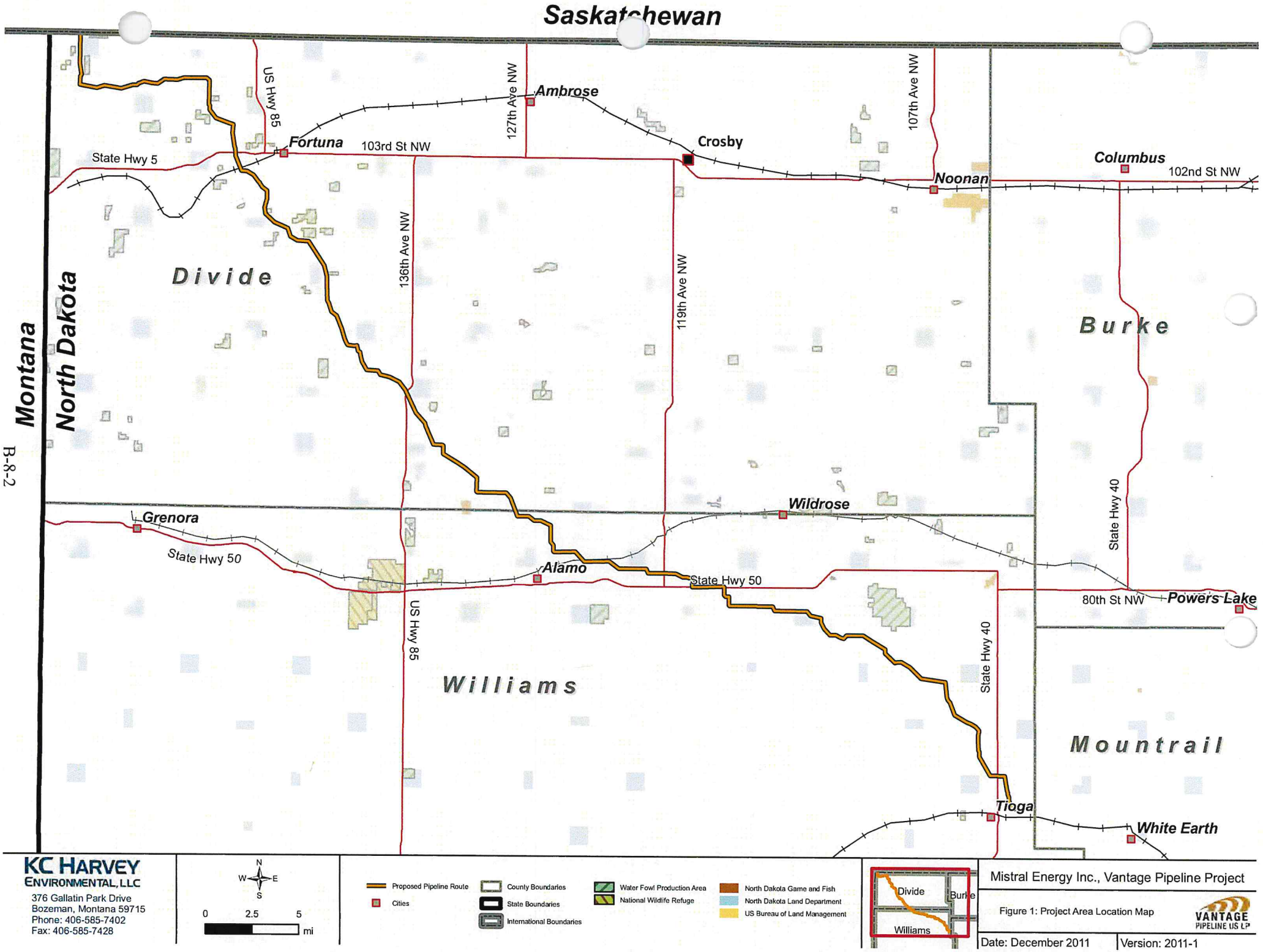
Figure 4 – Piping Plover Critical Habitat Location Map
Figure 5 – Radar WPA Critical Habitat
Figure 6 – McCone Lake Critical Habitat
Figure 7 – Local Whooping Crane Migration Corridor
Figure 8 – Regional Whooping Crane Migration Corridor
Figure 9 – Unavoidable USFWS Grassland Easement
Figure 10 – Land Cover within the 500ft Survey Corridor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Fortuna
103rd St NW
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Noonan
Divide
136th Ave NW
119th Ave NW
Burke
Wildrose
Grenora
State Hwy 50
Alamo
State Hwy 50
State Hwy 40
80th St NW
Powers Lake
US Hwy 85
Williams
State Hwy 40
Mountrail
Tioga
White Earth
KC HARVEY ENVIRONMENTAL, LLC
376 Gallatin Park Drive
Bozeman, Montana 59715
Phone: 406-585-7402
Fax: 406-585-7428
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Proposed Pipeline Route
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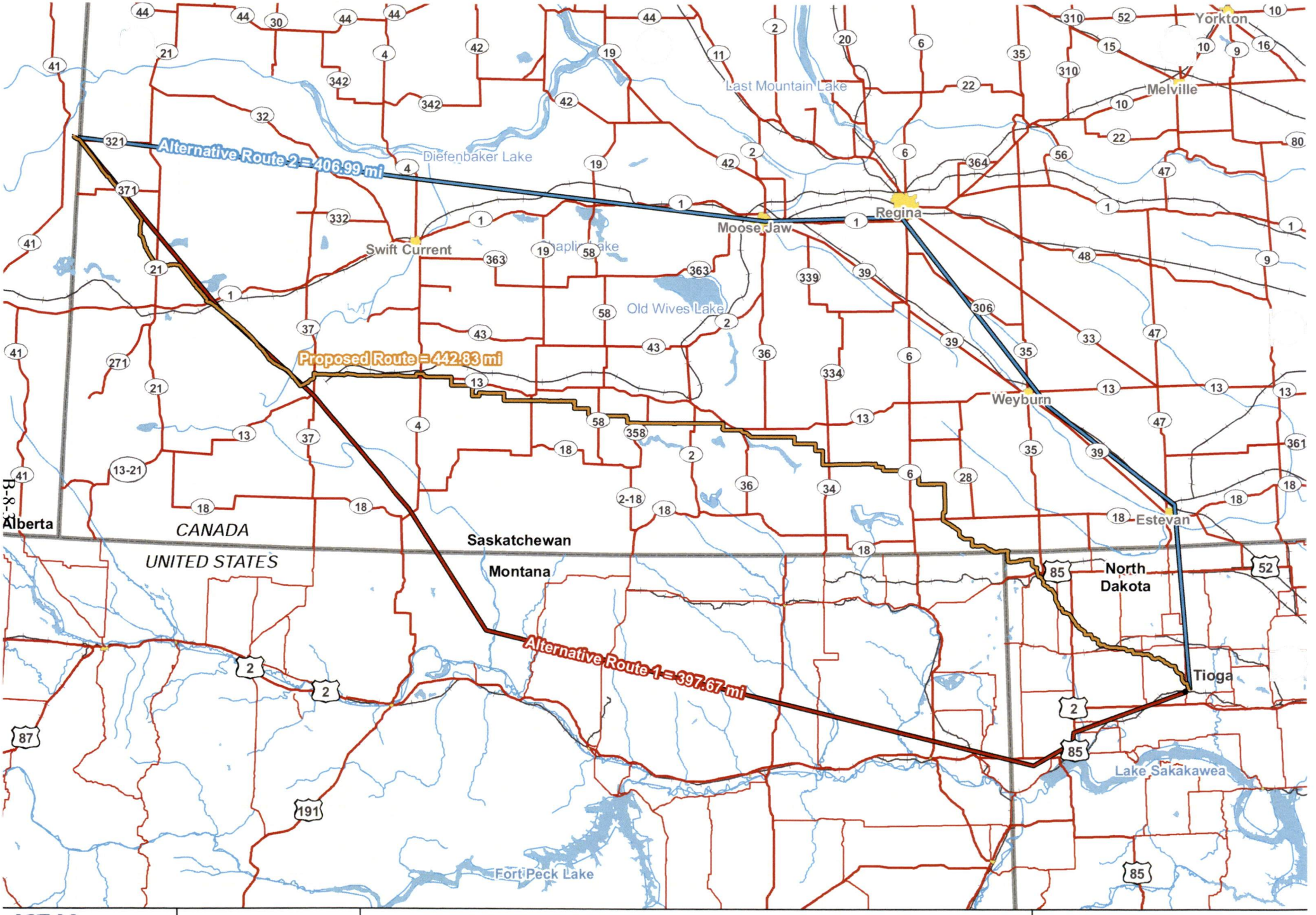
County Boundaries
State Boundaries
International Boundaries
Water Fowl Production Area
National Wildlife Refuge
North Dakota Game and Fish
North Dakota Land Department
US Bureau of Land Management
Divide
Burke
Williams
Mistral Energy Inc., Vantage Pipeline Project
Figure 1: Project Area Location Map
VANTAGE PIPELINE US LP
Date: December 2011
Version: 2011-1



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Bozeman, Montana 59715
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Fax: 406-585-7428

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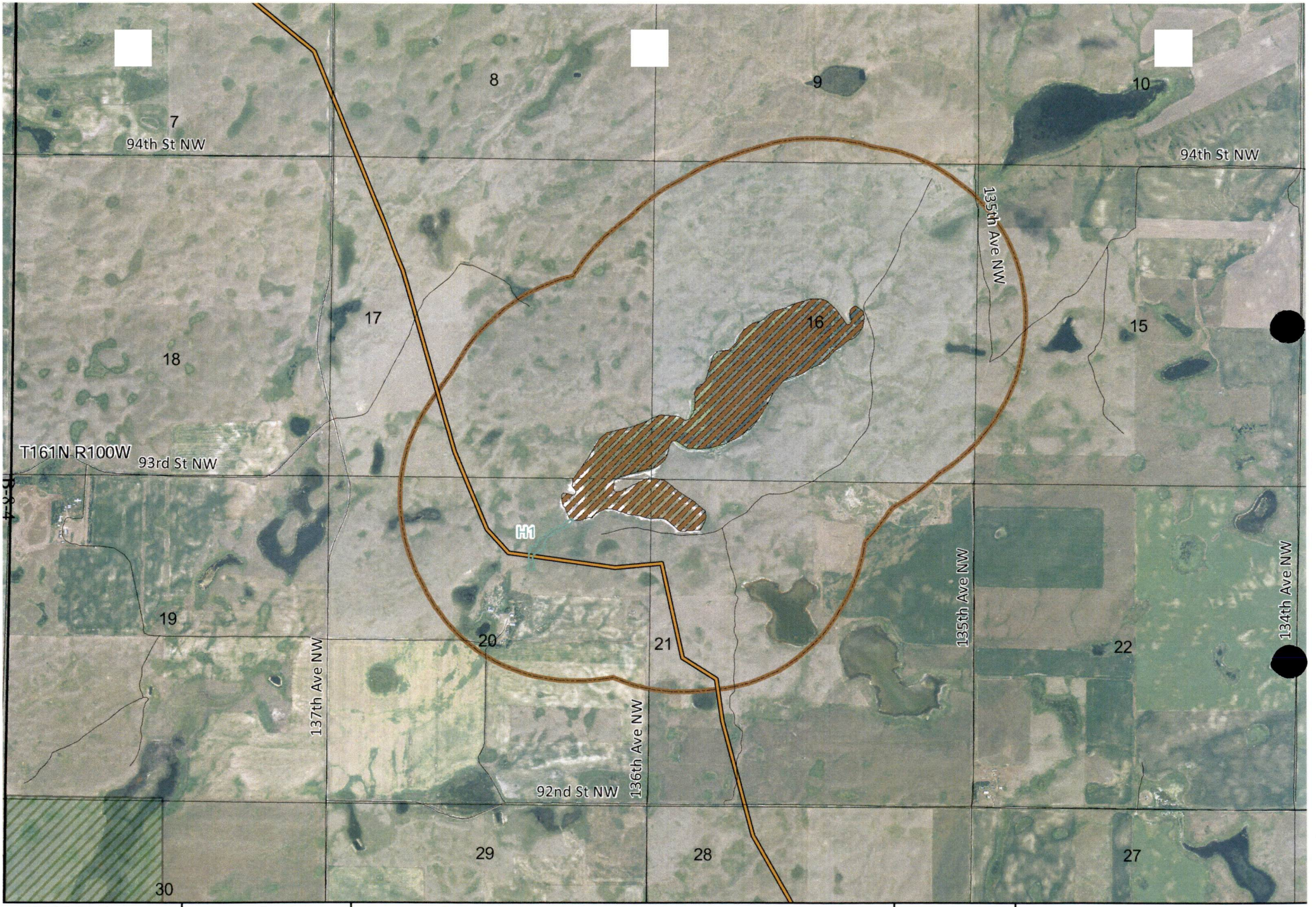
Alternate Route 1 | Alternate Route 2 | Proposed Route

Mistral Energy Inc., Vantage Pipeline Project

Figure 2: Alternative Routes

VANTAGE PIPELINE US LP



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1 : 24,000 N W E S 2,000 ft = 1 in

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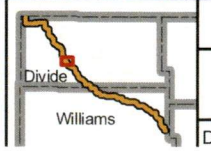
- Pipeline with 16ft buffer
- Piping Plover Occurrence Area
- Occurrence Area 1/2 Mile Buffer
- Potential Drainage
- Waterfowl Production Area
- National Wildlife Refuge
- North Dakota Game and Fish
- North Dakota Land Department
- US Bureau of Land Management

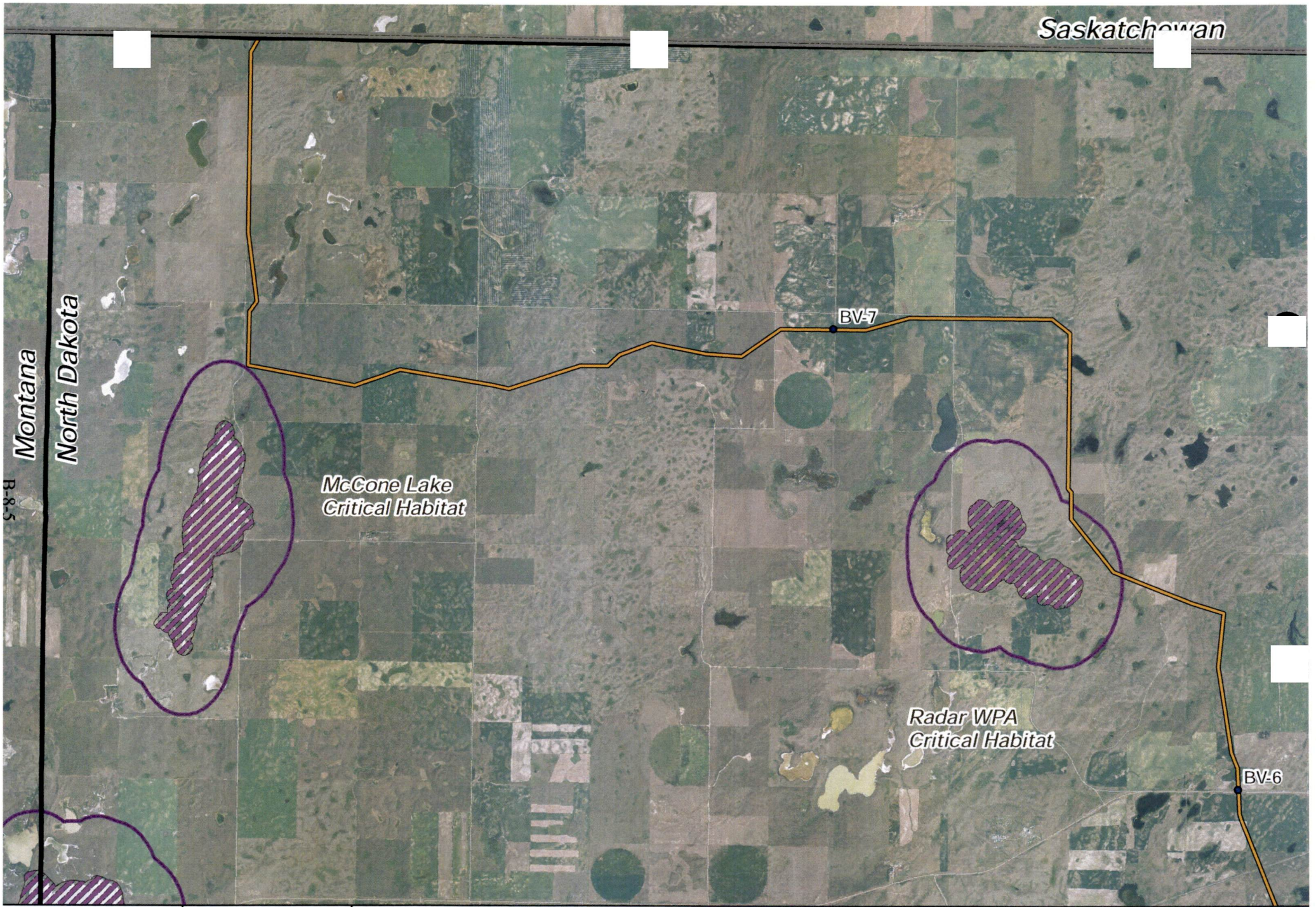


Mistral Energy Inc., Vantage Pipeline Project

Figure 3:
Hapet Lake Location Map

VANTAGE PIPELINE US LP

Date: February 2012 | Version: 2012-1



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Proposed Pipeline Route
Block Valve
Cities
Critical Habitat 1/2 Mile Buffer
Piping Plover Critical Habitat
State Boundaries
International Boundaries

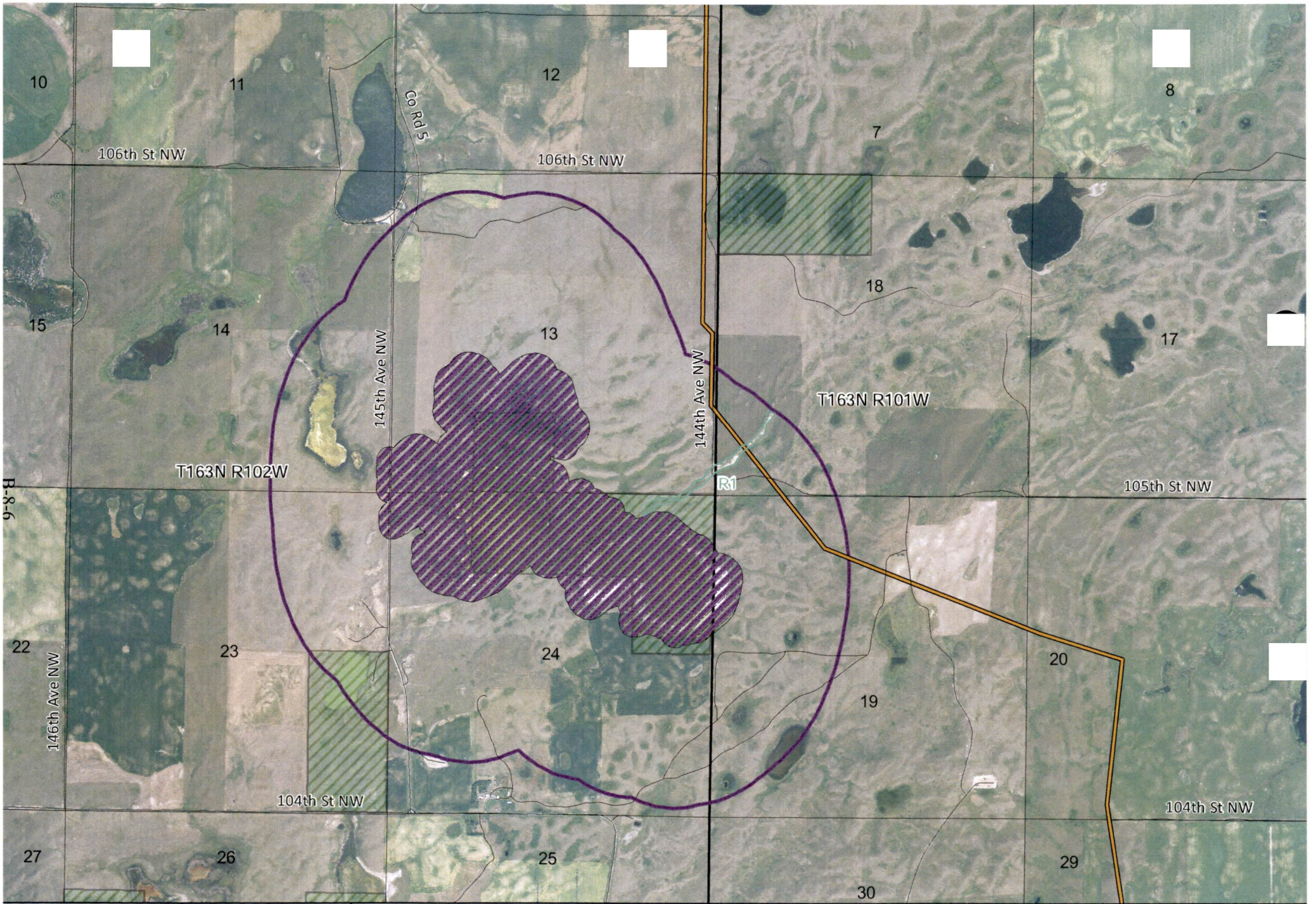
Divide
Burke
Williams

Mistral Energy Inc., Vantage Pipeline Project

Figure 4:
Piping Plover Critical Habitat Location Map

VANTAGE PIPELINE US LP

Date: February 2012 | Version: 2012-1



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1 : 24,000 — 2,000 ft = 1 in

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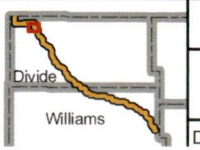
- Pipeline with 16ft buffer
- Critical Habitat
- Critical Habitat 1/2 Mile Buffer
- Potential Drainage
- Waterfowl Production Area
- National Wildlife Refuge
- North Dakota Game and Fish
- North Dakota Land Department
- US Bureau of Land Management



Mistral Energy Inc., Vantage Pipeline Project

Figure 5: Radar WPA Critical Habitat

VANTAGE PIPELINE US LP

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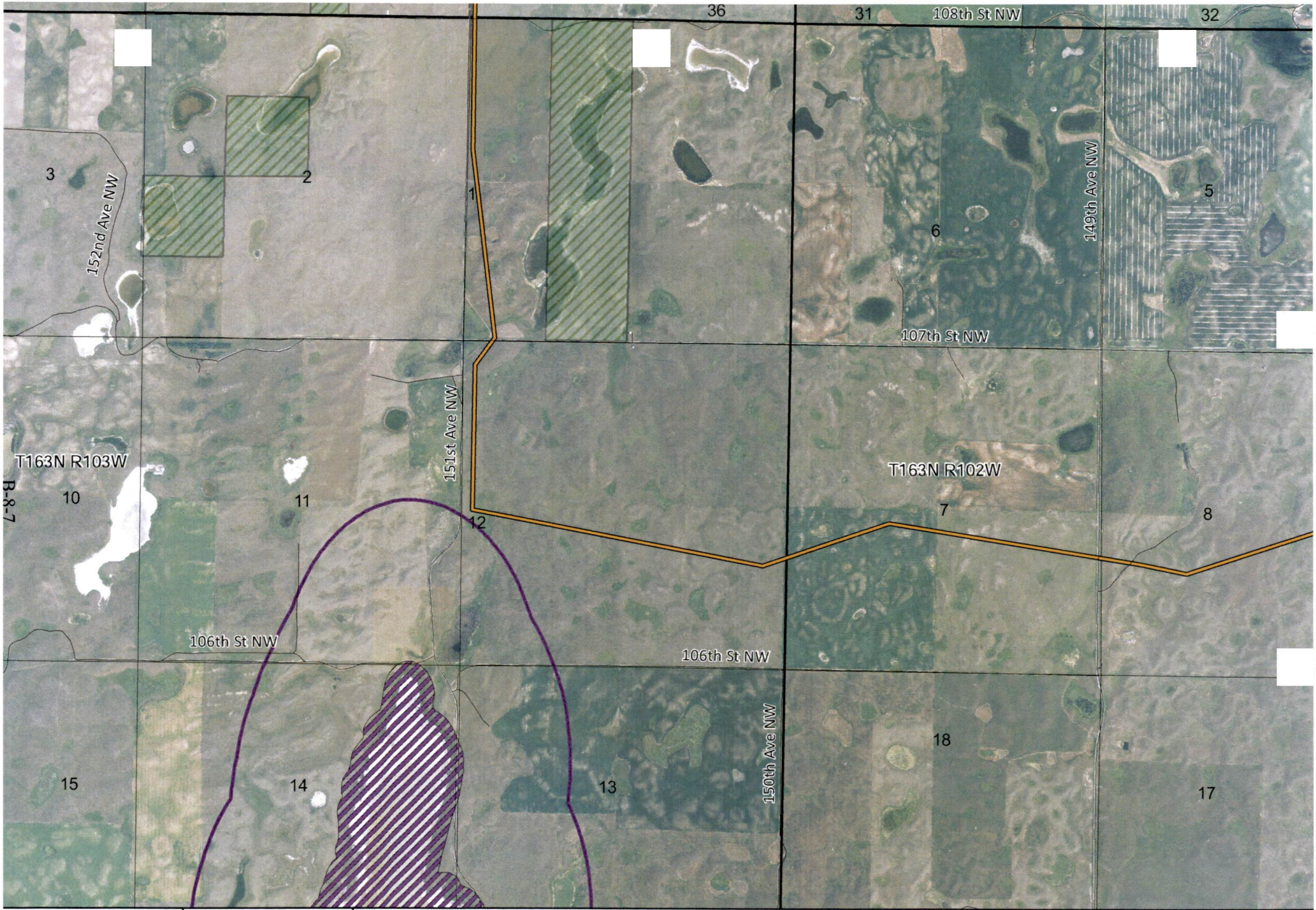

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1 : 24,000 2,000 ft = 1 in

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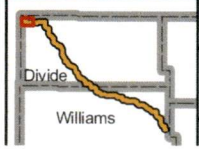
- Pipeline with 16ft buffer
- Critical Habitat
- Critical Habitat 1/2 Mile Buffer
- Waterfowl Production Area
- National Wildlife Refuge
- North Dakota Game and Fish
- North Dakota Land Department
- US Bureau of Land Management

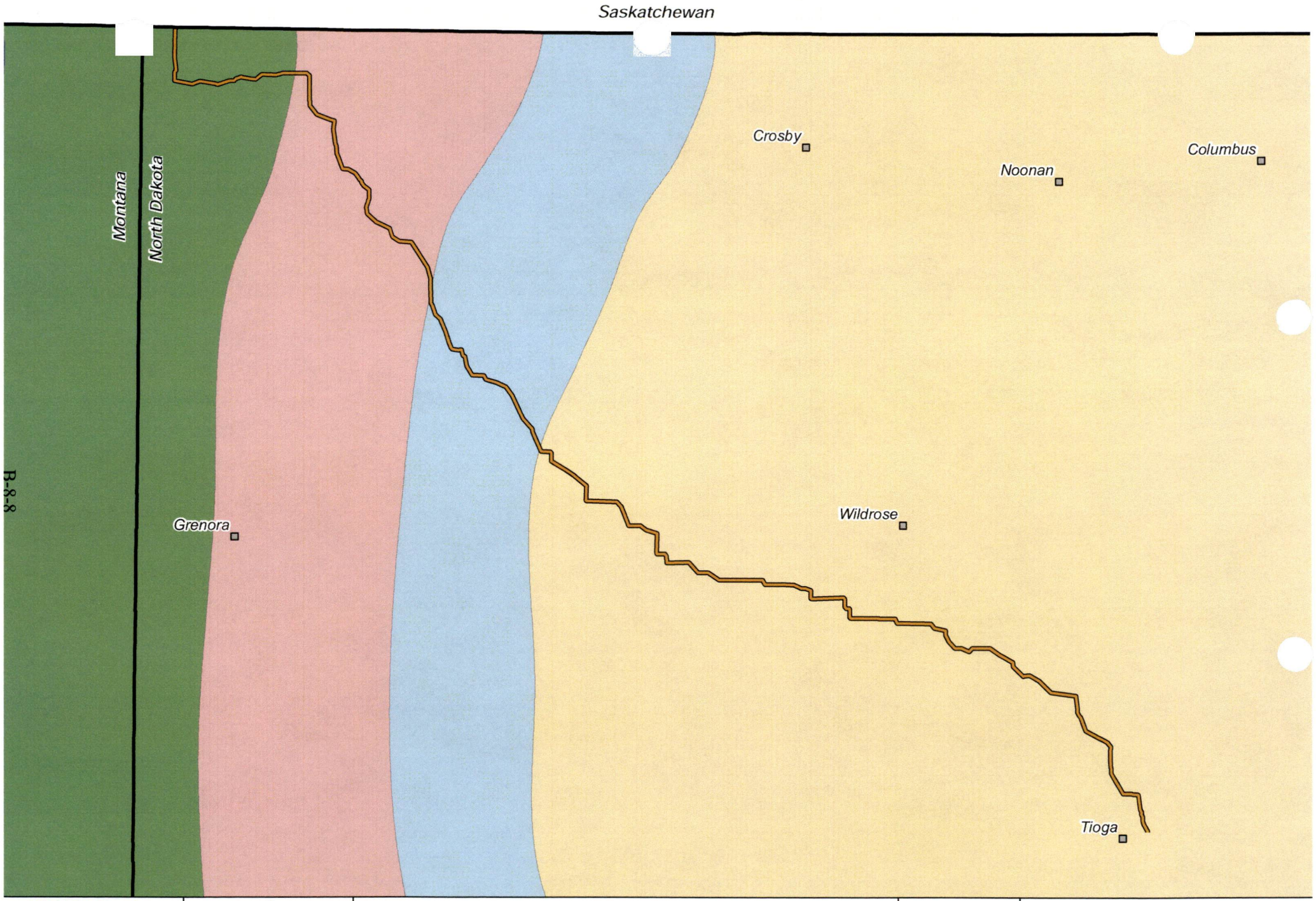


Mistral Energy Inc., Vantage Pipeline Project

Figure 6: McCone Lake Critical Habitat

VANTAGE PIPELINE US LP

Date: December 2011 Version: 2011-1



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Mistral Energy Inc., Vantage Pipeline Project

Figure 7:
Local Whooping Crane Migration Corridor

VANTAGE PIPELINE US LP

Date: December 2011 | Version: 2011-1

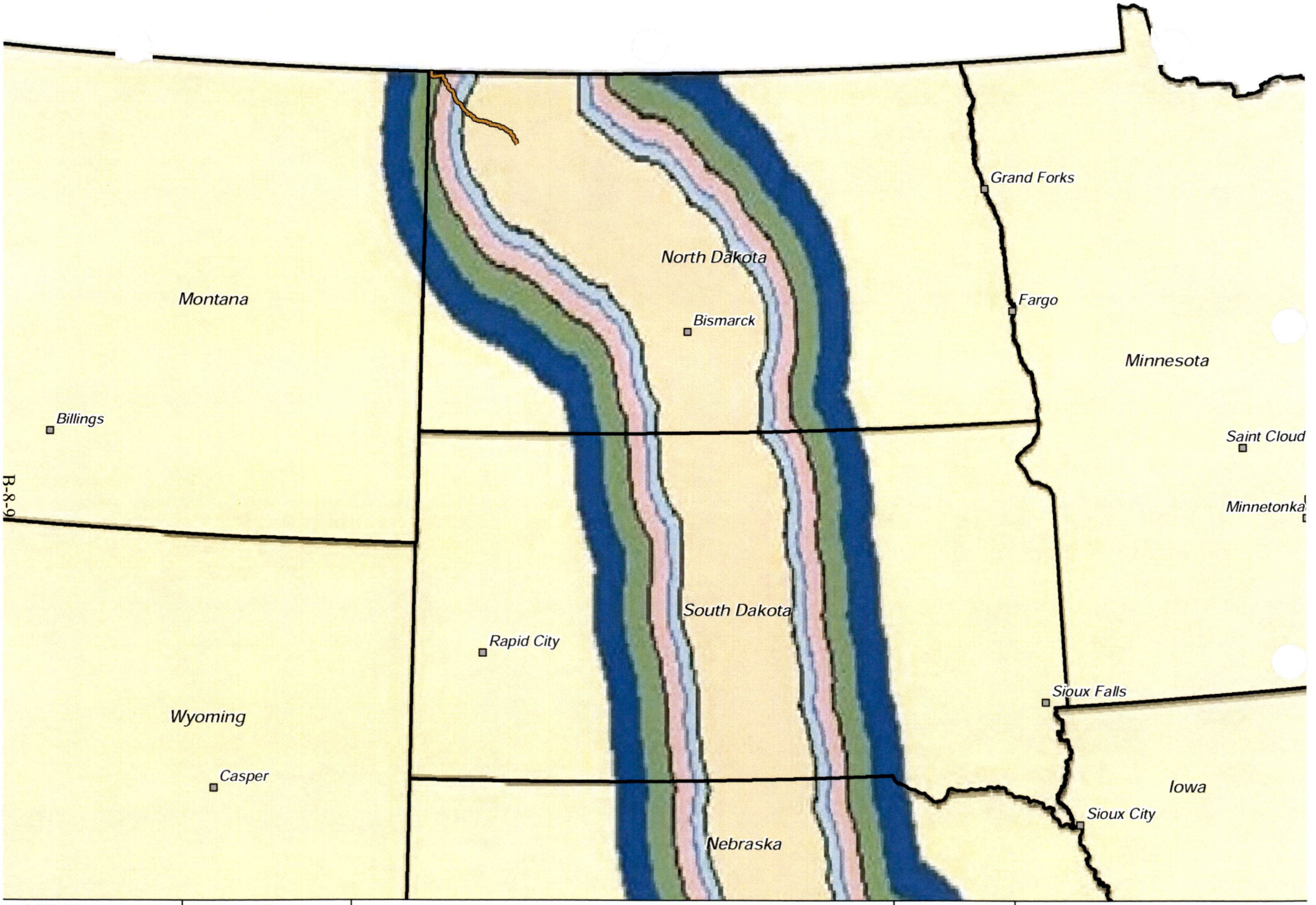

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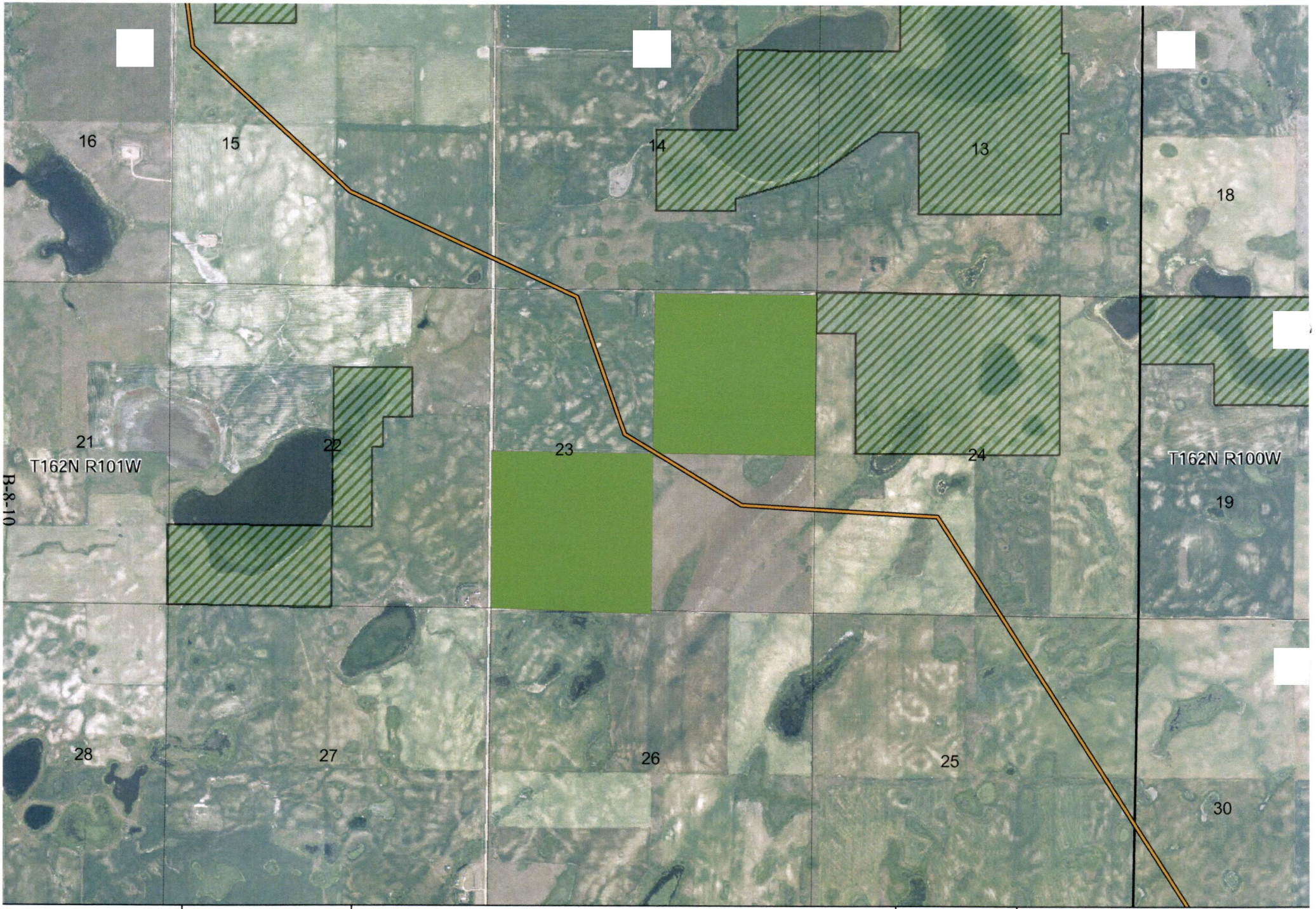
Figure 8:
Regional Whooping Crane Migration Corridor

VANTAGE PIPELINE US LP

Date: April 2012

Version: 2012-1



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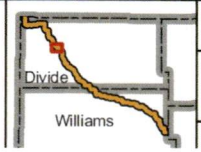
Pipeline with 16ft buffer

Grassland Easement

Waterfowl Production Area



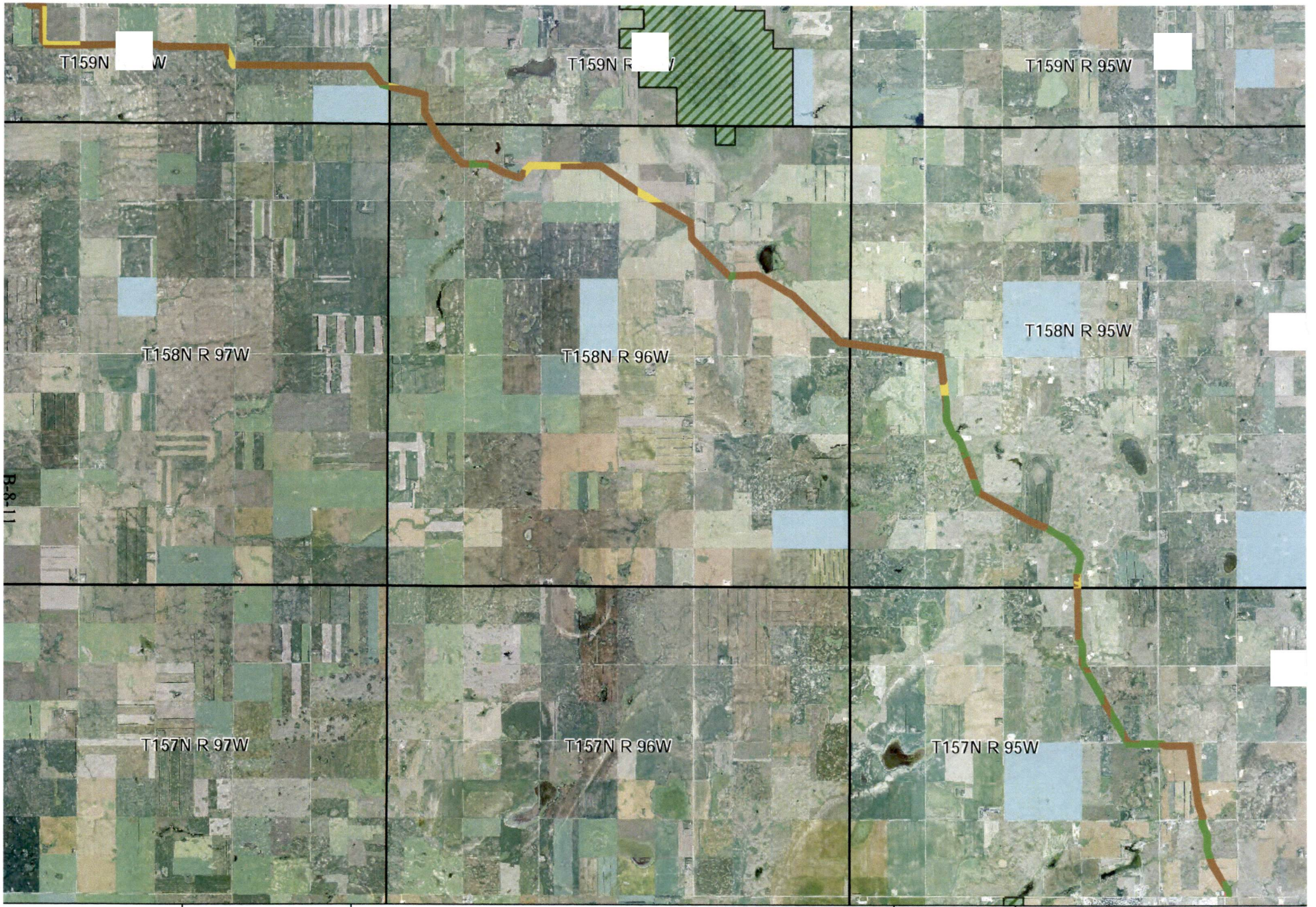
Mistral Energy Inc., Vantage Pipeline Project

Figure 9: Unavoidable USFWS Grassland Easement

VANTAGE PIPELINE US LP

Date: December 2011

Version: 2011-1



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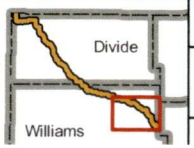
Landcover Classes

- Cultivated Crops
- Developed
- Grassland
- Pasture or Hay
- Waterfowl Production Area
- Piping Plover Critical Habitat
- Half mile bufer
- North Dakota Game and Fish
- North Dakota Land Department
- US Bureau of Land Management

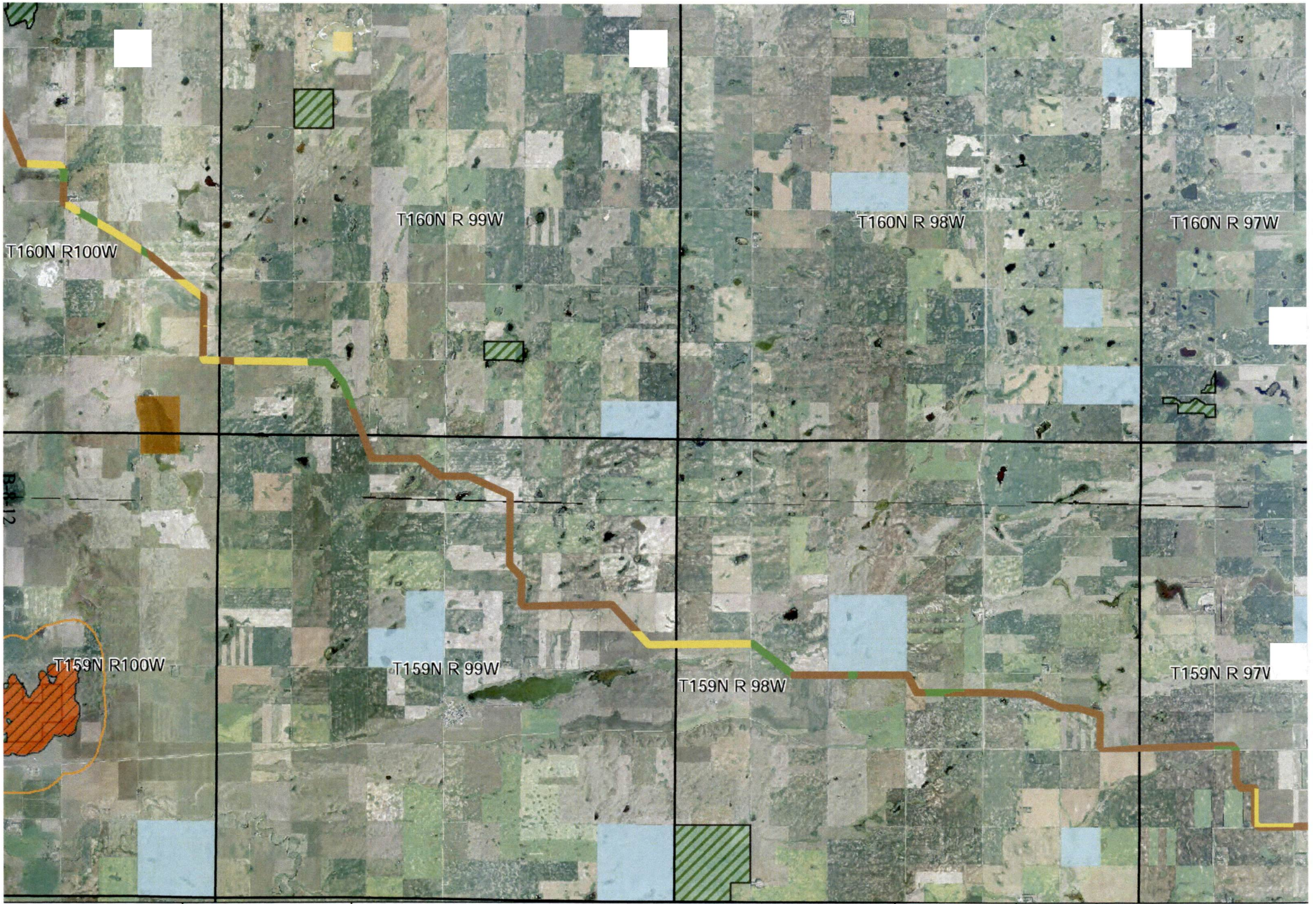


Mistral Energy Inc., Vantage Pipeline Project

Figure 10: Land Cover within the 500ft Survey Corridor (1 of 4)

VANTAGE PIPELINE US LP

Date: February 2012 | Version: 2012-1



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Landcover Classes

- Cultivated Crops
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- Grassland
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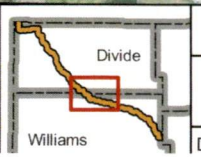
- Waterfowl Production Area
- Piping Plover Critical Habitat
- Half mile bufer
- North Dakota Game and Fish
- North Dakota Land Department
- US Bureau of Land Management

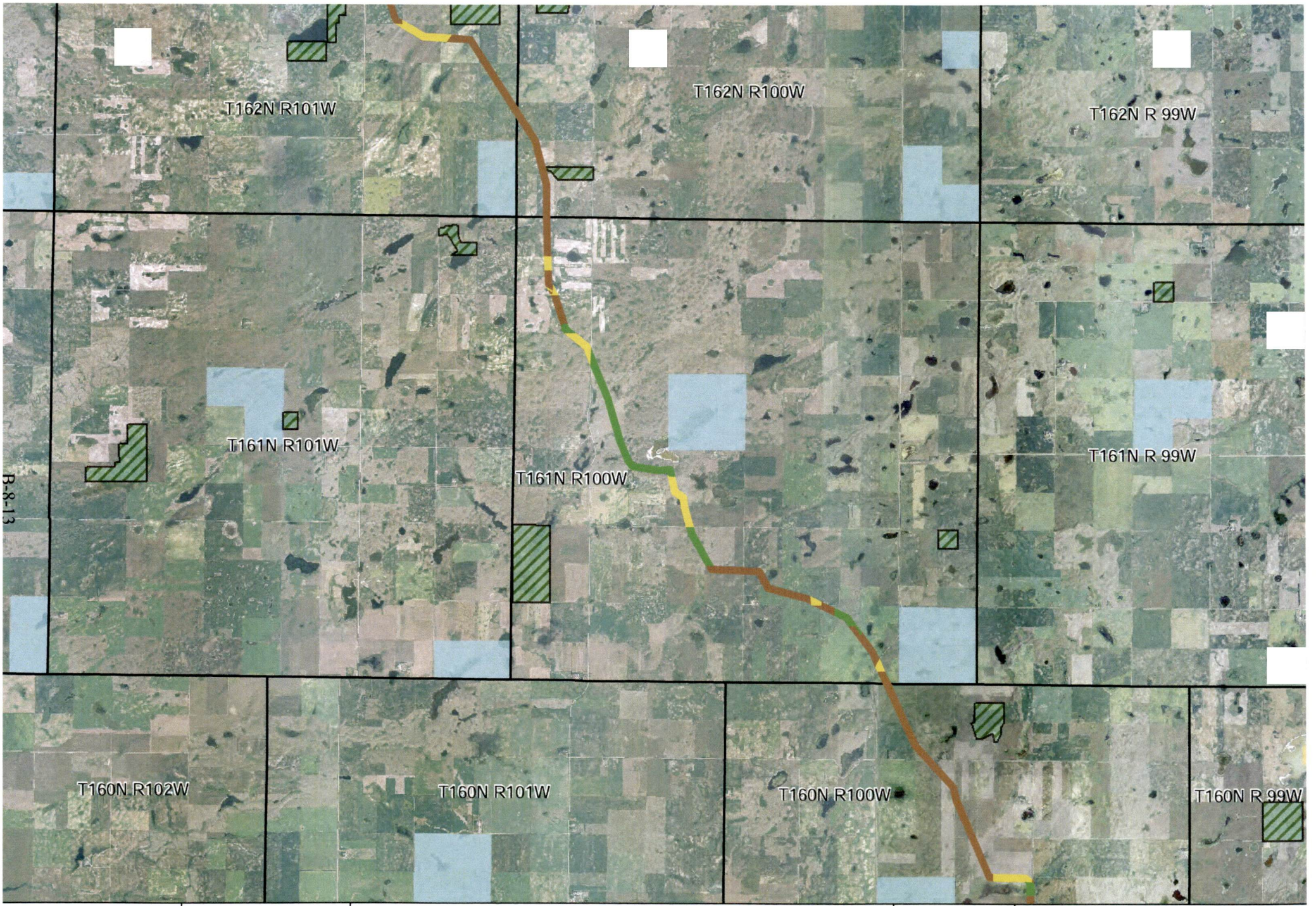


Mistral Energy Inc., Vantage Pipeline Project

Figure 10: Land Cover within the 500ft Survey Corridor (2 of 4)

VANTAGE PIPELINE US LP

Date: February 2012 | Version: 2012-1



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Fax: 406-585-7428

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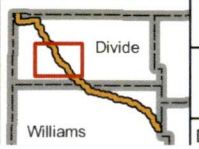
Landcover Classes

- Cultivated Crops
- Developed
- Grassland
- Pasture or Hay
- Waterfowl Production Area
- Piping Plover Critical Habitat
- Half mile bufer
- North Dakota Game and Fish
- North Dakota Land Department
- US Bureau of Land Management

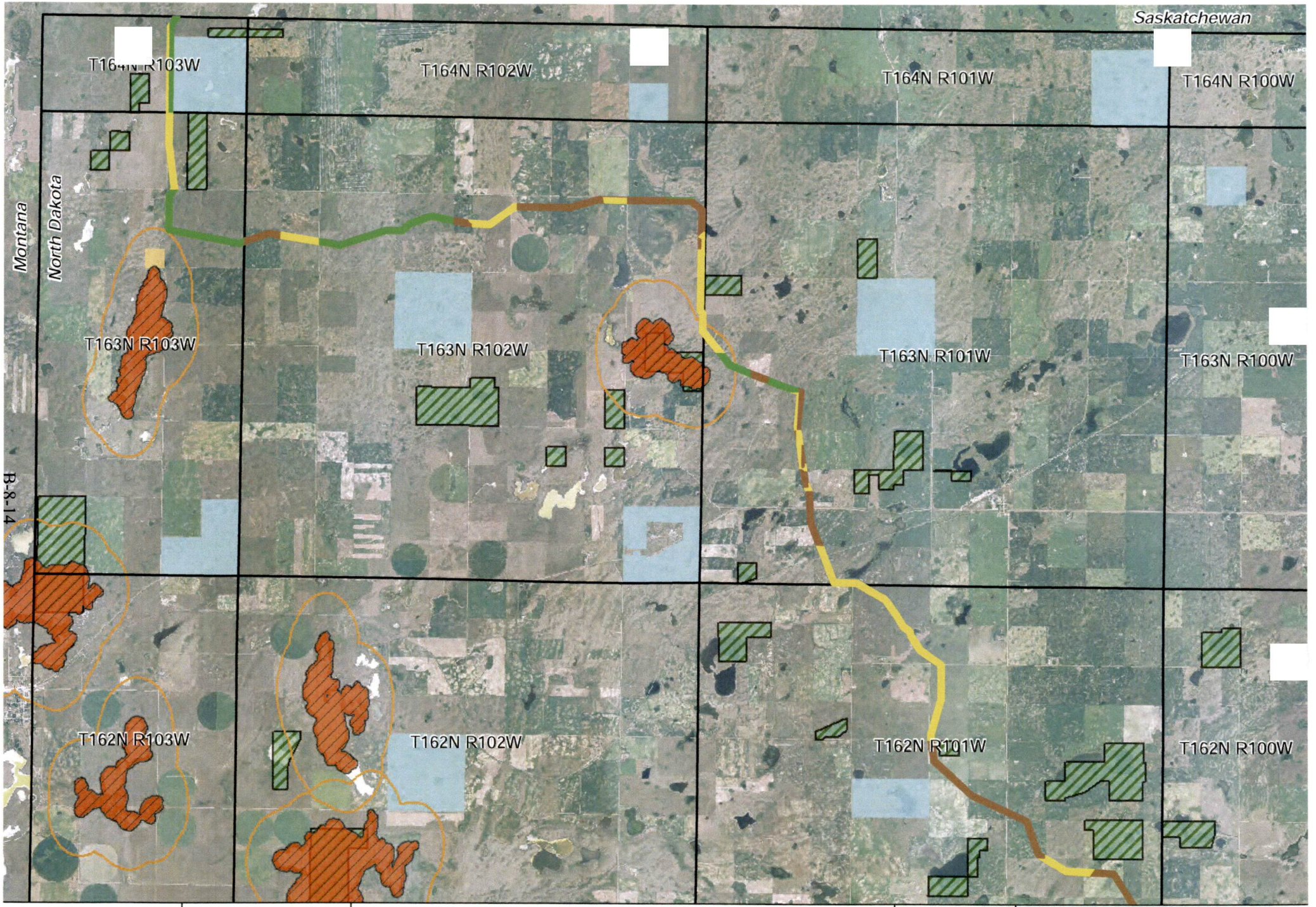


Mistral Energy Inc., Vantage Pipeline Project

Figure 10: Land Cover within the 500ft Survey Corridor (3 of 4)

VANTAGE PIPELINE US LP

Date: February 2012 | Version: 2012-1



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Landcover Classes

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- North Dakota Land Department
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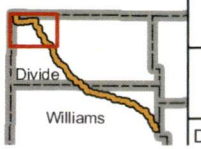

Mistral Energy Inc., Vantage Pipeline Project

Figure 10: Land Cover within the 500ft Survey Corridor (4 of 4)

VANTAGE PIPELINE US LP

Date: February 2012 | Version: 2012-1

Appendix A – Correspondence and Documents

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501

OCT 1 2010

Mr. David P. Cameron, P.E.
KC Harvey Environmental, LLC
376 Gallatin Park Drive
Bozeman, Montana 59715

Re: Request for Coordination and Consultation for the Proposed Vantage Pipeline, Divide and Williams Counties, North Dakota

Dear Mr. Cameron:

This is in response to your July 27, 2010, letter regarding the proposed 10-inch diameter ethane pipeline which would convey ethane from Tioga, North Dakota, and would be connected to an existing ethane pipeline system near Empress, Alberta, Canada. The proposed pipeline would be located in Divide and Williams Counties and would be constructed by Vantage Pipeline Company Inc. (Vantage).

We offer the following comments under the authority of and in accordance with the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) (MBTA), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) (BGEPA), the Endangered Species Act (16 U.S.C. 1531 et seq.) (ESA), the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57), and the National Environmental Policy Act (NEPA).

Threatened and Endangered Species

If an action that may affect a federally-listed threatened or endangered species is carried out, funded, permitted, or licensed by a Federal agency (in this case the Department of State), the Federal agency may designate a non-Federal representative to conduct informal consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the ESA. The Federal agency is responsible to ensure that its actions comply with the ESA and other relevant wildlife protection laws, including obtaining concurrence from the Service for any action that may affect a threatened or endangered species, or result in the destruction or adverse modification of designated critical habitat. The Federal agency is also responsible for making a determination of effects for federally listed species, and should consult with the Service as appropriate.

Until such time as the Department of State designates Vantage and/or its consultants as its agent for purposes of informal Section 7 consultation, these comments should be considered as preliminary to assist in project planning. As the Federal action agency for this project, the Department of State has the responsibility under Section 7 of the ESA to conduct consultation with the Service. The Service expects to consult with the State Department or their designated agent on actions that may affect any listed species.

A list of federally endangered and threatened species that may be present within the proposed project's area of influence is enclosed. This list fulfills requirements of the Service under Section 7 of the ESA. This list remains valid for 90 days.

There is designated critical habitat for the piping plover in Divide and Williams Counties. The evaluation area includes known nesting sites and designated critical habitat. One critical habitat unit in Divide County falls within approximately 0.2 mile from the project center line. Piping plovers are protected wherever they occur, regardless of land ownership. In North Dakota, piping plovers begin arriving on their breeding grounds in early to mid-April and are typically gone by September 1. Disturbance from construction activities during this timeframe is possible depending on proximity to birds. The Service recommends that construction activities in these areas take place from September 1 – April 1. We can provide shapefiles for designated critical habitat for piping plover if desired; however, there are also other suitable wetlands in the project area where plovers may be nesting. Piping plovers nesting on one wetland could be feeding on another. The alkali soils on the census wetlands are soft and tracks are easily left behind. Piping plover chicks have been documented to be trapped and/or drowned in depressions as shallow as a few inches. Compaction of soil in dry or frozen conditions has the potential to impact piping plovers for many years after the activity. In order to avoid disturbing these birds and their habitat, we recommend the following precautions when working in potential or known piping plover habitat:

- Total avoidance of the documented and potential nesting wetlands from April 1 – September 1;
- On wetlands with potential or documented plover nesting, maintain a one-half mile no entry buffer around all shorelines during construction. (If the nesting season cannot be avoided, this may entail rerouting the pipeline route to maintain a minimum ½-mile buffer.);
- All vehicle use should be avoided on any wetland shoreline, including a 200 foot buffer, in the project area.

If you are unable to positively identify piping plover nesting areas, or to maintain a one-half mile no-entry construction buffer on all piping plover nesting wetlands, we recommend that you retain the services of a qualified biologist to survey your project area for these resources.

The Aransas Wood Buffalo Population (AWBP) of endangered whooping cranes is the only self-sustaining migratory population of whooping cranes remaining in the wild. These birds breed in the wetlands of Wood Buffalo National Park in Alberta and the

Northwest Territories of northern Canada, and overwinter on the Texas coast. Whooping cranes in the AWBP annually migrate through North Dakota during their spring and fall migrations. They make numerous stops along their migration route to feed and roost before moving on.

Whooping cranes in the AWBP annually migrate through North Dakota during their spring and fall migrations. The proposed project lies within a 90 mile corridor that includes approximately 75 percent of all reported whooping crane sightings in the State (enclosure). The presence of suitable roosting and feeding habitat for whooping cranes document the potential for whooping crane presence in the proposed project area. Whooping cranes are unlikely to spend more than a few days in any one spot during migration. The Service recommends that if a whooping crane is sighted within one mile of a pipeline or associated facilities while it is under construction, that all work cease within one mile of that part of the project and the Service be contacted immediately. In coordination with the Service, work may resume after the bird(s) leave the area.

Potential habitat for the Sprague's pipit exists in Divide and Williams Counties. In 2010, the Sprague's pipit was determined to be a candidate species under the ESA. No legal requirement exists to protect candidate species; however, it is within the spirit of the ESA to consider these species as having significant value and worth protecting.

The Sprague's pipit is a species which both breeds and winters on the North American prairie. Their breeding range includes parts of Montana, North Dakota, South Dakota, and Minnesota in the United States. Sprague's pipits require grassland habitat for both breeding and wintering. They also require relatively large patches of prairie for nesting (estimated at between 170-776 acres). They avoid intrusive human features on the landscape, so the impact of a development can be much larger than the actual footprint of the feature. If Sprague's pipit habitat is present near the proposed project, and you intend to take precautions to avoid impacts to the pipit, please notify the Service for further coordination.

Migratory Birds

The Migratory Bird Treaty Act prohibits the taking, killing, possession, and transportation, (among other actions) of migratory birds, their eggs, parts, and nests, except when specifically permitted by regulations. While the MBTA has no provision for allowing unauthorized take, the Service realizes that some birds may be killed during construction even if all known reasonable and effective measures to protect birds are used. The Service's Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and industries that have taken effective steps to avoid take of migratory birds, and by encouraging others to implement measures to avoid take of migratory birds. It is not possible to absolve individuals, companies, or agencies from liability even if they implement bird mortality avoidance or other similar protective measures. However, the Office of Law Enforcement focuses its resources on investigating and prosecuting individuals and companies that take migratory birds

without identifying and implementing all reasonable, prudent and effective measures to avoid that take. Companies are encouraged to work closely with Service biologists to identify available protective measures when developing project plans and/or avian protection plans, and to implement those measures prior to/during construction or similar activities.

The BGEPA, prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles, including their parts, nests, or eggs. The Act provides criminal and civil penalties for persons who take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof. The Act defines take as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. "Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagles return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

Bald and/or golden eagles may use the project area where the pipeline will be located. Golden eagles inhabit a wide variety of habitat types, including open grassland areas. They are known to nest on cliffs, in trees, manmade structures, and on the ground (Kochert et al. 2002). While the bald eagle tends to be more closely associated with forested areas near water (Buehler 2000), they have been found nesting in single trees several miles from the nearest water body. Therefore, there may also be potential habitat for the bald eagle at the proposed project site. Especially early in the nesting season, eagles can be very sensitive to disturbance near the nest site and may abandon their nest as a result of low disturbance levels, even from foot traffic. A buffer of at least 1/2 mile should be maintained for golden and bald eagle nests. A permit is required for any take of bald or golden eagles or their nests. Permits to take golden eagles or their nests are available only for legitimate emergencies and as part of a program to protect golden eagles.

To the extent practicable, schedule construction for late summer or fall/early winter so as not to disrupt waterfowl or other wildlife during the breeding season (February 1 to July 15). If work is proposed to take place during the breeding season or at any other time which may result in the take of bald or golden eagles or other migratory birds, their eggs, or active nests, the Service recommends that the project proponent implement all practicable measures to avoid all take, such as suspending construction where necessary and/or maintaining adequate buffers to protect the birds until the young have fledged. The Service further recommends that if you choose to conduct field surveys for nesting

birds, including eagles, with the intent of avoiding take, that you maintain any documentation of the presence of eagles or other migratory birds, eggs, and active nests, along with information regarding the qualifications of the biologist(s) performing the survey(s), and any avoidance measures implemented at the project site. Should surveys or other available information indicate a potential for take of eagles or other migratory birds, their eggs, or active nests, the Service requests that you contact this office for further coordination on the extent of the impact and the long-term implications of the intended use of the project on eagles or other migratory bird populations.

High Value Habitat Avoidance

As part of the National Wildlife Refuge System, the U.S. Fish and Wildlife Service (Service) administers fee title Refuge and Waterfowl Production Areas, as well as wetland and grassland easements, throughout North Dakota. A review of our county plat maps indicates that Service property interests are located in the study area.

The Service recommends that all property interests within the National Wildlife Refuge System be avoided during project construction, when possible. Special Use or right-of-way permits will be necessary for construction affecting property interests administered by the Service. The issuance of Special Use or right-of-way permits is subject to the final determination of a refuge compatibility review process. This determination may add some time to the review process, so early coordination with the district is important. In your telephone conversation with Heidi Riddle of my staff on September 28, 2010, you indicated that you had contacted Crosby Wetland Management District and are coordinating with them for additional requirements and considerations on Service easements.

Cultural resource compliance requires coordination with the Zone Archeologist early in the NEPA process. Cultural Resource field investigations on USFWS easements and fee lands requires a permit issued by the Zone Archeologist. Contact Barry G. Williams, USFWS Dakotas Zone Archeologist (barry_williams@fws.gov, 701-355-8577).

According to the Service's National Wetland Inventory maps, the corridor and the study area intersect several wetlands. Wetlands are important for water quality as well as for a variety of wildlife species. The Service suggests that Vantage include a detailed plan to avoid or mitigate for unavoidable impacts to wetlands. This will also avoid impacts to threatened and endangered species as discussed above. If your project will result in unavoidable impacts to wetlands, we request to review a mitigation plan to compensate for all wetland losses. If a 404 permit is required, the Service will provide recommendations on this project to the Corps.

Construction activities should be conducted in a manner that will avoid/minimize impacts to the existing habitat in the project area. The following recommendations are intended to reduce construction related impacts:

- Make no stream channel alterations or changes in drainage patterns.

- Install and maintain appropriate erosion control measures to reduce sediment transport to adjacent wetlands and stream channels.

- Reseed disturbed areas with a mixture of native grass and forb species immediately after construction to reduce erosion. Parts of the proposed project area appear to be grassland habitat currently. If trenching is performed in these areas, post-construction reseeding of native prairie grasses, forbs and legumes should be completed. The Service suggests that Vantage consider planting a diverse mix of native species to reclaim the grassland areas. Recent research indicates that a diverse native species mix, including numerous forb species, is not only ecologically beneficial, but is also more weed resistant. A diverse planting of native grasses and forbs allows for less intensive management and chemical use. The more species included in a mixture, the higher the probability of providing competition to resist invasion by non-native plants.

Thank you for the opportunity to comment on this project. If you require further information or the project plans change, please contact me or Heidi Riddle of my staff at (701) 250-4481 or at the letterhead address.

Sincerely,

Jeffrey K. Towner

Jeffrey K. Towner
Field Supervisor
North Dakota Field Office

Enclosures

cc: Project Leader, Crosby WMD
Regulatory Office, Army Corps of Engineers, Bismarck
(Attn: D. Cimarosti)
U.S. Department of State, Washington DC
ND Game & Fish Department, Bismarck

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FEDERAL THREATENED AND ENDANGERED SPECIES
AND DESIGNATED CRITICAL HABITAT FOUND IN
DIVIDE COUNTY, NORTH DAKOTA
October 2010

ENDANGERED SPECIES

Birds

Whooping crane (Grus Americana): Aransas-Wood Buffalo Population (264 birds) occurs in North Dakota counties during spring and fall migration between breeding and wintering areas. Whooping cranes prefer to roost overnight in shallow open water wetland habitat with good visibility during migration stopovers.

Mammals

Gray wolf (Canis lupus): Occasional visitor in North Dakota. Most frequently observed in the Turtle Mountains area.

THREATENED SPECIES

Birds

Piping plover (Charadrius melodus): Nests on midstream sandbars of the Missouri and Yellowstone Rivers and along shorelines of saline wetlands. More nest in North Dakota than any other state.

DESIGNATED CRITICAL HABITAT

Birds

Piping Plover - Alkali Lakes and Wetlands - Critical habitat includes: (1) shallow, seasonally to permanently flooded, mixosaline to hypersaline wetlands with sandy to gravelly, sparsely vegetated beaches, salt-encrusted mud flats, and/or gravelly salt flats; (2) springs and fens along edges of alkali lakes and wetlands; and (3) adjacent uplands 200 feet (61 meters) above the high water mark of the alkali lake or wetland.

FEDERAL THREATENED AND ENDANGERED SPECIES
AND DESIGNATED CRITICAL HABITAT FOUND IN
WILLIAMS COUNTY, NORTH DAKOTA
October 2010

ENDANGERED SPECIES

Birds

Interior least tern (Sterna antillarum): Nests along midstream sandbars of the Missouri and Yellowstone Rivers.

Whooping crane (Grus Americana): Aransas-Wood Buffalo Population (264 birds) occurs in North Dakota counties during spring and fall migration between breeding and wintering areas. Whooping cranes prefer to roost overnight in shallow open water wetland habitat with good visibility during migration stopovers.

Fish

Pallid sturgeon (Scaphirhynchus albus): Known only from the Missouri and Yellowstone Rivers. No reproduction has been documented in 15 years.

Mammals

Gray wolf (Canis lupus): Occasional visitor in North Dakota. Most frequently observed in the Turtle Mountains area.

THREATENED SPECIES

Birds

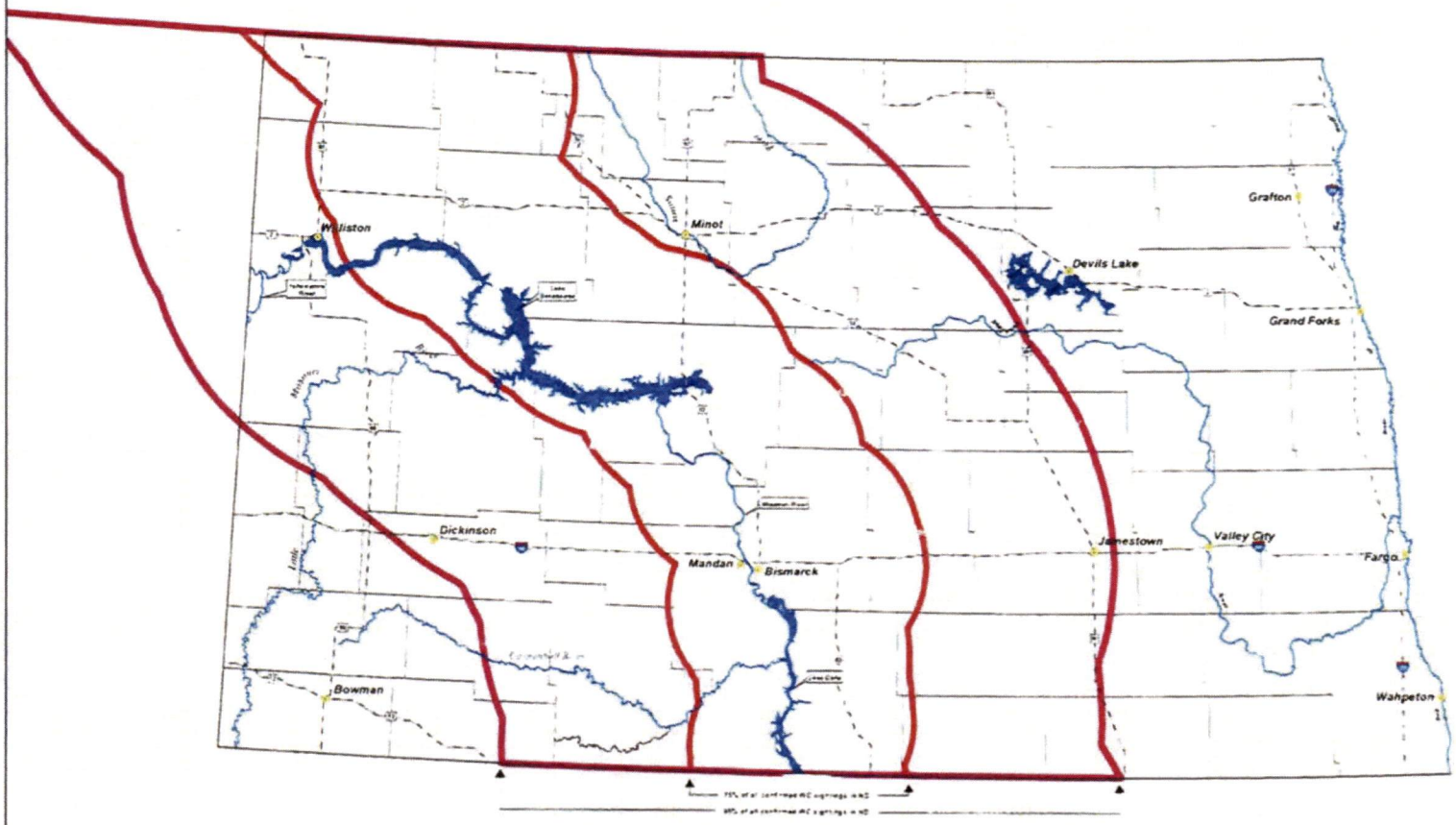
Piping plover (Charadrius melodus): Nests on midstream sandbars of the Missouri and Yellowstone Rivers and along shorelines of saline wetlands. More nest in North Dakota than any other state.

DESIGNATED CRITICAL HABITAT

Birds

Piping Plover - Lake Sakakawea - Critical habitat includes sparsely vegetated shoreline beaches, peninsulas, islands composed of sand, gravel, or shale, and their interface with the water bodies.

North Dakota
Whooping Crane Migration Corridor



DISCLAIMER:

The USFWS makes no claim as to the accuracy or completeness of the displayed information. Species occurrence and habitat information is provided for illustrative purposes only. Federal action agencies and project proponents should contact the USFWS North Dakota Field Office for more detailed species information and technical assistance in evaluating potential project impacts to fish and wildlife resources.

Map produced 04/21/2010 by USFWS Ecological Services, Bismarck, ND.

75% Whooping Crane Migration Corridor

95% Whooping Crane Migration Corridor

0 12.5 25 50 75 100
Miles

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501

SEP 22 2011

Mr. Stephen J. Gallogly, Director
Office of International Energy and
Commodity Policy
U.S. Department of State
2201 C Street NW
Washington, DC 20520

Re: Request For Comments For
The Proposed Vantage
Pipeline, Divide and Williams
Counties, North Dakota

Dear Mr. Gallogly:

This is in response to your August 19, 2011, Notice of Intent to prepare an environmental assessment and request for comments on environmental issues regarding the proposed 10-inch diameter ethane pipeline which would convey ethane from Tioga, North Dakota, and would be connected to an existing ethane pipeline system near Empress, Alberta, Canada. The proposed pipeline would be located in Divide and Williams Counties and would be constructed by Vantage Pipeline Company Inc. (Vantage).

The U.S. Fish and Wildlife Service (Service) offers the following comments under the authority of and in accordance with the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 *et seq.*) (NEPA), the Endangered Species Act, as amended (16 U.S.C. 1531 *et seq.*) (ESA), Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*) (MBTA), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) (BGEPA), and Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds", and Executive Order 11990 "Protection of Wetlands."

Threatened and Endangered Species

If a Federal agency authorizes, funds, or carries out a proposed action, the responsible Federal agency, in this case the Department of State (State) or its designated agent, is required to evaluate whether the action "may affect" listed species. State, or its designated non-Federal agent, should make a determination of the proposed projects'

effects on listed species, including whether there is anticipated destruction or adverse modification of designated critical habitat. This determination may be included in the EA, but should be clearly identified as State's Biological Assessment (BA) of effects to federally-listed species. It should state whether or not State plans to incorporate the Service's recommendations to avoid and minimize adverse effects. If State does not plan to take the recommended measures, the BA must provide the rationale.

A list of federally endangered and threatened species that may be present within the proposed project's area of influence is enclosed. This list fulfills requirements of the Service under Section 7 of the ESA. This list remains valid for 90 days.

There is designated critical habitat for the piping plover in Divide and Williams Counties. The evaluation area includes known nesting sites and designated critical habitat. Piping plovers are protected wherever they occur, regardless of land ownership. In North Dakota, piping plovers begin arriving on their breeding grounds in early-to-mid April and are typically gone by September 1. Construction or maintenance activities during this time period may disturb nesting piping plovers. The Service is also concerned about the risk of a leak during pipeline operation impacting piping plover nesting areas. As discussed in the September 16, 2011, letter and map submitted by Lostwood Wetland Management District Complex (copy enclosed), there are three documented piping plover nesting areas within 0.5-mile of the proposed pipeline route. Two of these have been designated as critical habitat, and a third, Hapet Lake, is within 650 feet of the proposed pipeline route. We can provide shapefiles for designated critical habitat for piping plover if desired; however, there may be additional suitable wetlands in the project area where plovers may nest or feed. The Service recommends a 0.5-mile no entry buffer around all designated critical habitat and on wetlands with potential or documented plover nesting.

If you are unable to maintain a 0.5-mile buffer around all piping plover nesting wetlands, the Service recommends that Vantage provide, and State require, additional protective measures to be implemented in these areas to avoid the potential take of piping plovers and destruction or adverse modification of critical habitat.

The Aransas Wood Buffalo Population (AWBP) of endangered whooping cranes is the only self-sustaining migratory population of whooping cranes remaining in the wild. These birds breed in the wetlands of Wood Buffalo National Park in Alberta and the Northwest Territories of northern Canada, and overwinter on the Texas coast. Whooping cranes in the AWBP annually migrate through North Dakota during their spring and fall migrations. They make numerous stops along their migration route to feed and roost before moving on.

Whooping cranes in the AWBP annually migrate through North Dakota during their spring and fall migrations. The proposed project lies within a 90-mile corridor that includes approximately 75 percent of all reported whooping crane sightings in the state (enclosure). The presence of suitable roosting and feeding habitat for whooping cranes document the potential for whooping crane presence in the proposed project area.

Whooping cranes are unlikely to spend more than a few days in any one spot during migration. The Service recommends that if a whooping crane is sighted within 1 mile of a pipeline or associated facilities while it is under construction, that all work cease within 1 mile of that part of the project and the Service be contacted immediately. In coordination with the Service, work may resume after the bird(s) leave the area.

Potential habitat for the Sprague's pipit exists in Divide and Williams Counties. In 2010, the Sprague's pipit was added to the candidate species list. Migratory bird species such as the Sprague's pipit that are candidates are still protected under the MBTA. Sprague's pipits require large patches of grassland habitat for breeding, with preferred grass height between 4 and 12 inches. The species prefers to breed in well-drained, open grasslands and avoids grasslands with excessive shrubs. They can be found in lightly-to-heavily grazed areas. They avoid intrusive human features on the landscape, so the impact of a development can be much larger than the actual footprint of the feature. If Sprague's pipit habitat is present within or adjacent to the proposed project area, the Service requests that you document any steps taken to avoid and minimize disturbance of this habitat. Section 7(a)(4) of the ESA provides a mechanism for identifying and resolving potential conflicts whereby a Federal action agency may request a conference on any proposed action that may adversely affect proposed species or proposed critical habitat at an early planning stage. During the conference, the Service may assist the action agency in determining effects and may advise the action agency on ways to avoid or minimize adverse effects to proposed species (or candidate species if present, and voluntarily considered by the action agency and/or the applicant) or proposed critical habitat. Conferences may involve informal discussions among the Service, the action agency, and the applicant.

Migratory Birds

The Migratory Bird Treaty Act prohibits the taking, killing, possession, and transportation, (among other actions) of migratory birds, their eggs, parts, and nests, except when specifically permitted by regulations. While the MBTA has no provision for allowing unauthorized take, the USFWS realizes that some birds may be killed during construction even if all known reasonable and effective measures to protect birds are used. The USFWS Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and agencies that have taken effective steps to avoid take of migratory birds, and by encouraging others to implement measures to avoid take of migratory birds. It is not possible to absolve individuals, companies, or agencies from liability even if they implement bird mortality avoidance or other similar protective measures. However, the Office of Law Enforcement focuses its resources on investigating and prosecuting individuals and companies that take migratory birds without identifying and implementing all reasonable, prudent and effective measures to avoid that take. Companies are encouraged to work closely with Service biologists to identify available protective measures when developing project plans and/or avian protection plans, and to implement those measures prior to/during construction or similar activities.

The BGEPA prohibits anyone without a permit issued by the Secretary of the Interior from taking bald eagles, including their parts, nests, or eggs. The Act provides criminal and civil penalties for persons who take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof. The Act defines take as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. "Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously-used nest site during a time when eagles are not present, if, upon the eagles return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

Bald and/or golden eagles may use the project area where the pipeline will be located. Golden eagles inhabit a wide variety of habitat types, including open grassland areas. They are known to nest on cliffs, in trees, manmade structures, and on the ground (Kochert et al. 2002). While the bald eagle tends to be more closely associated with forested areas near water (Buehler 2000), they have been found nesting in single trees several miles from the nearest water body. Therefore, there may also be potential habitat for the bald eagle at the proposed project site. Especially early in the nesting season, eagles can be very sensitive to disturbance near the nest site and may abandon their nest as a result of low disturbance levels, even from foot traffic. A buffer of at least 0.5-mile should be maintained for golden and bald eagle nests. A permit is required for any take of bald or golden eagles or their nests. Permits to take golden eagles or their nests are available only for legitimate emergencies and as part of a program to protect golden eagles.

The Service recommends that aerial raptor surveys be conducted prior to any on-the-ground activities. The Service recommends that an aerial nest survey (preferably by helicopter) be conducted within the 1mile wide evaluation corridor to identify active and inactive eagle nest sites near the proposed well pad and associated facilities, as well as active nests of other raptor species. The aerial surveys should include surveys for proposed new roads. Aerial surveys should be conducted between March 1 and May 15, before leaf-out so that nests are visible.

Aerial surveys should include the following:

1. Due to the ability to hover and facilitate observations of the ground, helicopters are preferred over fixed-wing aircraft, although small aircraft may also be used for the raptor surveys. Whenever possible, two observers should be used to

conduct the surveys. Even experienced observers only find approximately 50 percent of nests on a flight, so we recommend that two flights be performed prior to any on-the-ground work, including other biological surveys or other work.

2. Observations of raptors and nest sites should be recorded using GPS. The date, location, nest condition, activity status, raptor species, and habitat should be recorded for each sighting.

3. We request that you share the qualifications of the biologist(s) conducting the survey, method of survey, and results of the survey with the Service.

To the extent practicable, schedule construction for late summer or fall/early winter so as not to disrupt waterfowl or other wildlife during the breeding season (February 1 to July 15). If work is proposed to take place during the breeding season or at any other time which may result in the take of bald or golden eagles or other migratory birds, their eggs, or active nests, the Service recommends that State and Vantage implement all practicable measures to avoid all take, such as suspending construction where necessary and/or maintaining adequate buffers to protect the birds until the young have fledged. The Service further recommends that if you choose to conduct field surveys for nesting birds, including eagles, with the intent of avoiding take, that you maintain any documentation of the presence of eagles or other migratory birds, eggs, and active nests, along with information regarding the qualifications of the biologist(s) performing the survey(s), and any avoidance measures implemented at the project site. Should surveys or other available information indicate a potential for take of eagles or other migratory birds, their eggs, or active nests, the Service requests that you contact this office for further coordination on the extent of the impact and the long-term implications of the intended use of the project on eagles or other migratory bird populations.

The above measures may reduce or eliminate impacts to migratory birds during construction. However, even if all measures are taken to avoid take of migratory birds during the construction phase, there is likely to be some migratory bird take associated with construction and ongoing operation and maintenance of the proposed pipeline. The Service recommends that Vantage develop a Conservation Plan in cooperation with State and the Service to identify potential impacts to migratory birds during all phases of the proposed project. This Conservation Plan should evaluate impacts both from the immediate footprint of the project as well as from the larger impacts from ongoing disturbance. We recommend that this plan include a Habitat Equivalency Analysis or similar habitat analysis method, which may include funding to allow for conservation actions to be directed towards the greatest needs of migratory birds in the proposed pipeline project area.

High-Value Habitat Avoidance

As part of the National Wildlife Refuge System, the U.S. Fish and Wildlife Service (Service) administers fee title Refuge and Waterfowl Production Areas, as well as wetland and grassland easements, throughout North Dakota. A review of our county plat

maps indicates that Service property interests are located in the study area. According to the September 16, 2011, submitted to Mr. Yuan by the Lostwood Wetland Management District Complex, State is coordinating with the Wetland Management District regarding Service property interests.

Cultural resource compliance requires coordination with the Zone Archeologist early in the NEPA process. Cultural Resource field investigations on USFWS easements and fee lands require a permit issued by the Zone Archeologist. Contact Barry G. Williams, USFWS Dakotas Zone Archeologist (barry_williams@fws.gov, 701-355-8577).

According to the Service's National Wetland Inventory maps, the corridor and the study area intersect several wetlands. Wetlands are important for water quality as well as for a variety of wildlife species. The Service suggests that Vantage include a detailed plan to avoid or mitigate for unavoidable impacts to wetlands. If your project will result in unavoidable impacts to wetlands, we request to review a mitigation plan to compensate for all wetland losses. If a 404 permit is required, the Service will provide recommendations on this project to the Corps.

Construction activities should be conducted in a manner that will avoid/minimize impacts to the existing habitat in the project area. The following recommendations are intended to reduce construction-related impacts:

- Make no stream channel alterations or changes in drainage patterns.

- Install and maintain appropriate erosion control measures to reduce sediment transport to adjacent wetlands and stream channels.

- Reseed disturbed areas with a mixture of native grass and forb species immediately after construction to reduce erosion. Parts of the proposed project area appear to be grassland habitat currently. If trenching is performed in these areas, post-construction reseeding of native prairie grasses, forbs and legumes should be completed. The Service suggests that Vantage consider planting a diverse mix of native species to reclaim the grassland areas. Recent research indicates that a diverse native species mix, including numerous forb species, is not only ecologically beneficial, but is also more weed resistant. A diverse planting of native grasses and forbs allows for less intensive management and chemical use. The more species included in a mixture, the higher the probability of providing competition to resist invasion by non-native plants.

Thank you for the opportunity to comment on this project. If you require further information or the project plans change, please contact me or Heidi Riddle of my staff at (701) 250-4481 or at the letterhead address.

Sincerely,

Jeffrey K. Towner

Jeffrey K. Towner
Field Supervisor
North Dakota Field Office

cc: Regulatory Office, Army Corps of Engineers, Bismarck
(Attn: D. Cimarosti)
Project Leader, Crosby Wetland Management District
ND Game & Fish Department, Bismarck

FEDERAL THREATENED, ENDANGERED, AND CANDIDATE SPECIES
AND DESIGNATED CRITICAL HABITAT FOUND IN
DIVIDE AND WILLIAMS COUNTIES, NORTH DAKOTA

ENDANGERED SPECIES

Birds

Interior least tern (Sterna antillarum): Nests along midstream sandbars of the Missouri and Yellowstone Rivers.

Whooping crane (Grus Americana): Aransas-Wood Buffalo Population (264 birds) occurs in North Dakota counties during spring and fall migration between breeding and wintering areas. Whooping cranes prefer to roost overnight in shallow open water wetland habitat with good visibility during migration stopovers.

Fish

Pallid sturgeon (Scaphirhynchus albus): Known only from the Missouri and Yellowstone Rivers. No reproduction has been documented in 15 years.

Mammals

Gray wolf (Canis lupus): Occasional visitor in North Dakota. Most frequently observed in the Turtle Mountains area.

THREATENED SPECIES

Birds

Piping plover (Charadrius melodus): Nests on midstream sandbars of the Missouri and Yellowstone Rivers and along shorelines of saline wetlands. More nest in North Dakota than any other state.

CANDIDATE SPECIES

Birds

Sprague's Pipit (Anthus spragueii): Nests in native and planted grassland. Prefers patches of grassland at least 72 acres (29 hectares).

DESIGNATED CRITICAL HABITAT

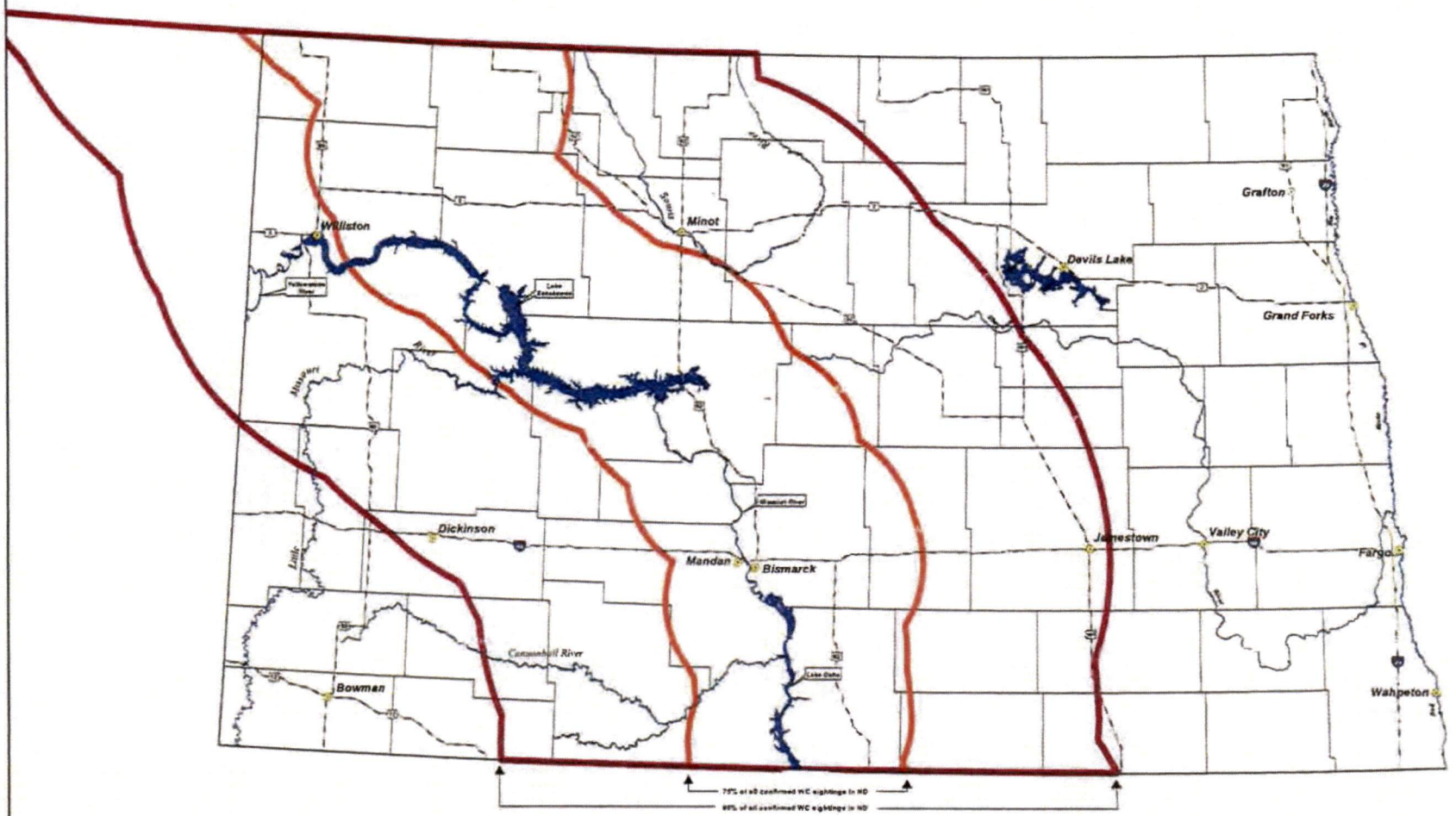
Birds

Piping Plover - Alkali Lakes and Wetlands - Critical habitat includes: (1) shallow, seasonally to permanently flooded, mixosaline to hypersaline wetlands with sandy to gravelly, sparsely vegetated beaches, salt-encrusted mud flats, and/or gravelly salt flats; (2) springs and fens along edges of alkali lakes and wetlands; and (3) adjacent uplands 200 feet (61 meters) above the high water mark of the alkali lake or wetland.

Piping Plover - Missouri River - Critical habitat includes sparsely vegetated channel sandbars, sand and gravel beaches on islands, temporary pools on sandbars and islands, and the interface with the river.

Piping Plover - Lake Sakakawea and Oahe - Critical habitat includes sparsely vegetated shoreline beaches, peninsulas, islands composed of sand, gravel, or shale, and their interface with the water bodies.

North Dakota
Whooping Crane Migration Corridor



DISCLAIMER:

The USFWS makes no claim as to the accuracy or completeness of the displayed information. Species occurrence and habitat information is provided for illustrative purposes only. Federal action agencies and project proponents should contact the USFWS North Dakota Field Office for more detailed species information and technical assistance in evaluating potential project impacts to fish and wildlife resources.

Map produced 04/21/2010 by USFWS Ecological Services, Bismarck, ND.

75% Whooping Crane Migration Corridor

95% Whooping Crane Migration Corridor

0 12.5 25 50 75 100 Miles

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Lostwood Wetland Management District Complex
8315 Hwy 8
Kenmare, ND 58746
Refuges: Lostwood
Wetland Districts: Crosby, Lostwood

September 16, 2011

Alexander Yuan, OES/ENV
NEPA Compliance Officer
P.O. Box 18500
Minneapolis, MN 55418
REFERENCE: VANTAGE

Dear Mr. Yuan:

This letter is in response to a request for comments regarding the Vantage Pipeline Project proposal to construct and operate 77.4 miles of ethane pipeline in Divide and Williams Counties of North Dakota, which fall within the of the U.S. Fish and Wildlife Service's Crosby Wetland Management District.

We have reviewed the proposed pipeline route, version 091411, which was given to us by Vantage Pipeline. Our office has specific concerns about the projects impacts to: a federally listed threatened bird species, the piping plover and its breeding habitat, which we monitor in our management area, and U.S. Fish and Wildlife Service (FWS) grassland and wetland easement interests.

Federally listed species and their habitats are protected by the Endangered Species Act (ESA). The ESA protects federally-listed species from harassment and harm, as well as direct mortality. Even temporary disturbance may be harmful to the birds and is considered a form of "take" or injury by impacting essential behavioral patterns including breeding, feeding or sheltering. In addition, designated critical habitat may not be destroyed or adversely modified.

Two designated critical habitat wetland basins fall near the proposed project area: Radar Waterfowl Production Area (WPA) and McCone Lake (see Attachment 1). Radar WPA, falls within approximately 1/4 mile, of the proposed pipeline. Our Best Management Practice recommendation for oil development activities is a buffer distance at least 1/2 mile from the high water mark of a plover nesting basin. To avoid disturbance and reduce the possibility of "take", this distance is also recommended for pipeline placement. McCone Lake is approximately 1/2 mile from the currently proposed pipeline route, which is a more preferable distance.

A third basin, not designated critical habitat, Hapet Lake, is a known wetland used by piping plovers. Hapet Lake is within 650 feet of the proposed pipeline location. We have six years of survey data spanning the years 2001-2011. The site was not surveyed each year. However, five of the six years, the site was occupied by plovers. The site is a mix of private and state ownership.

Additionally, the FWS has purchased many wetland and grassland easements in your proposed pipeline project area. Wetland easements protect basins from being drained, leveled, filled, or burned. Grassland easements protect the grasslands from being cultivated or disturbed in any manner. These easements are crucial habitat for wildlife. The FWS has worked on dozens of pipeline projects and has demonstrated by having open communication earlier in the planning process, most pipelines can avoid impacting wetland and grassland easement areas.

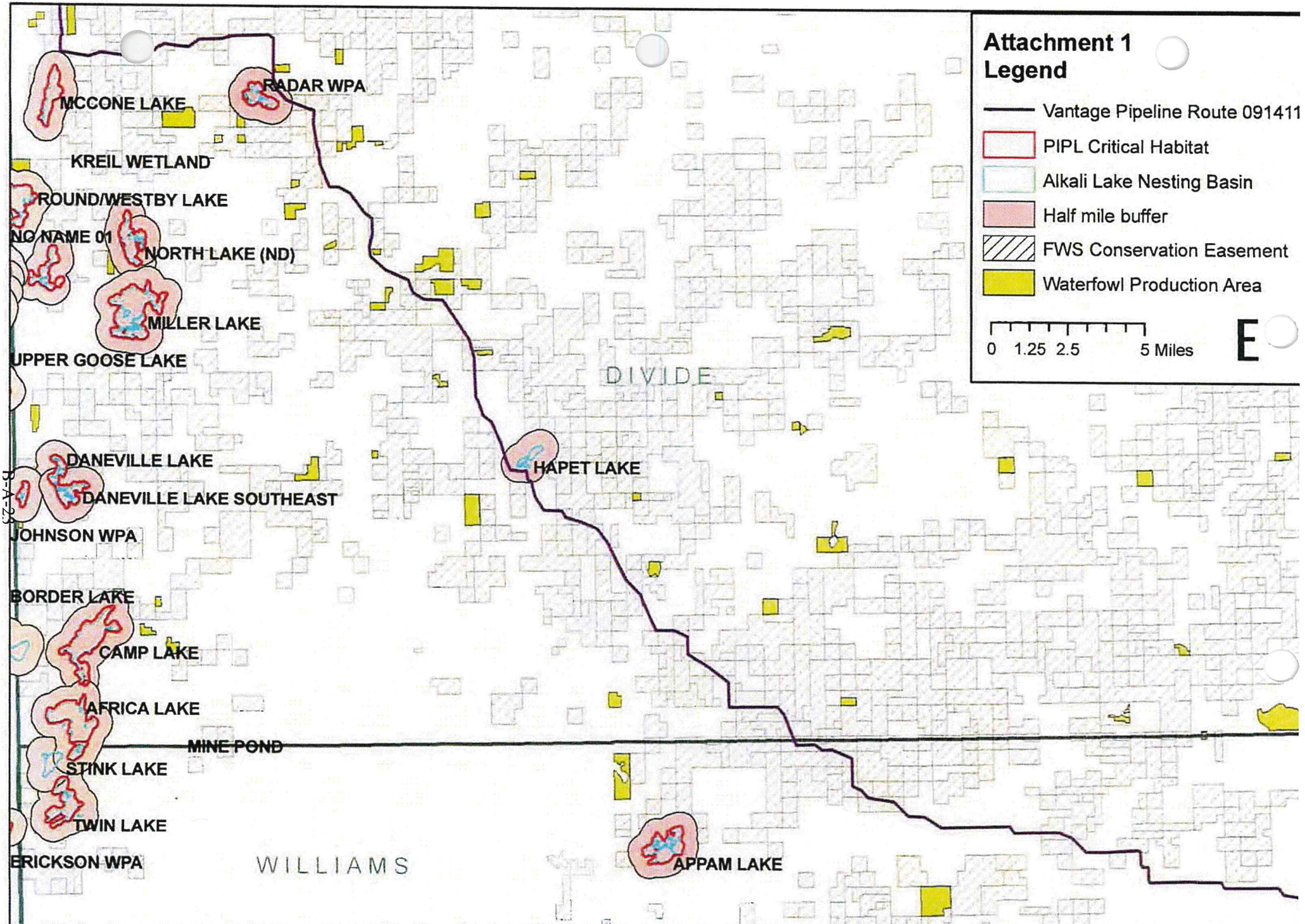
Please be advised of federal laws including the Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), the National Wildlife Refuge System Improvement Act and the Bald and Golden Eagle Protection Act (BGEPA) when planning your proposal. The ESA, MBTA, and BGEPA prohibit the unauthorized take of federally-listed threatened and endangered species, all migratory birds, and bald and golden eagles, respectively. You must ensure that your activities do not violate these laws. The best way to do that is through early coordination of your plans with the Ecological Services office for North Dakota. Please contact the field supervisor, Mr. Jeff Towner, 3425 Miriam Ave., Bismarck ND 58501; by phone at 701-250-4481, or email at northdakotafieldoffice@fws.gov. Additional information on these wildlife resources and potential impacts and requirements for oil and gas development is available at website www.fws.gov/northdakotafieldoffice/.

If you have any questions feel free to contact me at the Crosby Wetland Management District office, telephone (701) 965-6488, ext. 15, from 7 a.m. to 4:30 p.m.

Sincerely,

David Gillund
Project Leader

cc: U.S. Fish & Wildlife Service, Ecological Service
(Attn: Jeff Towner)



B-A-23

The USFWS makes no claim as to the accuracy or completeness of the displayed information. Shaded areas depicting USFWS WPA fee and easement lands are for illustrative purposes only and do not represent legal boundaries or in the case of easements, the acreage of wetland or grassland resources included in the easement contract. The quality of the data used to develop digital boundaries is variable, consequently, the digital representation of all boundary information is subject to change as higher quality data becomes available. All fee-title and easement arcs are attributed to allow for replacement. For more detailed information on the boundaries of fee-title land or easement areas, please contact one of the USFWS Realty Offices located in Bismarck and Minot, North Dakota, Aberdeen and Huron, South Dakota or Great Falls, Montana.

merjent

MEETING NOTES

Date:

December 12, 2011

To:

Meeting Attendees and Alex Yuan

From:

Kim Jessen

Subject:

Vantage Pipeline Project – Section 7 process and Biological Assessment

Meeting Date & Location:
Monday, December 12, 2011
Conference Call

Meeting Attendees:
Heidi Riddle, U.S. Fish and Wildlife Service
Dave Cameron, KC Harvey
Brad Kovach, KC Harvey
Steve Elbert, Merjent – Biological Specialist
Kim Jessen, Merjent – Project Manager

Meeting Notes:
The meeting began with an introduction of the attendees and each person's role on the Vantage Pipeline Project. K. Jessen thanked everyone for attending and explained that the project requires a Presidential Permit from the U.S. Department of State (DOS) and, therefore, a National Environmental Policy Act (NEPA) review of the project in the form of an environmental assessment (EA) was being completed by DOS. K. Jessen clarified that Merjent is a third-party contractor to the DOS and assisting the DOS in completing the EA as well as in meeting its Section 7 (Endangered Species Act) and Section 106 (National Historic Preservation Act) obligations. It was recognized that while the DOS' and Merjent's involvement with the project had been delayed until the signing of a Memorandum of Understanding between DOS, Vantage, and Merjent, Vantage has been informally corresponding with the U.S. Fish and Wildlife Service (FWS) to identify species and preliminary recommendations for avoidance and mitigation measures. K. Jessen noted that a letter will be issued by the DOS hopefully within the next 2 weeks that states that Vantage and its consultants will be identified as the DOS' non-federal agent for informal Section 7 consultations for the project.

Regarding Section 7 and the Biological Assessment (BA), B. Kovach verified that Vantage has already completed a draft BA. K. Jessen noted that there appear to be a few options available on how to proceed with Section 7 and the BA, and the goal of the meeting was to identify and come to a consensus on which route would be most advantageous to all parties. The options include:

1) As the non-federal agency, Vantage submits the draft BA directly to the FWS and works with the agency to develop avoidance or mitigation measures, determinations, etc. and the DOS and Merjent are cc:'d on all substantive correspondence prior to the EA issuance and post-EA as necessary;
2) Vantage submits the draft BA to the DOS and Merjent, who will repackage the draft BA and submit to the FWS, and subsequently work directly with the FWS to develop determinations, avoidance or mitigation measures, etc. and work with Vantage to adopt the FWS-recommended measures and/or develop alternative measures prior to the EA issuance and post-EA as necessary; or
3) Vantage submits the draft EA to the DOS and Merjent, the BA information is incorporated into the EA, and the DOS requests that once the EA is issued the FWS adopt the EA as the BA and provide comments.

H. Riddle stated that the FWS did not have a preference but did note that if the draft BA were to come from Vantage, that it be clear to her agency that Vantage is the DOS' non-federal agent for Section 7. She also noted that there are other "trust" issues that the FWS would need to provide comment on that should be addressed in the EA or draft BA, which include the Bald and Golden Eagle Protection Act (BGEPA) and Migratory Bird Treaty Act (MBTA).

B. Kovach responded that the draft BA currently discusses the BGEPA and MBTA issues along with federally threatened and endangered species in the project area. He added that Vantage has made a significant investment in drafting a draft BA and it seemed that Vantage providing it to the FWS/Vantage working with the FWS directly was the most direct route.

K. Jessen agreed, especially considering the upcoming DOS-to-FWS letter designating Vantage as a non-federal agent, and inquired with S. Elbert whether he had any concerns with that option. S. Elbert agreed that it would be the most direct approach and that we (for DOS) could add the BA as an appendix to the EA. Therefore, it was agreed by all parties that once the DOS-to-FWS letter was issued, Vantage would submit the draft BA to the FWS and the two parties would work together to develop final impact determinations, avoidance and mitigation measures, etc. as necessary.

K. Jessen noted that it was critical to the process and for the administrative record that Vantage and FWS cc: DOS and Merjent on any and all substantive correspondence. Additionally, the correspondence is critical for drafting the EA discussion regarding threatened and endangered species impacts and mitigation. All parties agreed and K. Jessen offered to provide contact information to the FWS and Vantage representatives (i.e., KC Harvey) after the call.

H. Riddle inquired whether a DOS representative had or will be joining the call. K. Jessen noted that Alexander Yuan, the DOS manager for the project, will be provided a copy of the meeting notes and also offered to arrange for a call between the FWS and DOS. H. Riddle stated that was not necessary at this time and that she will wait for the DOS-to-FWS letter that will identify Vantage as the non-federal representative for Section 7 consultations. B. Kovach added that he will postpone forwarding the draft BA to the FWS until the aforementioned letter is issued.

B. Kovach asked at what point "informal" versus "formal" consultation will be determined by the FWS. H. Riddle stated that is still not known and will be an ongoing process. She added that

hopefully there will be a dialog and all parties will agree to avoidance measures such that formal consultation does not need to occur.

K. Jessen asked if some species determinations could, for lack of a better term, be "segmented" or does the FWS have to comment on the project as a whole. For example, it is desired that, if completed in a timely fashion, the EA document species where it is obvious there will be a not likely to adversely affect determination made and agreed upon by the FWS so no further discussion or correspondence regarding these species is needed. Any remaining species could be classified under "consultations are ongoing" in the EA. H. Riddle responded that she was not certain but that it is likely possible to issue determinations for those species when it was clear the project will not result in adverse impacts, while still continuing the Section 7 consultation process for other species. B. Kovach added that the draft applicant-prepared EA also had some discussions presented regarding species that are not within the project area (e.g., Interior Least Terns).

H. Riddle and K. Jessen finished the meeting by communicating that a letter to the FWS from the DOS will be issued soon, with Vantage, other FWS staff, and Merjent cc:'d, and the importance of maintaining correspondence for the administrative record. Lastly, K. Jessen asked if any of the information presented in the draft BA might be sensitive and not shared with the public. H. Riddle stated that the only information that might be confidential is very specific bald eagle nest locations; however, it was unlikely the draft BA has such site-specific information.

All parties thanked one another for their attendance and exited the conference call.

Action Item:

- Merjent to notify the DOS of the BA discussion and recommended, agreed-upon option of Vantage submitting draft BA to FWS (discussion contained within).
- Merjent to assist the DOS in issuance of referenced DOS-to-FWS letter regarding Vantage as non-federal agent; Merjent to email copy of letter to call attendees once issued.
- Merjent to provide contact information to Vantage representatives (KC Harvey) and FWS of DOS and Merjent staff to cc: on all substantive correspondence for administrative record. Includes but not limited to draft BA.

Attachments:
None

MEMORANDUM

KC HARVEY
ENVIRONMENTAL, LLC

TO: Project File – Vantage Pipeline Environmental Assessment

CC: David Schmunk – Mistral Energy; Alexander Yuan – U.S. Department of State

FROM: Brad Kovach – KC Harvey Environmental, LLC

DATE: February 23, 2012

SUBJECT: Meeting Minutes – 2/23/12 Conference Call with U.S. Fish and Wildlife Service, North Dakota Ecological Services Re. comments on draft Biological Assessment for Vantage Pipeline

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These meeting minutes address a conference call with the North Dakota Ecological Services Office of the U.S. Fish and Wildlife Service (USFWS) at 9:00 AM CST February 23, 2012. Responses to USFWS comments received on February 9, 2012 on the draft Biological Assessment (BA) prepared for the proposed Vantage Pipeline project were discussed. The draft BA was prepared by KC Harvey Environmental, LLC. The U.S. Department of State (DoS) is the approving federal agency for the National Environmental Policy Act (NEPA) Environmental Assessment (EA) being prepared for the project and Merjent, Inc. is the DoS contractor preparing the draft EA.

Attendees: Heidi Riddle – USFWS; Alexander W. Yuan – DoS; Kim A. Jessen, Steve Elbert – Merjent, Inc.; Brad R. Kovach – KC Harvey Environmental

***Summary of Minutes*:** Comments and the interactive discussion that followed are summarized below.

1. The USFWS comment letter requested that Section 7 ESA topics remain in the BA and other subjects including the Migratory Bird Treaty Act (MGTA) and Bald and Golden Eagle Protection Act (BGEPA) be addressed separately in the EA.
    a. **Action Item:** the revised BA will only address Section 7 ESA topics.
    b. The comments on other subjects were beneficial for the purposes of the EA and discussed at today's meeting.
2. USFWS concerns over "worst case scenario" effects of a leak on ESA listed species were inadequately addressed in the draft BA. A more thorough analysis was requested.
    a. Providing the Environmental Protection Plan (EPP) and Health and Safety Plan (HASP) or parts thereof in the revised BA along with other details, data, and contingencies under a leak scenario would likely be sufficient. Recognize the different properties between liquid (crude) and gas.
        i. **Action Item**: These recommendations will be incorporated into the revised BA
3. USFWS requested that BA effects determination on whooping crane should also include an analysis of stopover wetlands.

KC Harvey Environmental, LLC
376 Gallatin Park Drive
Bozeman, Montana 59715

www.kcharvey.com
T 406-585-7402
F 406-585-7428

a. Quantification and map project impacted and project area wetlands with additional descriptive text on habitat affected would likely be sufficient
    i. **Action Item**: these are existing data and figures that will be incorporated into the revised BA with additional descriptive text. A one-mile radius around the project will be the overlay

4. USFWS requested additional information on and quantification of impacts to drainages within the pipeline route that outfall into piping plover alkali wetlands
    a. Response to this request can be generated using existing wetland impact data and minor GIS analysis with supplemental descriptive text on BMPs' and items addressed in # 2 above pursuant to the leak scenario.
        i. **Action Item**: these will be addressed in the revised BA
5. USFWS requested more analysis of cumulative effects on ESA listed species
    a. Address in terms of cumulative habitat loss. This may be attainable for project with some ranges or assumptions from other reasonable and foreseeable actions. Clarify relationship of project with oil and gas development; i.e. it's an outcome not a generator of more development. Be consistent with cumulative effects addressed in EA. Be sure to address direct and indirect impacts, even those that are highly assumptive. Check State of N. Dakota data on wells and related mitigation off-sets (if any?).
    b. The piping plover and habitat loss is of particular interest in regards to cumulative effects
    c. There was full acknowledgement that this is a tough topic to quantify and place hard parameters on. A general overview will likely suffice.
        i. **Action Item**: a best effort on the above will be made in the revised BA.
6. USFWS recommended a habitat assessment describing impacts to native habitats and Vantage Pipeline development of a Conservation Plan through cooperation between DoS and USFWS. The Conservation Plan should include a Habitat Equivalency Analysis.
    a. This is a USFWS recommendation, mostly related to MBTA. The need may be dependent on the amount of native grassland habitat impacted by the project.
        i. **Action Items**: Revisit the amount of native grassland habitat impacts
            1. Then DoS and Vantage Pipeline should confer
            2. Contact the USFWS for further direction based on native habitat impacts
        ii. **Action Item**: the revised BA will include additional analysis on potential habitat fragmentation and impacts on native grassland habitat for the Sprague's pipit, an ESA Candidate species
7. DoS and Merjent inquired if a separate determination letter of "no effect" could be issued for the ESA listed species that are obviously beyond the project scope of effect.
    a. **Action Item**: Heidi has not seen these happen before as typically all ESA listed species are addressed in a single Section 7 Consultation completion letter, but she will check and get back to the DoS on the possibility.
8. The remaining meeting time briefly went through the specific comments in the USFWS letter, most of which are editorial, redundant to the general comments, or simple BA

revisions. Action items on those discussed are summarized below and all others will be addressed in the revised BA.

a. Action items

i. Potential listed species habitats at stream crossings will be addressed and quantified.
ii. Include wetland impacts quantities and interpolate effects on listed species. Clarify nature of wetland impacts
iii. Identify on a figure and quantify borings under wetlands and habitat
iv. Ramp up any anticipated habitat fragmentation language.

merjent

MEETING NOTES

Date:

April 12, 2012

To:

Meeting Attendees and Alex Yuan

From:

Steve Elbert (on behalf of Kim Jessen)

Subject:

Vantage Pipeline Project – Section 7 process and Biological Assessment Discussion

Meeting Date & Location:

Thursday, April 12, 2012
Conference Call

Meeting Attendees:

Heidi Riddle, U.S. Fish and Wildlife Service
George Sibley, Department of State
Nicole Gibson, Department of State
Patrick Pearsall, Department of State
Steve Elbert, Merjent – Biological Specialist
Brad Kovach, KC Harvey
David Schmunk, Vantage
Brad Kovach, KC Harvey
Kate Johnson, KC Harvey
Josh Runyan, Steptoe & Johnson, LLP

Meeting Notes:

The meeting began with an introduction of the attendees and each person's role on the Vantage Pipeline Project. B. Kovach thanked everyone for participating and expressed that the intent of the conference call was to discuss Section 7 Consultation on the Biological Assessment (BA) regarding U.S. Fish and Wildlife Service (FWS) comments on an earlier BA [applicant prepared] draft with FWS subjects, including the Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act, conservation easements, Waterfowl Production Areas, and other issues will be addressed in the FWS comments and coordination on the draft Environmental Assessment (EA). The meeting will also address DOS comments and questions on the BA [applicant prepared] and migratory bird issues covered in the EA. H. Riddle verified that the FWS would prefer to limit the scope of the Biological Assessment (BA) to only Section 7 (Endangered Species Act) issues. Migratory birds and eagles should be addressed in the Environmental Assessment (EA).

A brief explanation of the Section 7 process as it goes forward was discussed. G. Sibley indicated that a final revision of the BA should be available soon, but only after a final review has been completely by the DOS. N. Gibson requested clarification on several issues, including the status

of a "no affect letter"; the migratory birds Conservation Plan; and the plans for 2012 pre-construction surveys and monitoring.

H. Riddle indicated that at the end of the informal consultation, the action agency (i.e., DOS) is required to prepare the affects statement based on the conclusion in the BA. H. Riddle also mentioned that a Biological Opinion is only necessary if informal consultations progress to formal consultations. The project is currently within the informal consultation process and H. Riddle stated that it was the intent of the FWS to limit Section 7 coordination on the project as informal consultation. Three affect conclusions can be reached in BA:

- "No affect";
- "May affect, but not likely to adversely affect"; or
- "Likely to adversely affect."

Based on the information included in the BA, the project conclusion should be: "may affect, but not likely to adversely affect" for all project subject threatened, endangered, and candidate species. The DOS would prepare a letter to the FWS requesting that the FWS concurs with its findings in the BA.

H. Riddle indicated the FWS does not believe that there are any "show stoppers" in the BA and there is no reason to believe that the FWS would not concur with the BA's conclusions. When asked about final BA review timing, H. Riddle indicated that the FWS cannot commit to providing comments on the final BA in less than a week's time.

N. Gibson asked that a table be inserted in the BA that identifies each species, the species' status, and a separate affects statement for each species. B. Kovach committed to inserting edits into the BA and distributing the revision to others.

The MBTA and a FWS-recommended Conservation Plan to protect grassland birds and enhance habitat was also discussed. N. Gibson was aware the FWS encourages companies to "go beyond" standard mitigative measures in construction and restoration of their projects, and that a statement regarding development of a Conservation Plan, if the applicant decided to prepare one, should be included in the EA. S. Elbert mentioned that a draft paragraph regarding development of a voluntary Conservation Plan was submitted to Alex Yuan (DOS) yesterday. Vantage indicated that a Conservation Plan would be developed for the project at a later date. N. Gibson emphasized that the details of the plan are not required for issuance of the EA, but a reference should be included in the EA that a Conservation Plan would be finalized before construction and the plan would be agreed upon by the FWS and Vantage, if the applicant decided to prepare such a plan. H. Riddle would prefer to have grassland habitat fragmentation issues also addressed in the Conservation Plan.

H. Riddle stated that issues related to the MBTA should only be included in the EA and not the BA in order to complete the Section 7 consultation process. She reiterated that determinations in the EA cannot be considered finalized until the Section 7 letter is in hand. It was agreed, however, that the EA may be published for public comment prior to receipt of the Section 7 letter from DOS to FWS that would request concurrence with effect determinations.

N. Gibson requested a description of Vantage's plans for the pre-construction surveys and construction monitoring. B. Kovach described Vantage's survey plans, which would consist of:

- Reconnaissance for new eagle and raptor nests would be completed immediately prior to construction; and
- Surveys for potential pipeline plover habitat in areas not within the boundaries of the designated critical habitat (e.g., alkali wetlands and lakes along the pipeline corridor) would also be conducted.

Construction monitoring would be performed by full-time trained biologists and the roles and responsibilities will be be included in the Environmental Protection Plan (EPP), which would be finalized in the summer prior to construction. H. Riddle requested that the monitors report key findings and observations to the FWS and Vantage agreed. Additionally, H. Riddle indicated that monitoring reports should be submitted to the agencies during construction. The DOS (N. Gibson) raised the issue of the timeline for post-construction monitoring and the potential use of a third-party contractor to perform the monitoring. B. Kovach indicated that Vantage would consider a monitoring period as long as would be necessary or until the FWS and other agencies would sign off on the project. Also discussed was the metric that would be used to measure successful reclamation. No criteria were discussed or agreed upon, but Vantage confirmed that it would be included in the EPP.

N. Gibson suggested some global edits and figure revisions to the EA. She also mentioned that the columns "Construction" and "Operations" be reversed in the table.

N. Gibson also asked about the probability of new power lines that might be installed to provide power to the mainline valve sites. Vantage indicated that voltaic cells with battery backup or electric power supplied by underground or overhead power lines could be used. H. Riddle indicated that if overhead power lines would be used as power source, the FWS would need to know the distance of the overhead line and where the over lines would be located as overhead powers lines constitute a significant hazard to whooping cranes. Before the Section 7 process can be finalized, it is essential that this information be identified and discussed in the BA. If electric power would be supplied by an underground power line or by voltaic cells (with battery backup), there would not be any potential affect and the BA would not need to be modified. H. Riddle also indicated that if an overhead line would be built, line markers (i.e., flight diverters) would be required on the new line and an equal amount on the exiting line. Vantage would need to discuss placement of flight diverters with the power company before making a commitment.

Using boring or horizontal directional drilling to avoid wetland impacts was discussed. B. Kovach stated that a contingency plan would be prepared in the event of a drill failure. Additionally, N. Gibson added that the DOS would like to have an inadvertent release containment and cleanup plan prepared. In these plans, the properties of bentonite clay should be included for the public's benefit.

Meeting Notes
Vantage Pipeline Project, April 12, 2012

Action Items:

- Vantage to incorporate DOS comments into BA, both from electronic edits provided in March and those discussed during conference call. B. Kovach and N. Gibson will be in contact and coordinate on the remaining BA edits.
- Merjent to draft letter to FWS requesting concurrence with BA.

Attachments:
None

merjent

MEETING NOTES

Date:

April 16, 2012

To:

Meeting Attendees

From:

Kim Jessen

Subject:

Vantage Pipeline Project – Follow-up to April 12, 2012 meeting with U.S. Fish and Wildlife Service regarding Section 7 process and Biological Assessment Discussion

Meeting Date & Location:

Monday, April 16, 2012
Conference Call

Meeting Attendees:

Nicole Gibson, Department of State
Alexander Yuan, Department of State
Jeffrey Towner, U.S. Fish and Wildlife Service
Heidi Riddle, U.S. Fish and Wildlife Service
Kim Jessen, Merjent
Steve Elbert, Merjent

Meeting Notes:

The meeting began with an introduction of the attendees and each person's role on the Vantage Pipeline Project. N. Gibson noted the purpose of the call was to follow-up to the April 12, 2012 meeting between the U.S. Fish and Wildlife Service (FWS), Department of State (DOS), and Vantage, and to clarify other project-related items, including:

1) the timing of the Environmental Assessment (EA) and the Biological Assessment (BA);
2) language for insertion into the EA and BA regarding a Migratory Bird Conservation Plan; and
3) the special status species listed in a September 2011 letter from the FWS to the DOS.

N. Gibson began by stating that the EA had been provided to the FWS for a preliminary review and that the DOS would appreciate the agency's comments if schedules allowed. H. Riddle and J. Towner agreed that the FWS would be able to provide informal comments on the EA to the DOS in a track changes version of the document, and that, if necessary, a formal response to the DOS regarding the EA would be provided once the EA was made available for public and agency review. H. Riddle stated that she would attempt to provide comments to the DOS by the end of this week (Friday, April 20, 2012).

N. Gibson noted that the DOS is currently working on language specific to the Migratory Bird Conservation Plan that the FWS had recommended Vantage complete for the project. N. Gibson added that once language regarding a migratory bird conservation plan was developed and agreed by all parties, it would be inserted into the EA and, where applicable, into the BA. J. Towner noted that the FWS would recommend that the EA have an environmental analysis regarding migratory birds and their habitat, potential project impacts, and references to the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and Executive Order 13186. A. Yuan, S. Elbert, and K. Jessen confirmed that these items are included in the EA and would be supported by additional Migratory Bird Conservation Plan language. K. Jessen added that Vantage agreed to adopt all of the FWS' recommended mitigation measures for the species potentially affected by the project.

S. Elbert asked if the FWS had a recent example Migratory Bird Conservation Plan that Vantage might use as a template. A. Yuan, N. Gibson, and H. Riddle stated that one had been provided to the DOS [from the Ruby Pipeline Project] and that it would be shared with Merjent and Vantage.

J. Towner noted that the FWS would prefer to see the Migratory Bird Conservation Plan completed and approved prior to issuance of a Presidential Permit by the DOS.

H. Riddle inquired who the point of contact would be moving forward. A. Yuan and N. Gibson noted that KC Harvey is the contractor working for Vantage on biological issues.

N. Gibson pointed out that the BA is still an applicant-prepared document and that it would ultimately be transferred to the DOS prior to requesting FWS comment on the final BA. H. Riddle asked if the FWS would be allowed another opportunity to review the applicant-prepared BA after KC Harvey has addressed the comments from the DOS and the April 12, 2012 interagency meeting. N. Gibson confirmed that the FWS would indeed be provided another draft of the applicant-prepared BA prior to it being finalized by the DOS and issued to the FWS and public. N. Gibson added that, it would be preferable to have the BA attached to the EA, the timing of the documents is such that the BA may follow the EA. J. Towner noted that a BA normally is issued at the same time as the EA. N. Gibson and A. Yuan noted that BAs are standalone documents that may be issued separately from the EA.

N. Gibson stated that the most recent letter from the FWS listing the potentially affected special status species in the project area was dated September 22, 2011, and that the letter noted the list of species was valid for only 90 days. H. Riddle thanked the DOS for recognizing this as it is sometimes possible for a new species to occur in an area since the last consultation. J. Towner and H. Riddle noted that the DOS could review the FWS' website for the counties affected by the project (Williams and Divide), which has a current list of special status species, for a more recent reference. K. Jessen and S. Elbert stated that Merjent would complete this for the EA and the BA and update the special status species references. J. Towner and H. Riddle noted that, based on a review of the FWS' website, there are no new species of concern in the project area. J. Towner added that if the DOS would prefer a formal letter from the FWS for the administrative record, his office could produce one. All parties agreed that the FWS' website would suffice.

J. Towner inquired if the DOS has any policy regarding candidate species, and noted that some agencies treat candidate species similarly to proposed or protected species. A. Yuan and N.

Gibson stated that they were not aware of a specific DOS policy [Sprague's pipit is a candidate species and will be addressed in the BA].

N. Gibson asked if the FWS had any concerns regarding the confidentially of species information presented in the EA or BA. S. Elbert noted that the FWS had not provided specific species location data, only public data such as whooping crane migration route maps. H. Riddle recalled that Vantage's piping plover surveys had not occurred during 2011 due to flooding and that the surveys to be conducted in 2012 would result in specific location information, which would be used to create FWS-recommended buffer zones. H. Riddle stated that the FWS would prefer to have the piping plover survey information be treated as confidential and not released, but the FWS would request that Vantage share the data with the FWS.

In closing, J. Towner noted that, regarding the earlier discussion of the Migratory Bird Conservation Plan, the Migratory Bird Treaty Act does not have a provision for "take." Therefore, the FWS recommends that the language to be focused on mitigating for migratory bird habitat loss versus species take. All parties agreed this would be the direction of the mitigation discussion in the EA and, as appropriate, in the BA.

Action Items:

- FWS to provide track-changes comments to internal draft of EA to DOS.
- DOS to suggest possible language to FWS and Vantage regarding Migratory Bird Conservation Plan.
- Merjent to review FWS' website for updated special status species list in project area and revise EA with updated reference.

Attachments:
None

merjent

MEETING NOTES

Date:

April 18, 2012

To:

Meeting Attendees

From:

Kim Jessen

Subject:

Vantage Pipeline Project – Weekly Conference Call

Meeting Date & Location:

Wednesday, April 18, 2012
Conference Call

Meeting Attendees:

Alex Yuan, DOS
George Sibley, DOS
Patrick Pearsall, DOS
Nicole Gibson, DOS
Kim Jessen, Merjent
Zeke Rice, Merjent
Peg Boden, Merjent
David Schmunk, Vantage
Josh Runyan, Steptoe & Johnson, LLP
David Cameron, KC Harvey

Meeting Notes:

Ms. Jessen provided an update on the preparation of the Environmental Assessment (EA). Merjent received comments from the DOS on Tuesday and Wednesday, and is reviewing and addressing them. She noted that Merjent hopes to provide a revised EA to the DOS by tomorrow (Thursday). Mr. Sibley said that at a minimum the DOS would like the revised Executive Summary by Thursday, April 19 for the Assistant Secretary's review.

Ms. Jessen provided an update on the Biological Assessment (BA). KC Harvey is updating the applicant-prepared BA, Ms. Gibson has been working with KC Harvey and the U.S. Fish and Wildlife Service (FWS) to make revisions, and it is anticipated that a revised applicant-prepared BA would be provided by KC Harvey by the end of the week. Ms. Gibson confirmed that the FWS would like to review the revised BA, and that the FWS is also reviewing the EA and intends to provide comments by the close-of-business Thursday, April 19. Specifically, the FWS is looking at the language related to the Migratory Bird Treaty Act (MBTA) and the Conservation Plan.

Mr. Sibley discussed Mr. Runyan's edits to the meeting notes for the April 12, 2012 conference call between the DOS, the FWS, KC Harvey, Vantage, and Merjent. Mr. Sibley stated that he thought there had been agreement amongst all parties that Vantage would develop a Conservation Plan to mitigate for project-related impacts on grassland bird habitat to address potential MBTA concerns. After a discussion between Mr. Sibley and Mr. Runyan regarding the Conservation Plan, Mr. Schmunk confirmed that Vantage is comfortable committing to the development of a Conservation Plan and will

negotiate with the FWS regarding the contents of the plan. Mr. Runyan stated that he would revise his edits to the April 12 meeting notes and redistribute them.

Regarding the April 12 meeting notes, Mr. Sibley and Ms. Gibson also clarified the language related to how the BA is described. The BA is considered applicant-prepared on behalf of the DOS, but will be transferred to the DOS at which time it becomes a DOS-maintained document. Mr. Pearsall and Ms. Gibson added that the DOS would like the meeting notes to be clear that the document is KC Harvey's now, but will be transferred to the DOS.

Dr. Boden asked Mr. Schmunk if any new progress has been made on the tribal surveys. Mr. Schmunk stated that he has sent shape files to Tim Mintz and the land agents are beginning work to obtain landowner permissions. Mr. Schmunk also indicated that Pete Coffey of the Three Affiliated Tribes had contacted him to request that his group participate. It was noted that the Rosebud Sioux Tribe has also contacted Mr. Schmunk via email. Dr. Boden recommended that Mr. Schmunk suggest the Rosebud Tribe contact Tim Mintz regarding participation in the survey, or Dr. Boden could call them. Mr. Schmunk asked that Dr. Boden call them and direct any necessary requests/actions to Mr. Schmunk.

Dr. Boden asked the group if any other tribes had contacted Vantage or the DOS (none have), and asked that all parties let her know if any further follow-up contacts occur so they may be documented.

Dr. Boden also stated that the transcripts of the tribal meetings in New Town, North Dakota had been received and distributed to the attendees, the North Dakota State Historic Preservation Office, Vantage, and Ethnoscience.

Action Items:

- Merjent – Follow-up with the Rosebud Sioux Tribe
- Runyan – Revisions to the April 12 meeting notes

Attachments:
None

merjent

MEETING NOTES

Date:

April 25, 2012

To:

Meeting Attendees

From:

Kim Jessen

Subject:

Vantage Pipeline Project – Weekly Conference Call

Meeting Date & Location:

Wednesday, April 25, 2012
Conference Call

Meeting Attendees:

Alex Yuan, DOS
George Sibley, DOS
Patrick Pearsall, DOS
Kim Jessen, Merjent
Zeke Rice, Merjent
Peg Boden, Merjent
Steve Elbert, Merjent
Josh Runyan, Steptoe & Johnson, LLP
David Coburn, Steptoe & Johnson, LLP
Brad Kovach, KC Harvey
Lynelle Peterson, Ethnoscience

Meeting Notes:

The status of the Environmental Assessment (EA) was discussed by all parties. Merjent has updated the working version of the EA with edits from the DOS. Mr. Sibley indicated that the changes remaining for the EA are small, and the Biological Assessment (BA) has been shifted to the DOS and is being finalized.

Ms. Jessen noted that the latest draft of the BA was provided to the U.S. Fish and Wildlife Service (FWS), as promised, for another review. Ms. Jessen added that it was sent to Heidi Riddle of the FWS yesterday with the edits shown in track changes, and the DOS is waiting for Ms. Riddle to confirm that the edits are acceptable so that it can be included as an appendix to the EA. Ms. Jessen added that Nicole Gibson of the DOS will be following up with Ms. Riddle regarding the status of her review.

Ms. Jessen mentioned that the transcript from the tribal meeting in North Dakota have been provided to the meeting participants, but asked the DOS if they should also be sent to the remaining tribes. Dr. Boden indicated that we asked for comments from the tribes on the transcripts by May 1. Mr. Sibley requested that we wait until May 1 and, if no response from the meeting participants provided a copy of the transcript is received, the transcript should be sent to the tribal members who have been in contact with Dr. Boden but who did not attend the meeting.

Dr. Boden provided an update on the tribal contacts that she has made in the past week. She spoke with Conrad Fischer of the Northern Cheyenne Tribe, who wanted an update on the activities since the meeting in North Dakota. She informed him that Vantage is working with Tim Mintz to set up surveys

and that the DOS and Merjent have had telephone meetings with the North Dakota State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation.

Dr. Boden contacted the Rosebud Sioux Tribe, specifically Kathy Arcoren, who had previously contacted David Schmunk. However, Dr. Boden has been unable to reach Ms. Arcoren by telephone, and therefore sent a detailed email regarding the status of the project.

Dr. Boden has also been in contact with Kade Ferris, the Tribal Historic Preservation Officer of the Turtle Mountain Band of Chippewa. Mr. Ferris has provided a proposal to conduct his own ethnographic study, and Dr. Boden forwarded the proposal to Mr. Schmunk yesterday.

Per an email from Ethnoscience dated March 19, Mr. Sibley asked about the status of a historic homestead site that was defined ambiguously in the Class III survey report. The group discussed the necessity of contacting the North Dakota SHPO regarding the site recommendations, with Mr. Runyan pointing out that the lead federal agency on a project usually makes the final determinations of eligibility and effect. Dr. Boden stated, however, that the DOS would want to consult with the North Dakota SHPO to determine what the state agency would require for the site (e.g., additional survey) for its records. Dr. Boden noted that Vantage has previously provided the Class III report to the North Dakota SHPO for comment, with the DOS being copied on the correspondence, and recommended the same approach be taken to clarify the historic homestead site's status and potential need for additional survey or site description. It was agreed that Dr. Boden and Ms. Peterson would contact the North Dakota SHPO regarding the issue.

Dr. Boden asked Ms. Peterson if additional surveys were currently being conducted. Ms. Peterson indicated that they are not yet underway; additional work areas (e.g., laydown areas, access roads, yards) are being identified and the locations will be finalized in the next few weeks. Dr. Boden confirmed with Ms. Peterson that the reports for the additional survey will be provided to the DOS and North Dakota SHPO when they are completed.

Action Items:
None

Attachments:
None

NATIONAL ENERGY BOARD

Hearing Order OH-3-2011

Vantage Pipeline Canada Inc.
Section 52 of the NEB Act Application for Vantage Pipeline Project
Application filed 8 February 2011

VANTAGE PIPELINE CANADA INC. RESPONSE TO
NEB INFORMATION REQUEST NO. 5

Supply Matters

5.1 Resource Definition

Reference: Vantage Pipeline Project, Vol. 1, Appendix A, Section V, page 17 (PDF page 23) [A1X5W3]

Preamble: In the reference, Vantage states, "The Williston Basin is estimated to contain several hundred billion barrels of oil in place. Of the estimated oil in place, about 4 billion barrels of oil is considered recoverable with existing technology, based on US Geological Survey reports." Some clarification is required.

Request: Please provide the following:

(a) more precise evidence to support a volume for the estimated oil-in-place, such as a range of recent estimates and a mean volume;

(b) a complete reference to the U. S. Geological Survey (USGS) report that indicates recoverable resources utilizing existing technology are 4 billion barrels; and,

(c) confirmation that the USGS reports pertain only to the area south of the Canada-United States border.

Response: (a) & (b)

In 2008, the USGS estimated that North Dakota and Montana alone have an estimated 3.0 to 4.3 billion barrels of undiscovered, technically recoverable oil in the Bakken Formation. The USGS estimate had a mean value of 3.65 billion barrels. See

Attachment 5.1(a), being Fact Sheet 2008-3092 issued by the U.S. Department of the Interior and USGS.

The reference to the complete USGS report is: Pollastro, R.M, Cook, T.A., Roberts, L.N.R., Schenk, C.J., Lewan, M.D., Anna, L.O., Gaswirth, S.B., Lillis, P.G., Klett, T.R., and Charpentier, R.R., 2008, Assessment of Undiscovered Oil Resources in the Devonian-Mississippian Bakken Formation, Williston Basin Province, Montana and North Dakota, 2008: United States Geological Survey. The following provides a link to the original 2008 USGS Assessment, as well as more recent work completed by the USGS in relation to the Bakken Formation:

http://www.usgs.gov/newsroom/article.asp?ID=1911

On May 19, 2011, the U.S. Department of the Interior announced that the Bakken Formation Oil Assessment in North Dakota and Montana will be updated by the USGS. See:

http://www.doi.gov/news/pressreleases/Bakken-Formation-Oil-Assessment-in-North-Dakota-Montana-will-be-updated-by-US-Geological-Survey.cfm

It is anticipated that the USGS' estimate of technically recoverable oil in the Bakken Formation will increase.

(c) Confirmed.

5.2 Extent of Area that will Provide Supply

Reference: Vantage Pipeline Project, Vol. 1, Appendix A, Section V, page 18 (PDF page 24) [A1X5W3]

Preamble: In the reference Vantage states, "We currently expect crude oil production from North Dakota to peak between 400,000 bpd and 450,000 bpd in the near term, with a relatively stable outlook through the later part of the decade, and then a subsequent slow decline of between 2.5 and 3 percent per year through the end of the forecast period."

Vantage further states, "It should be noted that several producers have very optimistic outlooks for North Dakota similar to North Dakota Department of Mineral Resources [ND-DMR]'s P10 forecast."

Additional detailed information in support of these forecasted volumes is required, such as the drilling activity required to reach the suggested

peak and to maintain it at the level indicated until the end of the forecast period.

The Board is also seeking additional information on Vantage's supply projection and its sensitivity to different price levels.

Request: Please provide the following:

(a) the production forecast of crude oil on an annual basis over the forecast period;

(b) the forecasts of individual producers in support of the more optimistic outlooks mentioned;

(c) the price forecast of crude oil in support of the production forecast as per (a) above; and,

(d) assuming a price projection 25% lower than in (c), the impact that may have on the production forecast provided in (a).

Response: (a) Purvin & Gertz was not retained to provide a detailed production forecast of crude oil on an annual basis over the forecast period. Vantage instead relied on the P50 forecast developed by the North Dakota Department of Mineral Resources. See Attachment 5.2(a) for a graph taken from a North Dakota Department of Mineral Resources presentation. The full presentation may be found at:

https://www.drm.nd.gov/oilgas/presentations/HouseApprop2011-01-07.pdf

See also Figure 10-2: Production Forecast - North Dakota/Eastern Montana Region from the Application by Enbridge Bakken Pipeline Company Inc. respecting the Bakken Pipeline Project Canada dated January 2011, Volume 1, NEB Applications at page 10-213.

(b) Vantage is not able to provide forecasts of individual producers because producers have asked that the forecasts remain confidential. However, publicly available information confirms that producers are optimistic about production from the Bakken Formation.

Attachment 5.2 (b-1) is a recent presentation prepared by Continental Resources Inc., an independent oil and natural gas exploration and production company with the largest acreage

position in the Bakken resource play. Slide 5 of the Attachment shows Continental's forecast Bakken production to reach 1 million bpd by 2015, steadily increasing to 2025 and beyond.

Attachment 5.2 (b-2) is a collection of News Releases issued by Hess Corporation, a producer with significant interests in the Bakken shale region. Hess Corporation acquired additional acreage in the Bakken play in late 2010, and has allocated significant amounts of money in 2011 towards production and field development of the Bakken oil shale play in North Dakota.

Finally, Attachment 5.2 (b-3) is a collection of News Releases issued by Oneok Partners, the largest independent operator of natural gas gathering and processing facilities in the Bakken shale region. Oneok has committed investments in the amount of US$300 to $355 million to the end of 2012, and an additional US$260 to $305 million to the end of 2014, in the Bakken region.

(c) & (d)

Purvin & Gertz was not retained to provide a price forecast of crude oil in support of the production forecast, and therefore, cannot provide a detailed analysis of the impact that a 25% lower price may have on the production forecast referenced in 5.2(a) above. Supply, demand and price forecasts require many detailed assumptions including, among others, world and regional economic growth and energy demand, various governments' fiscal and monetary policies, levels of reserves and technological developments. However, directionally, a lower price outlook could reasonably be expected to lead to a lower production forecast.

Also, please see Attachment 5.2(a), being the graph taken from a North Dakota Department of Mineral Resources presentation. The graph provides an oil production forecast given a starting oil price in 2011 that ranges between $50 and $100 per barrel and that increases over a five year period to between $110 and $200 per barrel.

5.3 North Dakota Gas Production

Reference: Vantage Pipeline Project, Vol. 1, Appendix A, Section V, page 20 (PDF page 26) [A1X5W3]

Preamble: In the reference Vantage indicates that North Dakota gas production is expected to grow to 500 mmcfd. The Board requires additional information on the gas production outlook, such as the source of the gas and more detail on the gas production forecast.

Request: With reference to the oil supply forecast identified in Information Request 5.2, please provide the total natural gas production forecast, indicating production by year.

Response: See Attachment 5.3, which is "An Update to the May 2010 Pipeline Authority Natural Gas Report" prepared August 18, 2010. The Update Report provides data on natural gas production in North Dakota.

Figure 1 of the Update Report illustrates how natural gas production has risen from an average of 150 mmscfd, in the 5 year period from 2000 to 2005, to an all-time record of over 280 mmscfd in February of 2010. This February production corresponds to the state oil production volume of approximately 200,000 bpd referenced in the graph in Attachment 5.2(a) above.

Further data on gas production expectations can be inferred from the gas processing capacity in North Dakota. Figure 5 of the Updated Report gives a 2010 gas processing capacity of 475 mmscfd. The Updated Report also describes several projects involving new or expanded processing capacity in North Dakota. These projects include:

- Hiland Partners, Watford – 50 mmscfd
- Hess, Tioga – 130 mmscfd
- Oneok, Garden Creek – 100 mmscfd

Oneok has announced two additional processing plants, Stateline I and Stateline II, each having a capacity of 100 mmscfd. This would add a total of 480 mmscfd of processing capacity, doubling the capacity in place in 2010, and resulting in almost 1 bcf of processing capacity in North Dakota.

See also Attachment 5.2 (b-1) which provides the Continental Resources gas forecast on slide 5 reaching 1 bcf per day in 2015 and 2 bcf per day by 2020. Slide 7 provides a breakdown of the various gas processing options available and indicates that the total gas processing capacity planned to be available by mid-2013 is in excess of 1 bcf per day.

5.4 Gas Composition

Reference: Vantage Pipeline Project, Vol. 1, Appendix A, Section V, pages 18-19 (PDF pages 24-25) [A1X5W3]

Preamble: In the reference Vantage states, "North Dakota gas processing and NGL production is dominated by three plants, namely Hess Corporation's Tioga facility (120 mmcfd), Bear Paw Energy/Oneok's Grasslands facility (100 mmcfd) and Hiland Partners Badlands facility (40 mmcfd) which together produce approximately 75% of the state's total NGL production. The associated natural gas processed at the North Dakota gas processing facilities is very rich in NGL. Current deliveries to the Williston Basin Interstate Pipeline from the Tioga area typically contain in excess of 20% ethane."

Vantage further states "Assuming that the composition of raw gas remains similar to what is being currently produced, then Purvin & Gertz estimates there will be approximately 40,000 to 50,000 bpd of potential ethane volumes in reasonable proximity to the Vantage Pipeline."

Clarification of the gas composition and NGL content of the gas that will support this project is required.

Request: Please provide the following:

(a) additional evidence relating to the NGL content and gas composition to support the estimate that potential ethane volumes will be 40,000 to 50,000 bpd; and,

(b) additional evidence to support the assumption that the composition of the raw gas will not change over time.

Response: (a) As discussed in the Purvin & Gertz Report, current deliveries to the Williston Basin Interstate Pipeline from the Tioga area typically contain in excess of 20% ethane. Detailed gas quality information is available at http://ebb.wbip.com/ under the Gas Quality tab.

A summary of the ethane content in the Williston Basin Interstate Pipeline for the most recent 12 month period is given below.

Month	Ethane Composition
May 2010	17.8

June 2010	18.7
July 2010	18.7
August 2010	18.9
September 2010	19.0
October 2010	18.1
November 2010	17.6
December 2010	18.7
January 2011	19.3
February 2011	20.1
March 2011	19.8
April 2011	19.4
May 2011	19.2

This composition corresponds to data from slide 7 of Attachment 5.2 (b-1), which states a liquid yield in the range of 11.5 to 13 GPM, or gallons per 1000 cubic feet (mcf), of which ethane would be approximately 50%. Therefore, assuming the production volume of 1 bcf per day, the ethane produced from the Bakken would be as follows:

1,000,000 mcf per day x 12 gallons per mcf x 50% = 6 million gallons of ethane available

6,000,000 gallons x a recovery of 80% = 4,800,000

4,800,000 gallons ÷ 42 gallons in a barrel = 115,000 bpd

(b) Vantage does not currently have access to sufficient production data to definitively determine how the composition of associated gas from the Bakken Formation will change over time. Given that the majority of the Bakken natural gas is associated gas, meaning that it is produced with oil, Vantage believes it is reasonable to

assume that this gas will continue to exhibit a relatively high liquids content, similar to today.

For example, oil and associated gas have been produced for over 20 years from southern Saskatchewan. This area has been the main source of supply for the Steelman Gas Plant, which is capable of recovering specification ethane. The table below shows the gas heating value for 2 receipt points in this area onto the TransGas system, being the gas transmission service provider in Saskatchewan. Heating value serves as a proxy for NGL content in natural gas, with high heating values typically associated with high NGL content. This table illustrates that the associated gas in this area has not changed significantly over the 13 year period that data was collected.

HEAT VALUE		
Year	**NAL - Nottingham**	**BP - Steelman**
1997	42.20	37.39
1998	43.64	38.23
1999	43.34	37.17
2000	42.72	38.06
2001	43.83	38.96
2002	43.25	39.48
2003	42.83	39.34
2004	43.06	38.32
2005	43.00	38.81
2006	43.00	38.93
2007	42.96	39.65
2008	42.78	40.62
2009	42.68	40.90
2010	42.55	39.38

Environment Matters

5.5 Atmospheric Environment

Reference: i) Vantage Pipeline Project, Vol. 2, Section 6.3.4, pages 42-45 (PDF pages 8-11) [A1X5X3]

ii) Vantage Pipeline Project, Vol. 2, Section 6.3.5, pages 45-46 (PDF pages 11-12) [A1X5X3]

Preamble: Reference (i) provides tables with predicted air emissions for the construction and operations phases of the proposed Vantage Pipeline Project. It is not clear how these numbers were derived (i.e., standard calculations) and what assumptions were used to derive them (e.g., number of vehicles, vehicle operating time, fuel use, any burning of woody debris, number and timing of survey vehicles, etc.). The assumptions and inputs used to calculate predicted air emissions can have a large effect on the output numbers.

Also in the operations phase, Reference (i) indicates that the total annual emission rate of CO2 equivalent (eq) greenhouse gas (GHG) emissions expected from the proposed pipeline is 805 tonnes. Most of these emissions (682 tonnes) are classified as fugitive emissions from the pipeline and pump stations that may occur during normal pipeline operation. Reference (ii) states that additional mitigation measures, such as those outlined in the Best Management Practices for Fugitive Emissions Management (Canadian Association of Petroleum Producers; CAPP) will be evaluated and implemented during the design, construction, and operation of the two pump stations. No specific mitigation, monitoring or detection measures for GHG emissions have yet been identified or committed to.

Request: Please provide the following:

(a) a description of the calculation methodology, including assumptions, inputs, standards and references used to derive the emissions estimates in Tables 6-3 and 6-4 of Reference (i);

(b) the criteria against which additional mitigation measures such as those outlined by CAPP will be evaluated and implemented;

(c) proposed mitigation measures additional to those identified in the application that can be committed to at this time, such as those outlined by CAPP, and the date when Vantage will make decisions on the remaining mitigation measures to be evaluated;

(d) an assessment of:

(d.1) potential sources of fugitive emissions;

(d.2) the contribution of each potential source to the estimated total annual fugitive emissions;

(d.3) detailed mitigation measures;

(d.4) proposed methods for monitoring and detecting fugitive emissions and the effectiveness of these methods; and,

(d.5) a planned response should the fugitive emissions increase for any reason (e.g., leak, release, process change).

Response: (a) See Attachment 5.5(a).

(b) & (c)

Vantage has committed to the following mitigation measures to minimize fugitive emissions, being the mitigation measures outlined by CAPP:

- Installation of tandem seals on all pumps.
- Installation of block valves upstream of pressure safety devices to allow for services in the event of leakage.
- Installation of plugs in all open ended devices to minimize fugitive emissions.
- Inspection of flanges and gaskets prior to installation to ensure they are clean.
- Provide instructions for and monitor flange bolt tightening.
- Develop an annual fugitive emissions leak detection and repair (LDAR) program, as outlined in the response to (d.5) below, which involves the use of gas detection or infra-red detection. Some leakage is expected through the normal course of operations (i.e. from valves, flanges, etc.). Prudent practice within industry is to use LDAR to reduce emissions below an economic threshold.

(d.1) Potential sources of fugitive emissions include:

- Connections
- Valves
- Open ended lines
- Pump seals

(d.2) In the Vantage Application, ethane was evaluated as methane. Since filing the Application, Vantage has undertaken more research on the effect fugitive emissions from ethane may have on the determination of CO_2E (equivalent). Ethane has been evaluated as a non-methane volatile organic compound (NMVOC) and according to the US Environmental Protection Agency, it is not considered to be sufficiently photo chemically active to be an ozone or photochemical smog pre-cursor. In a report prepared by the Intergovernmental Panel on Climate Change entitled "Climate Change 2007: Working Group I: The Physical Science Basis", Chapter 2 on "Changes in Atmospheric Constituents and in Radiative Forcing" discusses global warming potential (GWP) of methane and ethane. Methane has a *direct* 100 year GWP of 21 (multiplier to CO_2 set as 1). Ethane has a calculated *indirect* net GWP as a NMVOC of 5.5. The full IPCC report is available at http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-3-2.html

Based on this research, Vantage re-calculated the fugitive emissions from the pipeline operations to be as follows:

- Connections: 4 tonnes CO_2E per year
- Valves: 158 tonnes CO_2E per year
- Open ended Lines: 6 tonnes CO_2E per year
- Pump Seals: 11 tonnes CO_2E per year

Total 179 tonnes CO_2E per year

The annual fugitive emissions are expected to be less than 0.03% of the total annual throughput of the Vantage Pipeline (based on the design capacity of 40,000 bpd).

(d.3) Mitigation measures are outlined in (c) above.

(d.4) Monitoring will involve regular inspections of the valve sites and pump stations along with an annual fugitive emissions survey utilizing gas detection or infra-red technology. Both of these methods detect and/or quantify actual emissions and are considered an effective means to identify fugitive emissions.

(d.5) If fugitive emissions increase relative to previous readings or exceed an economic threshold, there are three possible planned responses:

1. If the equipment can be shutdown, isolated and repaired without taking the pipeline out of service, the work will be scheduled and done within a reasonable time schedule.

2. Schedule the emission repair during the next scheduled outage for the pipeline.

3. Shutdown the pipeline, isolate and repair the emission as soon as the work can reasonably be done.

5.6 Environmental Management System

Reference: i) Vantage Pipeline Project, Vol. 1, Section 7.1, pages 35-36 (PDF pages 43-44) [A1X5W0]

ii) *Onshore Pipeline Regulations, 1999*, (OPR-99) section 48

Preamble: Vantage has committed to operate the pipeline and associated facilities in accordance with all governing regulatory requirements, permit conditions and other approvals, including the OPR 99 and CSA Z662-07 (Reference (i)).

Reference (ii) requires companies to develop and implement an environmental protection program to anticipate, prevent, mitigate and manage conditions which have a potential to adversely affect the environment.

Vantage stated in Reference (i) that it will address responsibilities for health, safety and environmental performance by utilizing a Health, Safety and Environmental Management System. No further detail is provided.

Request: Please provide the following:

(a) an explanation of how the Health, Safety and Environmental Management System described in reference (i) will meet the requirements of OPR 99 section 48, or if this Management System is not intended to meet this requirement please describe the program that will meet it;

(b) the organizational and accountability structure for Vantage's Environmental Management System;

(c) the process for how management plans and directives will be implemented in the field;

(d) how the structure described in (a) ensures that environmental plans and directives are implemented; and,

(e) how monitoring and surveillance in the field will feed back into management plans and directives.

Response: (a) The Environmental Management System will meet the requirements of section 48 of OPR-99 which states a program must "anticipate, prevent, mitigate and manage conditions which may have a potential to adversely affect the environment." The Environmental Management System will identify the risks associated with the operation of the pipeline and discuss the prevention and mitigation procedures necessary to manage all identifiable conditions that may have an effect on the environment. For example, when a flare is used, there is a risk of igniting surrounding vegetation. The risk would be mitigated by having a program to manage vegetation growth in the vicinity of flare locations and ensure that a procedure is in place to check for adequate vegetation control prior to use of a flare.

(b) It is anticipated that pipeline operations employees would report to an operations manager, who would in turn report to the Chief Operating Officer. The Chief Operating Officer will ultimately be accountable and responsible for ensuring the organizational structure and systems are in place to manage the health, safety and environmental programs.

(c) Management plans and directives will be communicated directly to pipeline operations employees through regular meetings. Each employee will be required to provide written acknowledgement that they have read and understood the management plans and directives.

(d) Both internal and external auditing will be used to ensure the plans and directives are implemented. The internal and external auditors will report directly to the Chief Operating Officer who will follow up on all issues identified by the audits.

(e) Direct feedback from the field staff, along with a record of all "near misses", audits and safety/environmental meeting minutes, will be reviewed by the management and the Chief Operating Officer. This information will be used to determine whether the

management plan and directives are effective or need to be supplemented or amended.

5.7 Post-construction Monitoring

Reference: Vantage Pipeline Project, Vol. 3 Appendix A, Section 1.11, pages 33-34 (PDF pages 38-39) [A1X5Z8]

Preamble: The reference lists several monitoring assessments planned for post-construction, including soils, vegetation, watercourses, and wildlife. For wildlife post-construction monitoring (PCM), the first year following construction is given as the recommended duration. The duration for PCM for the other elements is not clear. The reference also states that, following the first year after construction, routine monitoring by Vantage personnel will be continuous for the life of the pipeline.

It is not clear what will be monitored continuously as part of ongoing operations and maintenance, and what will be monitored as part of a defined PCM program that would be provided to regulatory agencies.

Request: Please describe:

(a) what Vantage will consider to be PCM and what Vantage will consider to be ongoing operations and maintenance monitoring, including the rationale for the distinction and the scope, duration of program, and monitoring intervals for each;

(b) the desired objectives of Vantage's PCM program; and,

(c) the rationale for the chosen duration and monitoring intervals of PCM in meeting the objectives described in (b).

Response: (a) Post-Construction Monitoring (PCM) will occur immediately following construction and continue until the ROW is reclaimed, which is expected to be one year after construction. Reclamation results will be assessed after one year to determine whether continued monitoring is warranted. Vantage will consider feedback from landowners of cultivated lands, hay lands and native prairie to ensure that the reclamation of the ROW is adequate and crop growth has returned to normal. Vantage will be in contact with all landowners following construction to ensure they are satisfied with the ROW reclamation.

PCM in native prairie areas will be performed by Vantage's environmental consultants with an objective of ensuring that reclamation of the ROW is progressing as expected. The PCM

program will then transition to the Operations Group for ongoing monitoring of the pipeline ROW and facilities.

The PCM will consist of the following elements:

Soils

No specific measures are required.

Vegetation Monitoring

Vegetation inspections will occur following completion of construction in mid to late summer when vegetation is mature enough for accurate identification and evaluation. The ROW will be visually inspected for vegetation issues such as weed infestations, invasive species, poor vegetation establishment, and reduced crop growth along the ROW. PCM will also assess success of mitigative measures recommended for native communities and rare plants. Particular attention will be paid to areas with extensive surface disturbance, moderate to steep slopes, watercourse crossings, wetlands and areas of terrain instability.

Watercourse Monitoring

All watercourse crossings will be inspected during the PCM and also following significant precipitation events. The banks and approach slopes will be monitored for stability, erosion, invasive species, weed infestations and re-vegetation.

Wildlife

PCM wildlife surveys will occur in the first year at various times specific to each species. The PCM will focus on areas with recommended regulatory setbacks in habitats of species of management concern.

Following the PCM program, Vantage Operations personnel will perform regular inspections of the facilities and the ROW. These inspections will consist of a monthly aerial reconnaissance, a biweekly visual inspection of block valves and a weekly visual inspection of pump station locations, along with ongoing visual inspections of the ROW in areas where the pipeline is visible from the roads.

(b) The desired objectives for the PCM program are to:

- restore agricultural capability to pre-construction conditions;
- allow native prairie and wildlife habitat areas to recover to pre-construction quality (species/density/vigour);
- utilize data gathered during the PCM to assess construction and mitigation success. This information may be used to further add to the knowledge base for future projects; and
- promote ongoing, proactive discourse between Vantage representatives and landowners, occupants and government agencies.

(c) The duration of and intervals between monitoring are designed to allow for early identification of any areas that requires further mitigation measures. Assessments will be undertaken during the most appropriate time of the season or lifecycle, or if a significant weather event occurs which could cause specific impacts to the ROW.

Engineering Matters

5.8 Integrity Management Program

Reference:

i) Vantage Pipeline Project, Vol. 1, Section 7.1.4, page 35 (PDF Page 43) [A1X5W0]

ii) Alberta Energy and Resources Conservation Board (ERCB) Directive 041 - Adoption of CSA Z662-03, Annex N, as Mandatory, July 20, 2006

iii) CSA Z662-07 Oil and gas pipeline systems

iv) Onshore Pipeline Regulations 1999 (OPR-99) , Section 40 and Guidance Notes

v) CSA Z662-07 Oil and gas pipeline systems, Annex N – Guidelines for pipeline integrity management programs

Preamble: Reference (i) indicates that Vantage will establish a Pipeline Integrity Quality Assurance System in accordance with ERCB Directive 041.

However, reference (ii) points to an out-of-date version (2003) of CSA Z662 Annex N.

Reference (iii) Clause 10.14 requires a company to develop and implement a pipeline integrity management program that includes effective procedures for managing the integrity of pipeline systems so that they are suitable for continued service, including procedures to monitor for conditions that may lead to failures, to eliminate or mitigate such conditions, and to manage integrity data.

Reference (iii) Clause 10.2 specifies requirements for the development, implementation and maintenance of the safety and loss management system that provides for the protection of people, environment and property.

Reference (iv) requires companies to develop an integrity management program which may include the following four essential elements: Management System, Records Management System, Condition Monitoring and Mitigation Program.

Reference (v) provides guidelines for developing pipeline Integrity Management Programs.

Further clarification is required as to how Vantage's Pipeline Integrity Quality Assurance System complies with the specific regulatory requirements in OPR-99 and CSA-Z662.

Request: Please provide:

(a) details on how the proposed pipeline Integrity Quality Assurance System complies with the OPR-99 and CSA Z662-07, Clauses 10.14 and 10.2;

(b) confirmation that the latest version of CSA Z662 standard will be used for the development of the Integrity Management Program and its supporting management system for the proposed project;

(c) a Table of Contents for the Integrity Management Program (high level) reflecting the associated management system elements; and,

(d) the date when the Integrity Management Program will be available for the Board's review.

Response: (a) The proposed pipeline Integrity Quality Assurance System will comply with section 40 of OPR–99 and clauses 10.14 and 10.20 of

CSA Z-662. Specific elements of Vantage's Integrity Quality Assurance System are outlined in Volume 1 of the Application, Section 7.1.4, page 35 and include the following:

- Risk Assessment
    - will include items such as identifying factors that increase the risk of a release, identification of maintenance and operation risks, identification of risks due to mechanical damage from excavation, identify issues relating to product quality risk.
- Hazard Identification and Control & Risk Reduction
    - will includes items such as procedures, training, public awareness, slope stability, dept of cover, stream crossings.
- Inspection, Testing, Patrol and Monitoring
    - will includes items such as visual inspections, recording of operating parameters, cathodic protection surveys, aerial surveys, infrared surveys, sampling, corrosion monitoring and smart pigging.

Risks will be managed, in part, through a public awareness program to alert the public to "call before you dig", aerial patrols to spot activity near the pipeline, a cathodic protection program to minimize external corrosion and smart pigging to monitor the integrity of the pipeline, both inside and out.

All the results of this program will be monitored by both internal employees and external experts who will advise as to corrective actions that may need to be undertaken to minimize risks.

(b) Confirmed.

(c) A detailed Table of Contents for the Integrity Management Program has not yet been developed, but the elements of the program are outlined in Volume 1 of the Application, Section 7.1.4, page 35. It is anticipated that the Table of Contents would include:

- Program Records and Information Management
- Personnel Competency and Training

- Management of Change
- Failure and Damage Incident Investigation
- Hazard Identification and Control & Risk Reduction
- Risk Assessment
- Program Planning and Execution
- Inspection, Testing, Patrol and Monitoring
- Evaluation of Inspection
- Mitigation and Repair
- Facilities Integrity
- Program Review and Evaluation

(d) The Integrity Management Program will be available for the Board's review 3 months prior to operation.

5.9 Training and Competency

Reference: i) Vantage Pipeline Project, Vol. 1, Section 7.2.2, page 37 (PDF page 45) [A1X5W0]

ii) *Onshore Pipeline Regulations, 1999*, (OPR-99) section 46

Preamble: Reference (i) indicates Central Control Facility (CCF) emergency procedures and other necessary work instructions will be developed for the Project and will be completed prior to pipeline start-up to allow for the training of personnel.

Reference (ii) requires a company to develop and implement a training program for any employee of the company who is directly involved in the operation of the pipeline.

There is minimal information provided in Vantage's application regarding the operating procedures for the proposed liquid ethane pipeline. Clarification is required on the levels of training, scope and methods of the training, competency and qualifications for personnel, contractors and/or consultants who will be involved in the operation and maintenance of the proposed pipeline.

Request: Please submit:

(a) Vantage's procedures which outline the required levels of training, scope and methods of the training, competency, and qualifications for the personnel, contractors and/or consultants who will be involved in the operation and maintenance of the proposed pipeline and facilities (such as CCF, pump stations, etc); and,

(b) please advise the date that the operating procedures (work instructions) will be available for the Board's review.

Response: (a) Vantage has not yet developed detailed requirements addressing competency and qualifications for the personnel and contractors. It is anticipated that at minimum, a grade 12 diploma with post-secondary training in an area such as process operations or relevant oil and gas experience, will be required. Vantage's training program, once developed, will provide training in the following areas:

- Health, Environment and Safety Program
- Emergency Response Program
- Pipeline Integrity Program
- Public Awareness Program
- Safety manual and operating procedures manual
- Regulatory reporting
- Hazard identification, mitigation and management of hazards
- First Aid
- Workplace Hazardous Materials Information System (WHMIS)
- Transportation of Dangerous Goods (TDG)
- Fire and vapor release training

(b) The operating procedures will be available for the Board's review 3 months prior to operation.

5.10 Launching and Receiving Facilities

Reference: i) Vantage Pipeline Project, Vol. 1, Section 5.4.3, page 25 (PDF Page 32) [A1X5W0]

ii) CSA Z662-07 Oil and gas pipeline systems, Clause 4.3.13.1

Preamble: Reference (i) indicates the proposed pipeline will include pig launching and receiving facilities (pig traps) that will be used for cleaning pigs and will be able to accommodate tools for internal inspection of pipelines. In addition, Table 5-5 of the same reference summarizes locations for pig traps between the Assiniboia pump station and the AEGS Tie-in; however, it does not provide details on pig trap locations for inspecting the pipeline between the Assiniboia pump station and Tioga meter station.

Reference (ii) requires the operator to have a documented operating procedure to ensure the proper depressurizing of the pig trap prior to opening the closure.

Further details on the pig launching and receiving facilities are required.

Request: Please provide the following:

(a) typical drawings (schematics) of the launching/receiving facilities including the transition from below to above ground (S-bend riser) and pig trap reducer details;

(b) Process and Instrumentation Diagrams (P&IDs) for the launching/ receiving facilities with details on isolation and venting equipment which will ensure the safe opening of the closure;

(c) details on when the operating procedure for launching and receiving facilities will be available for the Board's review; and,

(d) details on how the proposed pipeline will be inspected between Assiniboia pump station and Tioga meter station including the location of the pig trap.

Response: (a)&(b) Please see Attachments 5.10 (a&b-1) and (a&b-2).

(c) The operating procedure for the launching and receiving facilities will be developed 3 months prior to pipeline start-up.

(d) There will be facilities installed between the Assiniboia pump station and Tioga meter station in order to inspect the pipeline. The following table lists all of the proposed locations of the

Launching and Receiving Traps that will be installed on the Vantage Pipeline in Canada and the United States.

Location	Type	Location	Province
AEGS Tie-In	Receiving	SE 11-20-1 W4M	Alberta
Empress Pump Station	Launching & Receiving	15-10-7-30 W2M	Alberta
BV-25	Launching & Receiving	SW 15-9-17 W3M	Saskatchewan
Assiniboia Pump Station	Launching & Receiving	14-36-19-1 W4M	Saskatchewan
BV-12	Launching & Receiving	NE 12-5-23 W2M	Saskatchewan
Tioga	Launching Trap	Township 157 North, Range 95 West, Section 26, W/2 NE/4	North Dakota

The traps will be used for maintenance and integrity pig runs during the operation and internal inspection of the pipeline.

5.11 Railway Crossings

Reference: Vantage Pipeline Project, Vol. 1, Appendices A-C, Attachment B-1, Figure 3.0 - Typical Railway Crossing, page 116 (PDF page 39) [A1X5W3]

Preamble: The reference states within note 1 to the figure, "The pipeline construction shall comply with the regulations of local authorities, Transport Canada Guide TC E-10, Order E-10, CSA Z662-07 and conditions specified in Railway Crossing Agreement."

The Board is seeking further clarification related to the railway crossings.

Request: Please:

(a) file with the Board a copy of the referenced Order E-10;

(b) file with the Board a copy of the referenced Transport Canada - Standards Respecting Pipeline Crossings Under Railways TC E-10;

(c) provide a document summarizing the type (cased or uncased) and location of every railway crossing;

(d) provide confirmation that every railway crossing will comply with requirements of Transport Canada TC E-10;

(e) indicate the location of emergency valves to meet requirements of clause 5.3 of TC E-10 and update table 5-4 as necessary; and,

(f) commit that the most stringent requirement will apply to each railway crossing in circumstances where there is a conflict between the requirements of OPR-99, regulations of local authorities, Transport Canada TC E-10, Order E-10, CSA Z662-07 and conditions specified in Railway Crossing Agreements (reference (i)).

Response: (a) The reference to Order E-10 is in error and should be removed from the Volume 1 of the Application, Attachment B-1, Figure 3.0 – Typical Railway Crossing, page 116. The reference should be to TC E-10 only.

(b) See Attachment 5.11(b).

(c)

RAILROAD CROSSINGS	LSD	Type
CANADIAN PACIFIC RAILWAY	SE-21-19-29-W3M	Uncased
CANADIAN PACIFIC RAILWAY	SE-25-17-28-W3M	Uncased
CANADIAN PACIFIC RAILWAY	NW-16-12-23-W3M	Uncased
101052644 SASKATCHEWAN LTD.	SE-17-09-17-W3M	Uncased
101052644 SASKATCHEWAN LTD.	SE-15-09-17-W3M	Uncased
101052644 SASKATCHEWAN LTD.	SE-14-09-13-W3M	Uncased
FIFE LAKE RAILWAY LTD.	NE-11-07-01-W3M	Uncased
RED COAT ROAD & RAIL LTD.	NW-08-07-27-W2M	Uncased
UN-NAMED	SE-21-06-25-W2M	Uncased
CANADIAN PACIFIC RAILWAY	NW-15-05-24-W2M	Uncased
LABATTE LAND & CATTLE LTD.	SW-31-02-18-W2M	Uncased

(d) The design and construction of the pipeline crossings will comply with the requirements of Transport Canada TC E-10.

(e) The automated emergency block valves are located upstream and downstream of the railway crossings at the indicated location on the following Table:

	LSD	Upstream Block Valve	Downstream Block Valve
CANADIAN PACIFIC RAILWAY	SE-21-19-29-W3M	NW 9-18-28 W3M	Empress Pump Station
CANADIAN PACIFIC RAILWAY	SE-25-17-28-W3M	NW 7-16-26 W3M	NW 9-18-28 W3M
CANADIAN PACIFIC RAILWAY	NW-16-12-23-W3M	NE 21-11-22 W3M	SW 15-13-24 W3M
101052644 SASKATCHEWAN LTD.	SE-17-09-17-W3M	SW 15-9-17 W3M	NW 26-8-19 W3M

101052644 SASKATCHEWAN LTD.	SE-15-09-17-W3M	SW 18-9-14 W3M	SW 15-9-17 W3M
101052644 SASKATCHEWAN LTD.	SE-14-09-13-W3M	SW 16-9-12 W3M	SW 18-9-14 W3M
FIFE LAKE RAILWAY LTD.	NE-11-07-01-W3M	Assiniboia Pump St	NW 9-7-2 W3M
RED COAT ROAD & RAIL LTD.	NW-08-07-27-W2M	NW 22-6-26 W2M	NW 12-7-28 W2M
UN-NAMED	SW-17-06-25-W2M	SE 4-6-24 W2M	NW 22-6-26 W2M
CANADIAN PACIFIC RAILWAY	NW-15-05-24-W2M	NE 12-5-23 W2M	SE 4-6-24 W2M
LABATTE LAND & CATTLE LTD.	SW-31-02-18-W2M	NW 19-2-18 W2M	SW 30-3-19 W2M

(f) Where there is a conflict between the requirements of OPR-99, regulations of local authorities, Transport Canada TC E-10, Order E-10, CSA Z662-07 and conditions specified in the Railway Crossing Agreements, the most stringent requirements will apply to each railway crossing.

Emergency Response Matters

5.12 Emergency Preparedness and Response Program

Reference: i) Vantage Pipeline Project, Vol. 1, Section 7.1.1, page 35 (PDF page 43) [A1X5W0]

ii) Onshore Pipeline Regulations – 1999 (OPR-99), sections 4, 32-35 and 46-48

iii) CSA Z662 07 Oil and gas pipeline systems, clause 10

iv) Board letter dated 24 April 2002 regarding Security and Emergency Preparedness and Response Programs [A0G1E4]

Preamble: Reference (i) describes Vantage's commitment to develop an Emergency Response Plan (ERP) for the Project that will meet regulatory requirements. Vantage notes that the ERP will be developed to comply with Directive 071 of the Alberta Energy and Resources Conservation Board (ERCB) for HVP Pipelines and also to meet the requirements of OPR-99.

Reference (ii) highlights OPR-99 requirements pertaining to emergency preparedness and response, including requirements to comply with CSA Z662.

Reference (iii) cites CSA Z662 requirements of companies to establish emergency procedures and prepare emergency response plans as well as a safety and loss management system.

Reference (iv) cites the 24 April 2002 Board letter sent to industry which sets out the Board's expectations that companies develop and implement

an emergency preparedness and response (EPR) program for all aspects of their operations.

Vantage has made several key commitments to comply with applicable regulations in the development of their ERP; however there is a lack of detail with respect to the depth of its EPR Program. As per the 24 April 2002 Board letter, the NEB has determined that its regulated companies must develop and maintain EPR Programs to minimize the effects of incidents and emergencies that have the potential to impact the health and safety of the public, company employees, property and the environment.

Request: Please provide the following:

(a) confirmation that Vantage's EPR program, procedures and plans will be developed in accordance with the requirements of the sections of OPR-99 noted in reference (ii), the CSA Z662 07 and the Board's expectations outlined in its 24 April 2002 letter;

(b) the hazard assessment which will be used to develop the EPR program;

(c) the Table of Contents for Vantage's emergency procedures manual; and,

(d) an overview of applicable HVP Pipeline regulatory requirements for the U.S. portion of the proposed project that would be used to develop the EPR Program and its components, including a comparison with the applicable Canadian regulatory requirements.

Response: (a) Confirmed.

(b) The hazard assessment that will be used to develop the EPR program will be a pipeline rupture.

(c) Vantage has not developed the emergency procedures manual or the Table of Content but it is anticipated that the Table of Contents will include:

i. Immediate Actions

1. Flowcharts

2. Emergency Levels

3. Contacts

4. Time and Event Logs

ii. Organization

1. All internal contact information

2. All external contact information

iii. Roles and Responsibilities

1. Field response responsibilities

2. Emergency operations center responsibilities

iv. Alarms and Activation

1. Emergency criteria

2. Emergency Levels

3. Alarms and initial calls

4. Communications

v. Specific Plans and Responses

1. Line Rupture

2. Security/Bomb Threat

3. Vandalism

4. Serious injury

5. Natural Disaster

6. Block Valve Closing

7. Vapor Cloud Ignition

8. Evacuation

9. Decommissioning

10. Commissioning

11. Portable Flare Operation

vi. Resources

1. Internal

2. External

3. Governmental

4. Community/Rural

vii. Recovery, clean up and reporting

1. Recovery activities

2. Stakeholder relations

3. Reporting

4. Post incident investigation

viii. Emergency Preparedness

1. Team

2. Risk assessment and hazards

3. Training

4. Exercises

ix. Administration

1. Policies and philosophy

2. Plan update plan

3. Distribution

x. Technical Data

xi. Product Data

xii. Maps

xiii. Pump Station Information

(d) The US regulatory agency that governs the requirements of an emergency response manual is US Department of Transportation Pipeline and Hazardous Materials Safety Administration. The US and Canadian requirements are similar. The following table lists the US and Canadian requirements:

US Regulatory Requirement	**NEB Guideline for an Emergency Procedures Manual**
Identify event and notice to appropriate officials and operating personnel for corrective action.	Definition and levels of emergency, internal and external contact lists, site specific emergency procedures
Prompt and effective response	Roles and responsibilities
Personnel, equipment and material available at the scene	Description and location of response equipment
Taking action to minimize hazardous liquid that is released	Description of general and site specific emergency response procedures
Control of released hazardous liquid to minimize the hazards	Description of general and site specific emergency response procedures
Minimize public exposure to injury by assisting with evacuation and traffic management	Site specific emergency information
Notify fire, police and other public officials of pipeline emergency and coordinate a preplanned and actual response during an emergency	Internal and external reporting requirements, role of government departments
Use of instruments of assess the extent and coverage of the vapor cloud and determine hazardous area	Description and location of response equipment, site specific emergency procedures
Post accident review	Training requirements
Actions to be taken by controller	Description of general and site specific emergency response procedures
Training	Training requirements
Annually update manual	Manual Updating Procedure and Schedule

Safety Matters

5.13 Safety Program

Reference: Vantage Pipeline Project, Vol. 1, Section 7.1.2, page 35 (PDF page 43) [A1X5W0]

Preamble: The reference describes Vantage's commitment to operate the pipeline and associated facilities in accordance with all governing regulatory requirements, permit conditions and other approvals, including the OPR-

99 and CSA Z662-07. Further, Vantage commits to address responsibilities for health, safety and environmental performance by utilizing a Health, Safety and Environmental Management System.

Although Vantage has made several key commitments to comply with applicable regulations, there is a lack of detail with respect to the depth of its programs, including the safety program. The Board defines a program as a documented set of procedures that accomplish a goal or goals as defined by a company's policy. At a minimum the program should set out how procedures are linked and how each one contributes toward these goals.

Request: Please provide the following:

(a) an overview of the framework of Vantage's safety program, including but not limited to a discussion of which standards have been applied in developing this aspect of Vantage's management system; and,

(b) an overview of Vantage's safety management approach which includes construction as well as operational safety as well as how the program would identify and address safety issues on the proposed Vantage Pipeline Project.

Response: (a) Vantage's safety program will follow the principles outlined in CSA Z-662, Annex A. The basic elements of Vantage's safety program is as follows:

xiv. Policies

xv. Responsibilities

xvi. Hazard Identification and Control

1. Inspections
2. Risk Control and Permitting
3. Preventative Maintenance

xvii. Management of Change

1. Procedure and project management
2. Engineering design

3. Hazop

4. Material control/procurement

5. Construction management

xviii. Training

xix. Communication

xx. Incident Reporting and Investigation

xxi. Operating Procedures

xxii. Emergency Preparedness

xxiii. Personnel Protective Equipment

xxiv. Contractor Safety

xxv. Continuous Improvement and Audits

xxvi. Document control

(b) Vantage's management is committed to ensuring that safety is top priority. Each contractor and employee is expected to understand and adhere to the safety program.

Prior to and during construction, pipeline contractors will be required to have a safety program in place that will be pre-approved by Vantage. Vantage will have inspectors on site that will monitor the safe work of the pipeline contractor and ensure that the safety program is being followed. If any concerns arise, they will be immediately documented and addressed by Vantage and the pipeline contractor.

During operations, safety awareness will be constantly reinforced to every employee through regular discussions and monthly meetings. A safe work permit system will be used to identify hazards on the job site and to identify ways of eliminating or managing the hazards prior to any work starting. An open system of communication will be developed and maintained such that all employees know and understand they will be supported by management in relation to safe work concerns. All safety issues identified through this collaborative process will be recorded and addressed by both management and employees. In addition,

internal audits and inspections will be undertaken to identify and address safety issues.

Security Matters

5.14 Security Management

Reference: i) NEB Filing Manual, Facility Security, Section 1.9

ii) Board letter dated 24 May 2006 regarding Proposed Regulatory Change 2006-01 – Pipeline Security Management Programs [A1 Q8R0]

iii) Board letter dated 3 May 2010 regarding Proposed Regulatory Change (PRC) 2010-01 – Adoption of CSA Z246.1-09 Security Management for Petroleum and Natural Gas Industry Systems [A1 S7H7]

Preamble: The Canadian Public Safety Act (Bill C-7) came into force on 20 April 2005. This act amends the *National Energy Board Act* to explicitly include "security" within the Board's mandate and provides the Board with the basis for regulating security of energy infrastructure under its jurisdiction.

Reference (i) highlights the section of the Filing Manual where the Board notes its expectation that applicants consider security during project design and when preparing subsequent applications.

Reference (ii) cites the 24 May 2006 letter in which the Board informed industry of proposed amendments to both the *Onshore Pipeline Regulations, 1999* (OPR-99) and the *National Energy Board Processing Plant Regulations*. The proposed amendments require companies to have a Pipeline Security Management Program.

Reference (iii) cites the 3 May 2010 letter in which the Board informed industry of Proposed Regulatory Change (PRC) 2010-01, which notes the requirement that companies develop a Security Management Program in accordance with CSA Z246.1-09, Security Management for Petroleum and Natural Gas Industry Systems (the Standard or CSA Z246.1-09). The Board defines a program as a documented set of procedures that accomplish a goal or goals as defined by a company's policy. At a minimum the program should set out how procedures are linked and how each one contributes toward these goals.

Although Vantage has made several key commitments to comply with applicable regulations, there is a lack of detail with respect to the depth of its programs.

Request: Please provide the following:

(a) confirmation that Vantage's security management program has been developed in accordance with the CSA Z246.1-09 Security Management for Petroleum and Natural Gas Industry Systems standard (the Standard or CSA Z246.1-09) outlined in the Board Proposed Regulatory Change (PRC) 2010-01 letter dated 3 May 2010 and effective 1 April 2011;

(b) an overview of Vantage's security management approach which includes physical security, personnel security, and operational control security (SCADA) and how the program would address security issues on the proposed Vantage Pipeline Project; and,

(c) an overview of how Vantage will manage security matters during times of increased construction activity. Please include in your response confirmation that Vantage has evaluated or will evaluate the vulnerabilities and security risks associated with construction, new facilities and operations and will implement measures to mitigate any additional risks.

Response: (a) Although Vantage's detailed security management program has not yet been developed, Vantage confirms that the program will be developed in accordance with CSA Z246.1-09. A copy of Vantage's security management program will be submitted to the Board 3 months prior to the start of construction.

(b) Vantage is committed to the security of its employees, its stakeholders and its facilities. Vantage's security management program will identify and assess risks and measures to avoid risks, as well as outline appropriate mitigation strategies and how employees or contractors will respond to situations in a safe and effective manner.

With regards to physical security of its facilities, Vantage will employ the following security measures:

- all sites will be fenced and locked for security and protection of wildlife and the public;
- fences around the sites will include a barb wire top section;

- all buildings located within the fenced compounds will be locked;

- buildings will be equipped with alarms notifying Vantage pipeline operators of an intrusion and personnel will be dispatched to the site;

- sites will be visited by pipeline operations and maintenance staff at least every 2 weeks.

With regards to operational safety, Vantage's operations control centre will be in constant, 24 hour communication with pipeline-related equipment via the SCADA system. All aboveground block valves and pumps will be operable from the operations control centre. All such equipment may also be operated manually at the site.

In addition, Vantage's emergency response manual will include a security threat procedure to be followed in the event of a security threat. All personnel will be trained in this procedure.

Vantage's operations personnel will be in constant contact with the control centre by cellular phone, and will receive training relating to personal security measures, as well as how to identify and deal with security risks.

Finally, Vantage will work with local and federal enforcement authorities and industry associations to identify and monitor trends, risks and issues related to security.

(c) It is anticipated that the pipeline contractors will play an integral role in implementing security measures and procedures, including measures undertaken to ensure that the construction site remains secure and that only qualified personnel are able to access the construction site. The pipeline contractor will be required to submit a security management program for the construction of the pipeline. Vantage will review this plan with respect to vulnerabilities and security risks associated with construction and ensure appropriate mitigative measures are taken to reduce the security risks identified. The security management program will be monitored by Vantage's on-site construction monitors and will be adjusted if the security measures put in place need to be supplemented or amended.

The security management program to be developed by Vantage will identify risks associated with new facilities and operations and Vantage will implement measures to mitigate any additional risks identified as a result of the new facilities and operations as indicated in 5.14(b).

VANTAGE PIPELINE RISK ASSESSMENT

Summary

The National Energy Board of Canada specifies that companies shall develop a documented risk assessment for installations of high vapor pressure (HVP) pipelines under the Guidance Notes for Onshore Pipeline Regulations for pipeline systems located near major roadways. With the commencement of the Vantage Pipeline Project in Southern Saskatchewan and North Dakota which will supply ethane to the NOVA Chemicals Joffre facility, a risk analysis was completed using historical incident rates published by the Alberta Energy and Utilities Board (EUB) for HVP products. The geographic risk resulting from a leak or rupture was compared to risk criteria published in the MIACC Risk-based Land Use Planning Guidelines.

In summary, the measured geographic risk for this pipeline was found to range from between 9.88e-6 and 1.63e-5 fatalities per year which, within the MIACC guidance represents an appropriate risk level for the neighboring land uses. Given the highly conservative nature of the assumptions in the presented model (e.g., probability of ignition and probability of fatality were both set equal to 1.0), it is anticipated that the true risk falls well below the upper limit of 1.00e-5 fatalities per year for "low density residential and commercial" allowable land uses.

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Introduction

Based on the Guidance Notes for Onshore Pipeline Regulations specified by the National Energy Board (NEB) of Canada, companies shall develop a documented risk assessment to determine the need for heavier wall design for high vapor pressure pipelines[1]. Informative (i.e., non-mandatory) guidelines are provided by the Canadian Standards Association (CSA) to assist in preparing the risk assessments[2]. The purpose of this risk assessment report is to address the requirements of the NEB guidance notes.

Discussion

The proposed Vantage pipeline is a HVP pipeline which will transport ethane from a source near Tioga, North Dakota, U.S. to a destination point near Empress, Alberta, Canada[3]. The overall length of the pipeline is approximately 430 miles with a diameter of 10 inches (originally specified, but subject to change to a 12-inch diameter). The proposed pipeline will be constructed of steel with a maximum operating pressure of 1,440 pounds per square inch. It will have the capacity to transport 43,000 barrels per day and will be expandable to 60,000 barrels per day by adding two additional pump stations. In order to assess the risk posed by a pipeline with these features, historical pipeline incidents were analyzed resulting from similar pipelines in Alberta which are monitored by the Alberta EUB. This approach is consistent with the recommended guidelines specified in the CSA standards under Section B.5.2.4 Frequency Analysis of Annex B which state that approaches available for frequency analysis include "historical operational and incident data". An assumption being made is that pipeline failure rates for rural locations within southern Saskatchewan will be similar or lower than that observed within Alberta covering both rural and urban areas and a far broader range of landscape types.

Frequency Analysis

The Alberta EUB Report 2007-A (Pipeline Performance in Alberta, 1990 – 2005) was used as a historical basis in the frequency analysis to estimate the incident frequency for all diameters of HVP pipelines[4]. In a supplemental legend to the report[5], incidents consist of leaks, ruptures, and hits according to the following definitions:

- Leak – An opening, hole, or crack in the pipeline causing some product to be released, but not immediately impairing the operation of the pipeline.
- Rupture – The instantaneous tearing or fracturing of pipe material, immediately impairing the operation of the pipeline.
- Hit – Striking a buried pipeline during ground disturbance activity resulting in the pipeline or pipeline coating being damaged. A release of product does not necessarily occur.

The report provides the total number of leaks, ruptures, and hits for pipelines with diameters from 2 inches up to 60 inches. The pipelines contain substances such as crude oil, fuel gas, natural gas, sour gas, fresh water, salt water, oil well effluent, LVP, HVP, miscellaneous gases, and miscellaneous liquids. The report shows the incident data but the substances are aggregated into groups (crude oil, natural gas, sour gas, water, multiphase, and other). The "other" category consists of HVP products (ethane, propane, butane, ethylene, and mixes of natural gas liquids), LVP products (fuel oil, motor oil, and condensate), and additional substances including hydrogen, carbon dioxide, nitrogen, ammonia, polymer, sulphur, etc. Thus, the report itself does not directly provide the number of incidents specific to HVP products for each line size, however this level of detail is available in the EUB database. Therefore, the EUB was contacted (Dave Grzyb, 403-297-8432, dave.grzyb@ercb.ca) to obtain more detailed incident records specific to HVP pipelines. Since ethane is a high vapor pressure product, incident frequency data for HVP products were relevant to model the risk for the proposed Vantage pipeline.

From 1990 to 2005, the ratio of leaks-to-ruptures for HVP substances on line diameters from 2 to 16 inches were 9-to-1, respectively, and there were no hits. More specifically, there were only 2 leaks on a 10-inch diameter and 1 leak on a 12-inch diameter pipeline with no ruptures on either. The incident data for HVP products does not suggest a correlation exists between line diameter and leak or rupture frequency. For example, over a 15-year period there were zero incidents on 9,420 km of 2-inch diameter HVP pipeline, two incidents on 2,534 km of 10-inch diameter HVP pipeline, and one incident on 3,010 km of 12-inch diameter HVP pipeline. Therefore, the total distance for HVP pipelines from 2 to 16 inches and the total number of leaks and ruptures were considered to obtain an "average" leak per kilometer per year and an "average" rupture per kilometer per year. To be conservative with this analysis, both this average incident frequency and the specific diameter incident frequency were assessed. However, since there were no ruptures on 10-inch and 12-inch pipelines, an approximation had to be applied in order to estimate a rupture frequency.

The approximation used an average rupture-to-leak ratio taken from "all substances" that could be applied to HVP products. This information was provided in Figure 6 of the report for all substances transported in the pipelines. Over the entire 16-yr period of data collection the average leak-to-rupture ratio was 15.1 which increased to 20.2 and 34.2 leaks per rupture over the past 10 and 5 years, respectively. This is likely due to the increased monitoring and recording of leaks on pipelines, not necessarily an increase in the actual number of leaks. To be conservative, the 15.1 (16-yr) and 20.2 (10-yr) leak-to-rupture ratios were considered instead of the ratio of 34.2 (5-yr) based on more recent historical records. Refer to Attachment I in the Appendix for the historical average leak-to-rupture ratio incident records. An even more conservative approach would be to directly apply the actual leak-to-rupture ratio of 9:1 for HVP products. Table 1 provides a summary of the results for the frequency analysis. Comparing the "actual" ruptures per year per 1000 km to the "estimated" ruptures per year per 1000 km in the table, it shows that the actual rupture rate (0.005) is more conservative than the estimated rates (0.0031 and 0.0023).

Line Diameter, inch	10	12	2 through 16
Total Distance, km	2,534	3,010	11,880
Total Leaks	2	1	9
Total Ruptures	0	0	1
Total Hits	0	0	0
Total Incidents	2	1	10
Total number of years	16	16	16
"Actual" Leaks/yr/1000 km	0.049	0.021	0.047
"Actual" Ruptures/yr/1000 km	0.000	0.000	0.005
"Estimated" Ruptures/yr/1000 km (16-yr)	0.0033	0.0014	0.0031
"Estimated" Ruptures/yr/1000 km (10-yr)	0.0024	0.0010	0.0023

Table 1. Estimation of Leak and Rupture Frequency

Consequence Analysis

Following a pipeline rupture event, the maximum hazard distance that would be impacted by the release and subsequent ignition was simply assessed based on the Emergency Planning Zones (EPZ) distances specified in Canadian Association of Petroleum Producers (CAPP) Companion Planning Guide to ERCB Directive 071 (July 2008)[6]. EPZ distances are very conservative guidelines based on a "guillotine" failure and worst-case meteorological conditions. Appendix 10 of the guide specifies EPZ distances for 10-inch and 12-inch pipelines as 900 meters and 1,100 meters for ethane, respectively. Since the EPZ represents the distance from the source to the endpoint, it must be multiplied by a factor of two to obtain a bi-directional impact distance.

The EPZ method approximates the impact distances from ruptures equal to the full diameter of the pipeline (i.e., guillotine failure), not leaks from cracks or holes in the pipeline. Therefore, leaks will have a smaller hazard distance than ruptures. In this analysis, in order to estimate the EPZ distance for leaks, the relationship between EPZ and pipeline diameter for ruptures was fit to a second-order polynomial regression in order to obtain a "leak diameter" and related EPZ. This regression methodology and selection of a diameter to represent leaks provided an "effective" EPZ for leaks. Extrapolation of the regression to zero diameter results in the minimum EPZ distance of 10 meters. As a more conservative approach, an EPZ of 50 meters was selected, corresponding to an approximate line diameter of 9/16 inch. Refer to Attachment II for the EPZ distance chart and the polynomial regression. Table 2 provides the EPZ distances multiplied by two to obtain the hazard distances. The hazard distance, probability of ignition, and probability of fatality could then be multiplied by the leak and rupture frequencies to estimate the risk of the release scenarios.

The probabilities for ignition and fatality were conservatively held constant at 1.0 which assumes that every leak or rupture results in an ignition and a fatality to any individual within the EPZ distance. The probability of ignition is complex and is typically modeled as a function of two components (probability that an ignition source is present and the probability that it ignites the cloud in a time interval, given the ignition source is present). Although not specifically analyzed in this model, the following off-site ignition probabilities determined by the Gas Research Institute (1980-1981) are provided to illustrate the range of possible values that may be considered in this type of analysis. Again, this model assumed 1.0 to be conservative.

- Automobile electrical systems: 0.06
- Continuously operating traffic signals: 0.24
- Flashing intermittent signal lights: 0.8
- Residential gas heating units using outside air: 1.0

Line Diameter, inch	**10**	**12**	**2 through 16**
LEAK (regression): 2X EPZ Distance (diameter), km	0.1	0.1	0.1
RUPTURE: 2X EPZ Distance (diameter), km	1.8	2.2	2.2
Probability of ignition	1.0	1.0	1.0
Probability of fatality	1.0	1.0	1.0

Table 2. Estimation of hazard distance for leaks, ruptures, and probabilities of ignition/fatality

Risk Analysis

Table 3 shows the output of the risk model when the inputs in Tables 1 and 2 are combined. The risk estimates are reported on a fatality equivalent per year basis (i.e., annual individual risk of fatality). In summary, the risk of a leak and rupture for all pipelines (2 through 16 inches) is 4.73e-6 and 1.16e-5 (most conservative value identified from described data) fatality equivalents per year, respectively. Adding the leak and rupture risk together for all pipelines results in a total risk of 1.63e-5 fatality equivalents per year, which is based on the more conservative (i.e., higher) estimates from the actual data on pipelines 2 through 16 inch in diameter.

It appears from the table that a 10-inch pipeline may have a higher risk than a 12-inch pipeline. However, recalling that the data does not suggest a correlation between diameter and incident rate, the higher result is more likely due to random variation than a causal factor. Thus, given the available data, an average risk based on total leaks and ruptures for all diameters (2 through 16 inches) is a more appropriate estimate of the actual risk. Using the more conservative actual leak-to-rupture ratio of 9:1 results in a rupture risk of 1.16e-5 and a combined (leak and rupture) risk of 1.63e-5 which is more conservative than either of the 10-inch or 12-inch line diameters independently.

Line Diameter, inch	10	12	2 through 16
Leak	4.93e-6	2.08e-6	4.73e-6
Rupture (estimated by 16-yr avg. L/R ratio)	5.89e-6	3.03e-6	6.91e-6
Rupture (estimated by 10-yr avg. L/R ratio)	4.39e-6	2.26e-6	5.15e-6
Rupture (based on actual data for 2 – 16 inch lines)	N/A	N/A	1.16e-5
L+R (estimated by 16-yr avg. L/R ratio)	1.08e-5	5.11e-6	1.16e-5
L+R (estimated by 10-yr avg. L/R ratio)	9.32e-6	4.33e-6	9.88e-6
L+R (based on actual data for 2 – 16 inch lines)	N/A	N/A	1.63e-5

Table 3. Risk estimates for leaks and ruptures (expressed as annual individual risk of fatality)

Table 4 summarizes criteria from the MIACC Risk-based Land Use Planning Guidelines which were used to determine the acceptable annual individual risk for various land use levels[7] (e.g., manufacturing, commercial, low-density residential, high-density residential). Since the geographic risk of a pipeline leak and rupture was estimated to be less than 1.63e-5 fatalities per year, then the estimated risk falls somewhere between "low density residential and commercial" and "open space, warehouse, manufacturing plants". The conservative nature of the assumptions make it likely that the true risk falls below the upper limit of the low-density residential and commercial land use (1.00e-5).

Allowable Land Uses	Minimum	Maximum
Facility, pipeline, corridor (no other land use)	1.00e-4	To risk at source
Open space, warehouses, manufacturing plants	1.00e-5	1.00e-4
Low density residential and commercial	1.00e-6	1.00e-5
High density residential	0	1.00e-6

Table 4. MIACC Risk-based Land Use Planning Guidelines (expressed as annual individual risk of fatality)

Conclusions

- The risk posed by the transport of ethane through the Vantage pipeline was estimated based on historical incident rates on Alberta pipelines over a 16-year period (1990 to 2005).
- Data from the EUB report and database for HVP products (ethane, propane, butane, ethylene, and mixes of natural gas liquids) specific to pipeline diameters from 2 to 16 inches were used to estimate the frequency of leaks and ruptures for ethane.

- The measured geographic risk from this pipelines was found to range from 9.88e-6 to 1.63e-5 fatalities per year which falls somewhere between "low density residential and commercial" and "open space, warehouse, manufacturing plants" in the MIACC guidelines.
- Given the conservative nature of the assumptions used in the model for HVP products, it is anticipated that the true risk posed by a new HVP pipeline is less than the estimated risk calculated by this model and likely falls well below the upper limit of 1.00e-5 fatalities per year for "low density residential and commercial" allowable land uses.

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6. Canadian Association of Petroleum Producers, Companion Planning Guide to ERCB Directive 071, July 2008: http://www.capp.ca/GetDoc.aspx?DocID=140751&DT=PDF
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Appendix

Attachment I

All Substances	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	TOTAL
Hit	0	0	0	0	51	44	42	53	58	33	58	53	38	61	61	105	657
Leak	721	674	681	653	707	633	714	689	737	827	801	752	686	661	709	788	11433
Rupture	71	66	56	61	85	55	66	64	45	43	41	27	31	23	13	11	758
TOTAL	792	740	737	714	843	732	822	806	840	903	900	832	755	745	783	904	

Leak/Rupture	10.2	10.2	12.2	10.7	8.32	11.5	10.8	10.8	16.4	19.2	19.5	27.9	22.1	28.7	54.5	71.6	15.08

16-yr avg.	15.1
10-yr avg.	20.2
5-yr avg.	34.2

Attachment II

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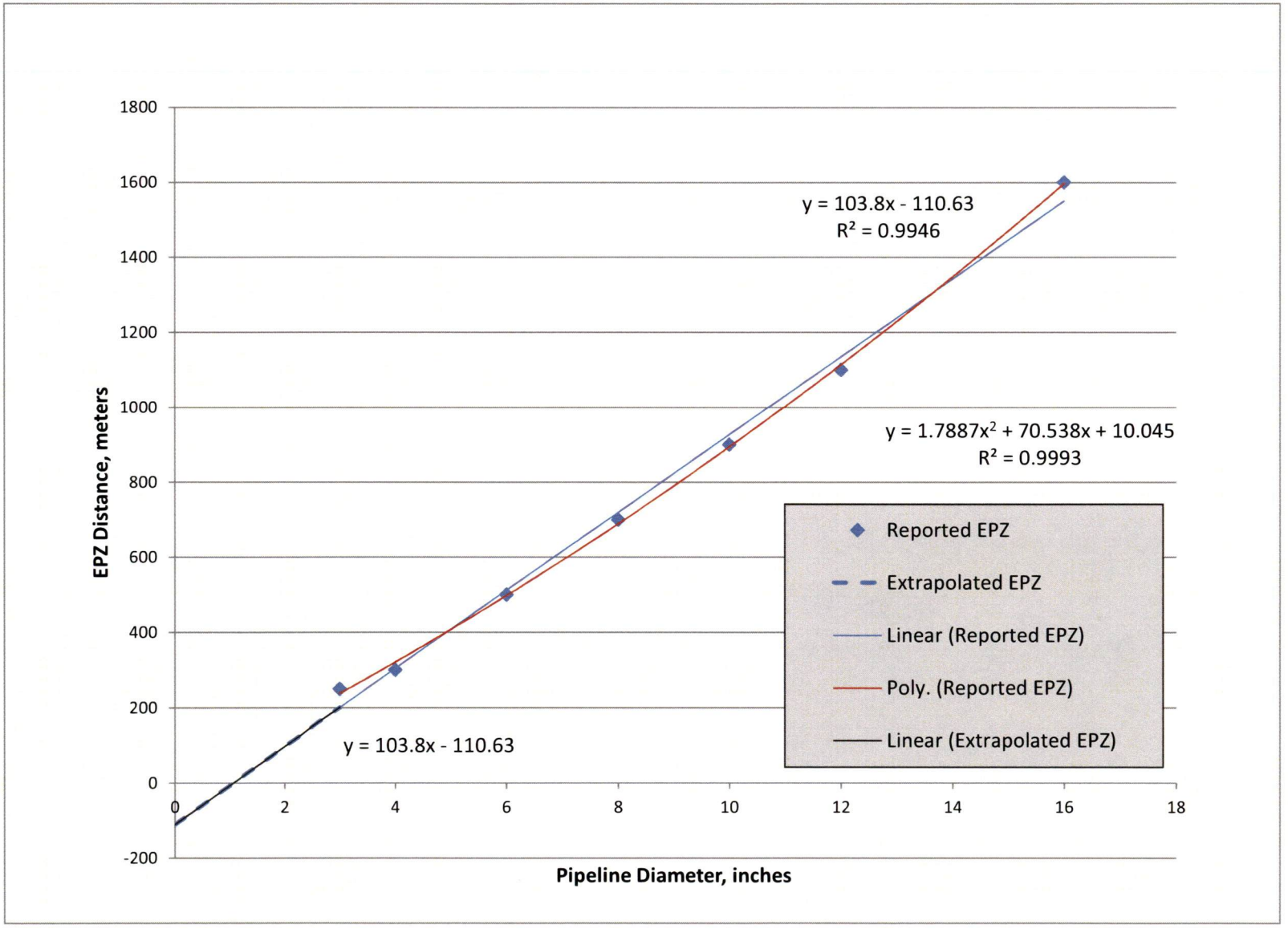

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Appendix B – Wetland Assessment

WETLAND ASSESSMENT REPORT

An initial wetland inventory was completed in July and August of 2010 by KC Harvey and SEH biologists. Wetlands in the vicinity of the pipeline were identified based on dominant vegetative cover and observable hydrology. Subsequent to the initial survey, surveys were completed in June 2011 to address approximately 32 miles of re-routes and in September – November, 2011 to address smaller sections of re-routes.

SCOPE OF WORK

A field survey to ground truth, classify, and map wetlands was conducted within a 500-foot corridor along the approximately 80-mile pipeline route. Preliminary meetings and correspondence with the U.S. Army Corps of Engineers (USACE) indicated that formal wetland delineations were not necessary for pipeline route planning. Rather, a conservative and approximate wetland boundary based on visible hydrology and vegetation would be appropriate for impact avoidance and minimization efforts. For this reason, full jurisdictional wetland delineations were not completed during the preliminary field surveys.

METHODOLOGY

Vantage completed a pre-field survey inventory of wetlands along the proposed pipeline route utilizing aerial photography, the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), and the Soil Surveys for Divide and Williams Counties. These data sources were used to create GIS field maps, which were the primary resources used to locate and confirm potential wetland habitat during the field surveys.

Wetland classification follows the methods described in *Wetlands and Deepwater Habitats of the United States* (Cowardin, *et al.* 1979) used by the USFWS NWI. The Circular 39 classification (Shaw and Fredine 1956) is also provided. Primary and secondary indicators of wetland hydrology are defined in the *Regional Supplement to the USACE Wetland Delineation Manual: Great Plains Region* (USACE 2010), a supplement to the 1987 Corps Wetland Delineation Manual.

Furthermore, wetlands are defined in federal Executive Order 11990 as follows:

> *"Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."*

According to the USACE *Wetlands Delineation Manual* (USACE 1987) and the 2010 *Regional Supplement*, one positive indicator (except in certain situations) from each of three elements must be present in order to make a positive wetland determination. Wetland indicators are as follows:

- Greater than 50 percent dominance of hydrophytic plant species
- Presence of hydric soil
- The area is either permanently or periodically inundated, or soil is saturated to the surface during the growing season of the dominant vegetation

FIELD PROCEDURES

The pipeline route, 500-foot survey corridor, and the NWI were loaded into a Magellan Mobile Mapper global positioning system (GPS) to aid in field navigation and identification of potential wetland areas. Wetlands were identified primarily by vegetation and surficial hydrology indicators. As the wetland survey was not a formal jurisdictional wetland delineation, soil data was not collected during the field survey. Wetlands were classified and photographed, dominant vegetation was documented, and approximate wetland boundaries were mapped using GPS. Wetland plant species nomenclature and wetland indicator status following the *National List of Plant Species that Occur in Wetlands* (U.S. Department of the Interior 1988) *for the Mountain-Prairie Region (Region 6).* Identification was supplemented when necessary with field guides for the region.

Although the field surveys were completed in the fall, the active growing season for the area had not yet ended. The *Regional Supplement* describes several criteria for an active growing season which includes fresh growth on wetland herbaceous vegetative species and/or active flowering plants. Water smartweed (*Polygonom amphibium*), an obligate wetland plant, was flowering at the time of the delineation and other herbs and forbs were still detectable due to the wet and warm growing seasons in 2010 and 2011.

Each wetland was assigned a unique alphanumeric ID. The letter corresponds to the field team that identified the wetland and the number indicates each individual wetland identified by that survey team. Letters correspond to field surveys as outlined below:

- "A" wetlands were surveyed August 25–September 2, 2010.
- "B" wetlands were surveyed August 25–September 2, 2010 and September 7–10, 2010.
- "C" wetlands were surveyed October 26–30, 2010.
- "D" wetlands were surveyed on October 11–16, 2010.
- "E" and "F" wetlands were surveyed June 13–19, 2011.
- "G" wetlands were surveyed between September 18–22, 2011.
- "H" wetlands were surveyed November 8, 2011.

RESULTS

The wetland investigations resulted in the identification and mapping of 201 wetlands within the survey corridor. Table 3-1 summarizes the wetlands within the 500-foot corridor by wetland type. The attached table (see Attachment 3-1) provides a complete summary of the classification and dominant species of all surveyed wetlands in the project area. Brief descriptions of the vegetation and hydrology characteristics for each wetland type observed throughout the project corridor are provided below.

Table 3-1. Wetlands by Type within the Project Area (500-ft Corridor) [1]

CLASSIFICATION		WETLANDS OBSERVED	
Circular 39[2]	Cowardin[3]	Number	Area (acres)
1	PEMA	25	5.18
1/2	PAMA/B	1	0.50
2	PEMB	101	40.90
2/3	PEMB/C	40	28.10
2/5	PEMB/PUBx	1	0.12
3	PEMC	20	13.21
3/4	PEMC/F	8	8.38
4	PEMF	2	2.10
4/5	PEMF/ PUB	1	0.21
5	PUB	1	3.59
6	PSS1B	1	0.08
Totals		201	102.36

[1] Includes only wetland area within the 500-foot pipeline corridor. Actual wetland boundaries may extend past the project limits and may be larger than indicated.

[2] *Wetlands of the United States, Circular 39.* (Shaw and Fredine, United States Fish and Wildlife Service, 1956)

[3] *Classification of Wetlands and Deepwater Habitats of the United States.* (Cowardin *et al.*, December 1979)

Type 1 (Palustrine Emergent A): Seasonally Flooded Basins

A total of 25 Type 1 wetlands, encompassing approximately 5.18 acres, were identified in the project area. Additional Type 1 wetlands were also identified as occurring with Type 2 wetlands. Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season. This type of wetland is very common throughout the prairie pothole region. Many of the seasonally flooded basins observed in the project area were cultivated with a variety of crops, although those basins that were fallow developed a dominance of wetland vegetation. Dominant vegetation in the seasonally flooded basins included water smartweed (*Polygonom amphibium*), reed canary grass (*Phalaris arundinacea*), foxtail barley (*Hordeum jubatum*), curly dock (*Rumex crispus*), field mint (*Mentha arvensis*), field sowthistle (*Sonchus arvensis*), and barnyard grass (*Echinochloa crus-gali*).

No primary indicators of wetland hydrology were observed in the seasonally flooded basins. However, several secondary indicators were observed including surface soil cracks, sparsely vegetated concave surface, saturation visible on aerial imagery, geomorphic position, and the FAC-neutral test. Figure 1 illustrates a typical PEMA wetland.

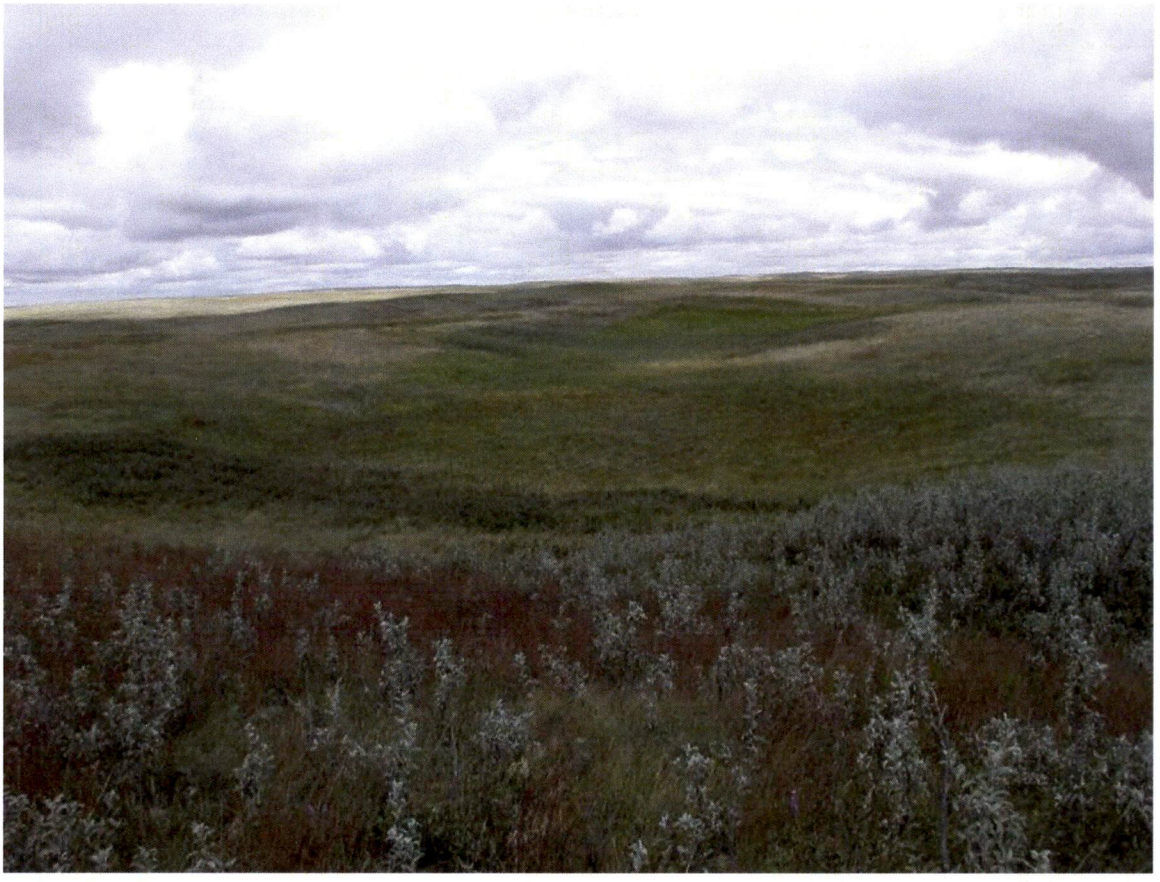

Figure 1. PEMA Seasonally Flooded Basins

Type 2 (Palustrine Emergent B): Fresh Wet Meadows

A total of 101 Type 2 wetlands, encompassing approximately 40.90 acres, were identified in the project area. Additional Type 2 wetlands were also identified as occurring with Type 1, Type 3, and Type 5 wetlands. Fresh wet meadows are depressions that may contain standing water for a short duration early in the growing season, but typically are saturated within 12 inches of the surface and lack surface water for most of the growing season. Fresh wet meadows are usually dominated by grasses, sedges, and forbs with little woody species present. Many of these wetlands observed in the project area were cultivated but crops showed evidence of stress due to the long duration of saturation. Dominant vegetation in the fresh wet meadows included water smartweed, reed canary grass, various species of sedges (*Carex spp.*) and rushes (*Juncus spp.*), and field sow thistle.

Primary indicators of wetland hydrology as defined by the Great Plains Regional Supplement to the USACE Wetland Delineation Manual were observed in few of the fresh wet meadows where the wetlands were saturated to the surface, but saturation would most likely have been observed if subsurface soils were investigated. Secondary indicators observed in the fresh wet meadows included sparsely vegetated concave surface, saturation visible on aerial imagery, geomorphic position, and the FAC-neutral test. Figure 2 illustrates a typical PEMB wetland.



Figure 2. PEMB Fresh Wet Meadows

Type 3 (Palustrine Emergent C): Shallow Marshes

A total of 20 Type 3 wetlands, encompassing approximately 13.21 acres, were identified in the project area. Additional Type 3 wetlands were also identified as occurring in complexes with Type 2 and Type 4 wetlands. Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. Most of the shallow marshes observed within the project area were adjacent to areas of deeper water, although several of the shallow marshes were deep, inundated depressions. Dominant vegetation in the shallow marshes included broad-leaved cattail (*Typha latifolia*) and softstem bulrush (*Scirpus validus*) with water smartweed in areas with drawn-down hydrology.

Surface water was the primary indicator of hydrology that was observed in the shallow marsh wetlands. The shallow marshes in the project area varied in the amount of standing water. Several wetlands did not have visible standing water but were saturated to the surface, had a thin muck surface, and contained vegetation typical of a shallow marsh. These wetlands were likely drawn down as the growing season progressed and were still considered shallow marshes.

Type 4 (Palustrine Emergent F): Deep Marshes

A total of two Type 4 wetlands, encompassing approximately 2.10 acres, were identified in the project area. Additional Type 4 wetlands were also identified as occurring in complexes with Type 3 wetlands. Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. They are dominated by emergent vegetation but may also be composed of floating-leaved and submergent vegetation. Both of the deep marshes observed in the project area were open water with a Type 2 or Type 3 fringes. Broad-leaved cattail and lake sedge (*Carex lacustris*) were dominant in the deep marsh habitats.

Surface water was the primary indicator of hydrology that was observed in the deep marsh wetlands. Deep marshes rarely draw down to expose the aquatic bed and standing water should be expected throughout the growing season.

Type 5 (Palustrine Unconsolidated Bottom): Shallow Open Water

One Type 5 wetland encompassing approximately 3.59 acres was identified within the project area. Additional Type 5 wetlands identified in the project area were complexes with Type 4 wetlands or had Type 2 fringes. Shallow open water communities have water depths of less than 6.6 ft. Water bodies with a depth greater than 6 ft. are deep water habitat and are not considered wetlands. Shallow open water communities differ from deep marshes in that floating-leaved and submergent vegetation is dominant rather than emergent vegetation, as in a deep marsh. Typical dominant species in shallow open water habitats include duckweed (*Lemna spp.*), pondweed (*Potamogeton spp.*), and various species of water lilies (*Nymphaea sp.* and *Nuphar sp.*). Both of the shallow open water communities observed within the project area showed historical evidence of excavation.

Surface water was the primary indicator of hydrology that was observed in the shallow open water wetlands. Shallow open water communities persist throughout growing season.

Type 6 (Palustrine Scrub-Shrub Broad-leaved Deciduous [PSS1B[): Shrub-carrs

One Type 6 shrub-carr community was identified within the study corridor, encompassing approximately 0.08 acres. Shrub-carrs are plant communities composed of tall, deciduous shrubs growing on saturated to seasonally flooded soils. They are typically dominated by willows (*Salix spp.*) or dogwood (*Cornus spp.*) shrub canopy with a ground layer of ferns, sedges, grasses and forbs of sedge meadow and fresh (wet) meadow communities. The diversity of species composing the ground layer is dependent on degree of shrub canopy cover, degree of disturbance, and water source. The observed Shrub-carr wetland was dominated by a mixed species willow shrub canopy.

Primary indicators of wetland hydrology as defined by the *Regional Supplement* were not directly observed in the Type 6 shrub swamp basin, but saturation would most likely have been observed if subsurface soils were investigated. Secondary indicators observed in the shrub swamp included a sparsely vegetated concave surface, saturation visible on aerial imagery, geomorphic position, and vegetation type.

Wetland Complexes

Wetland complexes are wetlands that are comprised of more than one wetland community type. Wetlands plant communities are dependent upon hydrology present. Depressional wetlands often have more than one wetland community type due to variation in topography, water depth, and

hydrology patterns. Deeper water wetland types are often located in the central portions of the basins with shallower wetland types on the fringes or edges of these complexes. Wetland complexes were frequently observed throughout the project area with shallow marsh/fresh wet meadow complexes being the most frequently encountered along with several deep marsh/ shallow marsh and shallow open water/fresh wet meadow complexes observed as well. These complexes are comprised of vegetation characteristic of each wetland type present and are often indicative of a transition between two wetland types. Figure 3 illustrates a typical PEMB/C wetland complex:



Figure 3. PEMB/C Wetland Complex

USFWS Wetland Easements

The USFWS Wetland Easement program pays landowners to enter wetlands in this permanent protection program. Wetlands protected under a wetland easement are regulated by the USFWS and cannot be drained, filled, graded, or burned. The Vantage Pipeline does cross parcels enrolled in the wetlands protection program, and has avoided any wetlands protected by a wetland easement where possible. (USFWS 2011)

Vantage has been working closely with the USFWS to identify wetlands under easement. In areas where wetland easements have been identified, the temporary construction right-of-way will be narrowed and oak matting may be used to avoid impact to any wetlands protected by a wetland easement.

Wetland Reserve Program

The Wetlands Reserve Program (WRP) provides landowner assistance in protecting, restoring, and enhancing wetlands in an effort to preserve wildlife habitat. There are no WRP tracts within the Vantage Pipeline corridor (NRCS 2010).

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ATTACHMENT 1: SUMMARY OF SURVEYED WETLANDS

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
A1	2	PEMB	Isolated	Mix of *Phalaris arundinacea, Rumex crispus, Polygonum amphibium,Carex sp.*
A22	2	PEMB	Isolated	*P. amphibium, P. arundinacea*
A24	3	PEMC	Isolated	Water present with *T. latifolia* edges
A29	3	PEMC	Isolated	*P. amphibium, Echinochloa crus-gali*
A33	3	PEMC	Isolated	Deep water in middle with mix of *T. latifolia, P. amphibium, P. arundinacea*
A35	3	PEMC	Isolated	All *T. latfolia*
A36	3	PEMC	Isolated	Surrounded by wheat fields; middle is all water with *T. latifolia, Scirpus sp., P. arundinacea*
A37	3	PEMC	Isolated	Bottom of wheat field; mostly *T. latifolia with P. arundinacea edges*
A38	3	PEMC	Isolated	Mostly *P. amphibium* with some *R. crispus, Scirpus sp.* surrounded by wheat field
A4	2	PEMB	Isolated	*P. amphibium, P. arundinacea, R. crispus, Carex sp.*
A4	2	PEMB	Isolated	*P. amphibium, P. arundinacea, R. crispus, Carex sp.*
A44	2	PEMB	Isolated	*P. amphibium, Carex sp.*
A50	2	PEMB	Isolated	*P. amphibium and P. arundinacea*
A51	2/3	PEMB/C	Isolated	Middle is *P. arundinacea* and *Carex sp.* with evidence of high water
A57	2	PEMB	Isolated	*Carex sp., P. arundinacea*
A58	2	PEMB	Isolated	*Carex sp., P. arundinacea,* recently grazed
A60	2	PEMB	Isolated	*Carex sp.*
A69	2	PEMB	Isolated	*P. amphibium;* more of a depression than A68
A70	1	PEMA	Isolated	*R. crispus*
A71	1	PEMA	Isolated	*Mentha sp., R. crispus*

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
A73	2/3	PEMB/C	Potentially Isolated Complex	Appears to have seasonal flow through it. Pockets of *T. latifolia* with a strip of *P. arundinacea* following drainage. Surrounded by wheat field.
A74	2/3	PEMB/C	Isolated	*P. amphibium, P. arundinacea*
A75	2/3	PEMB/C	Potentially Isolated Complex	*Pockets of T. latifolia,* standing water and *A. alba*
A76	2	PEMB	Potentially Isolated Complex	Strip of *P. arundinacea connecting A 75 to A 77* which appears to have seasonal flow
B10	2	PEMB	Isolated	*E. crus-gali* and *P. amphibium,* larger than NWI
B100	3	PEMC	Isolated	*T. latifolia, P. amphibium, Scirpus sp.*
B101	2	PEMB	Isolated	*P. amphibium, S. arvensis*
B102	3/4	PEMC/F	Potentially Isolated Complex	*T. latifolia* and standing water
B103	2	PEMB	Potentially Isolated Complex	Appears to be seasonal drainage that connects B102 to B104 and further south through culvert underneath road; *P. arundinacea*
B104	3/4	PEMC/F	Potentially Isolated Complex	*T. latifolia* and standing water
B105	2	PEMB	Potentially Isolated Complex	Mostly *P. amphibium* with *T. latifolia*
B106	2/3	PEMB/C	Isolated	*T. latifolia, Hordeum jubatum*
B107	2	PEMB	Isolated	*P. amphibium, P. arundinacea*
B108	1	PEMA	Isolated	*P. amphibium, R. crispus*
B109	2	PEMB	Isolated	*P. amphibium, Poa sp.*
B110	2	PEMB	Isolated	*P. amphibium, Poa sp.*
B111	2	PEMB	Isolated	*P. amphibium*
B112	2	PEMB	Isolated	*P. amphibium*
B113	2	PEMB	Isolated	*P. amphibium*
B114	2	PEMB	Isolated	*P. amphibium*
B124	2	PEMB	Isolated	*P. amphibium, S. arvensis* within a garbage pile
B125	1	PEMA	Isolated	Small depression with *P. amphibium*
B126	2	PEMB	Isolated	*Carex sp.* and *R. crispus*
B127	2	PEMB	Isolated	*P. amphibium, Carex sp. R. crispus*
B128	2	PEMB	Isolated	Mostly *P. amphibium*
B129	2	PEMB	Isolated	Mostly *P. amphibium*
B13	1	PEMA	Isolated	*Ambrosia artemisiifolia, E. crus-gali,* dried mud

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
B130	2	PEMB	Isolated	*Mostly P. amphibium* with some *P. arundinacea*
B131	2	PEMB	Isolated	*S. arvensis, P. amphibium,* grasses
B134	2	PEMB	Isolated	Along 105th Avenue: *P. amphibium*
B134	2	PEMB	Isolated	0
B135	1	PEMA	Isolated	*P. arundinacea,* portions hayed; very marginal
B14	2/3	PEMB/C	Isolated	*Carex sp., T. latifolia, P. amphibium.*
B16	1	PEMA	Isolated	*Carex sp., Poa sp.,* grazed
B18	2	PEMB	Isolated	*P. amphibium* and *Carex sp.*dominant
B24	2	PEMB	Isolated	*P. amphibium* and *Carex sp.*in ag field
B25	2/3	PEMB/C	Isolated	*Carex sp., T. latifolia*
B26	2	PEMB	Isolated	*P. amphibium* and *R. crispus* in lentil field
B27	2	PEMB	Isolated	*P. arundinacea* and *P. amphibium* in wheat field
B3	3/4	PEMC/F	Isolated	*Scirpus sp.* in center, *T. latifolia* near edge
B30	2/3	PEMB/C	Isolated	*P. arundinacea, P. amphibium,* some *T. latifolia*
B31	2	PEMB	Isolated	*P. amphibium, R. crispus, P. arundinacea*
B32	2	PEMB	Isolated	*P. amphibium* and *Carex sp*
B34	2	PEMB	Isolated	*P. amphibium* and *Carex sp,* adjacent to rock pile
B35	2	PEMB	Isolated	*P. arundinacea, P. amphibium* at road toe of slope
B36	2	PEMB	Isolated	*P. arundinacea, P. amphibium* at road toe of slope
B37	2/3	PEMB/C	Isolated	*P. arundinacea, T. latifolia* in center; *Cirsium arvense, Sonchus arvensis* invading
B4	2/5	PEMB/PUBx	Isolated	No vegetation, excavated cattle pond. Small T2 wetland adjacent, dominated by grasses.
B40	3/4	PEMC/F	Potentially Isolated Complex	Open water *T. latifolia, Scirpus sp.* in center, *P. arundinacea, P. amphibium* in fringe
B42	1	PEMA	Isolated	*P. arundinacea* monoculture
B43	2	PEMB	Isolated	*P. arundinacea, Agrostis alba,* some *R. crispus* in wheat field
B48	2/3	PEMB/C	Isolated Complex	*Carex sp., Scirpus sp.* NE corner of 151st and 107th intersection, culvert connection to B51
B49	2	PEMB	Potentially Isolated Complex	Excavated wet ditch connecting to a waterfowl area
B5	2	PEMB	Isolated	*P. arundinacea,* smaller than NWI shows

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
B51	3	PEMC	Isolated Complex	*T. latifolia, Scirpus sp.* SE corner of 151st and 107th intersection, culvert connection to B48
B52	1	PEMA	Isolated	*P. arundinacea,* some *R. crispus*
B54	2/3	PEMB/C	Isolated	*T. latifolia* in center with *P. arundinacea, P. amphibium, Carex sp.* in fringe
B60	2/3	PEMB/C	Isolated	*T. latifolia, P. amphibium* dominate
B75	1	PEMA	Isolated Complex	*P. arundinacea* and *H. jubatum,* 20–30' wide seasonal drainage swale in agriculture fields
B76	1	PEMA	Isolated Complex	*P. arundinacea* and *H. jubatum,* 20–30' wide seasonal drainage swale in agriculture fields
B77	1	PEMA	Isolated	*P. amphibium* monoculture surrounded by wheat field
B77	1	PEMA	Isolated	*P. amphibium* monoculture surrounded by wheat field
B78	1	PEMA	Isolated	*P. amphibium* with some *C. arvense* creeping in
B79	1	PEMA	Isolated	*P. amphibium* with some *C. arvense, S. arvensis*
B80	1	PEMA	Isolated	*Carex sp., P. amphibium* with some *C. arvense*
B81	2	PEMB	Isolated	*Carex sp., P. arundinacea,* some *P. amphibium*
B83	3	PEMC	Isolated Complex	*T. latifolia, P. amphibium,* part of swale to pond
B84	3	PEMC	Isolated Complex	*T. latifolia* drainage into pond, some *P. amphibium*
B85	4	PEMF	Isolated Complex	Mostly open water with *fringe of Carex sp., P. amphibium*
B86	2/3	PEMB/C	Isolated	*T. latifolia, Carex sp., P. arundinacea,* adjacent to road but no visible culverts
B87	2	PEMB	Isolated	*Carex sp.* depression surrounded by N/NN grassland
B88	2/3	PEMB/C	Isolated	*T. latifolia, Carex sp., P. amphibium, Scirpus sp.* in wheat field
B90	2	PEMB	Isolated	*Carex sp.* and *Scirpus sp.* Isolated portion of seasonal drainage pattern
B91	2	PEMB	Isolated	*P. arundinacea, P. amphibium* with some Carex sp. in sunflower field
B92	2	PEMB	Isolated	*Carex sp.* and *P. amphibium*
C16	2	PEMB	Isolated	0
C21	2	PEMB	Isolated	0
E13	5	PUB	Isolated	Mapped edge of water during flooding. Mostly open water with *Schoenoplectus sp.* and *T. latifolia* on western edge.

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
E15	4	PEMF	Isolated	Mapped edge of water during flooding. Large open water wetland with *T. latifolia and Scirpus sp.*
E16	2	PEMB	Isolated	Mapped largest extent of wetland hydrology during flooding. *P. amphibium and P. arundinacea.*
E17	2	PEMB	Isolated	Mapped largest extent of wetland hydrology during flooding. Both sides of road; *P. amphibium* and *P. arundinacea.*
E18	2/3	PEMB/C	Isolated	Mapped edge of water during flooding. 80% open water with *T. latifolia, P. amphibium, P. arundinacea* and *Echinochloa crus-gali* along fringe.
E19	2	PEMB	Isolated	Mapped edge of water during flooding; *Poa pratensis, Phleum pratense* and *R. crispus.*
E20	2	PEMB	Isolated	Mapped edge of water during flooding; 90% open water with *P. pratense* and *R. crispus*
E21	2	PEMB	Isolated	Mapped edge of water during flooding; shallow water with *P. pratense, Senecio Integerrimus,* and *Eleocharis sp.*
E22	2	PEMB	Isolated	Mapped edge of water during flooding. *P. amphibium, R. crispus, P. arundinacea* and *Scirpus sp.*
E23	2	PEMB	Isolated	Mapped edge of water during flooding; very small depression with *R. crispus* and *grasses*
E24	2	PEMB	Isolated	Mapped edge of water during flooding; very small depression with *R. crispus* and *grasses*
E25	2/3	PEMB/C	Potentially Isolated	Mapped edge of water during flooding; slightly flowing water into wetland with *Elecocharis sp., T. latifolia, R. crispus, Bromus inermis, P. arundinacea,* and *Carex sp.*
E26	2/3	PEMB/C	Isolated	Same basin as A29, but mapped edge of water during flooding; mostly open water with *P. amphibium* and scattered grasses
E26	2/3	PEMB/C	Isolated	Same basin as A29, but mapped edge of water during flooding; mostly open water with *P. amphibium* and scattered grasses
E27	2	PEMB	Isolated	Same basin as C25, but mapped edge of water during flooding; *Eleocharis sp., P. amphibium* and *Sonchus arvensis*
E28	2/3	PEMB/C	Isolated	Same basin as C24, but mapped edge of water during flooding; shallow water with *T. latifolia* edges
E29	3	PEMC	Isolated	Same basin as C23, but mapped edge of water during flooding; 95% open water with *P. arundinacea and P. amphibium*

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
E30	1/2	PEMA/B	Isolated	Same basin as C22, but mapped edge of water during flooding; grasses, *R. crispus* and rose family species
E31	3	PEMC	Potentially Isolated	Same basin as C17, but mapped edge of water during flooding; part of larger T4/5 basin. *Poa pratensis, Phleum pratense* and *R. crispus.*
E32	3	PEMC	Isolated	Same basin as C18, but mapped edge of water during flooding; deep water with *P. amphibium* and *R. crispus.*
E34	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; part of larger T4/5 wetland; *Eleocharis sp., Carex sp.,* and *P. arundinacea* edges.
E35	3/4	PEMC/F	Isolated	Same basin as C19, but mapped edge of water during flooding; *T. latifolia* with some *P. amphibium* with lots of nesting songbirds in area.
E36	2	PEMB	Isolated	Same basin as A4, but mapped edge of water during flooding. *P. amphibium* with small patches of *P. arundinacea* and *R. crispus.*
E36	2	PEMB	Isolated	Same basin as A4, but mapped edge of water during flooding; *P. amphibium* with small patches of *P. arundinacea* and *R. crispus.*
E38	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; 40% open water with *P. amphibium* and *Bromus inermis.*
E39	2	PEMB	Isolated	Mapped edge of water during flooding; open water in middle with *P. arundinacea, P. amphibium, Poa pratensis, bromus inermis, Taraxacum officinale,* and *Glycyrrhiza lepidota.*
E40	3	PEMC	Isolated	Mapped edge of water during flooding; *P. amphibium, Carex sp., Poa pratensis,* and *R. crispus.*
E41	2/3	PEMB/C	Potentially Isolated	Mapped edge of water during flooding; long, linear wetland along U.S. 50 with *T. latifolia, Bromus inermis,* and *P. pratense.*
E42	2/3	PEMB/C	Potentially Isolated	Mapped edge of water during flooding. Linear ditch on south side of U.S. 50 with *T. latifolia, Bromus inermis,* and *P. pratense.*
E8	6	PSS1B	Isolated	Mapped edge of water during flooding; willow shrubs dominant.
F1	2	PEMB	Isolated	Mapped edge of water during flooding; *P. arundinacea*
F1	2	PEMB	Isolated	Mapped edge of water during flooding; *P. arundinacea*
F10	2	PEMB	Isolated	Mapped edge of water during flooding. *Eliocharis sp., Carex*

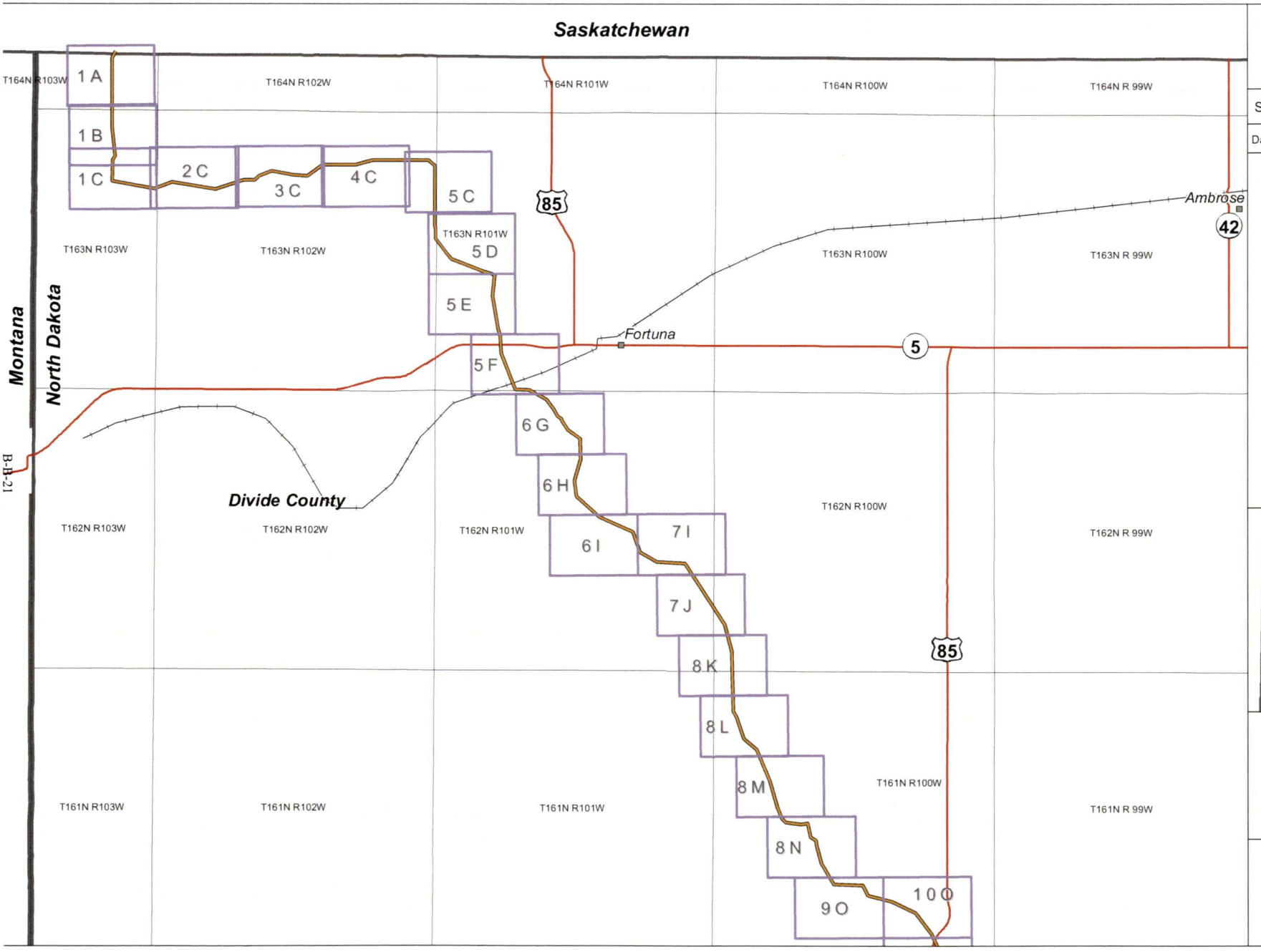
Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
				sp., R. crispus, and *P. amphibium.*
F12	2	PEMB	Isolated	Mapped edge of water during flooding; *R. crispus, Carex sp., Juncus sp.*
F13	2	PEMB	Isolated	Same as C1, but mapped edge of water during flooding; *Juncus sp., Scirpus sp., P. arundinacea.* Mostly open water during flooding.
F14	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; *P. arundinacea, P. amphibium,* and *R. crispus.*
F15	2	PEMB	Isolated	Same as C8, but mapped edge of water during flooding; *R. crispus, P. amphibium, P. arundinacea.*
F16	2	PEMB	Isolated	Same as C9, but mapped edge of water during flooding; *P. arundinacea* and *P. amphibium.*
F17	2/3	PEMB/C	Connected to Tioga Dam	Same as C6 and C7, but mapped edge of water during flooding; *T. latifolia* and flowing water through channel.
F18	2/3	PEMB/C	Isolated	Same as E37, mapped edge of water during flooding; *P. amphibium* and *T. latifolia* mix with small amounts of *Carex nebraskensis* and *Mentha sp.*
F19	2	PEMB	Isolated	Mapped edge of water during flooding; open water with *P. amphibium* and *P. arundinacea.*
F2	2	PEMB	Isolated	Same as B42, but mapped edge of water during flooding; *P. arundinacea*
F24	2	PEMB	Potentially Isolated	Mapped edge of water during flooding; wet ditch with *P. arundinacea* and *R. crispus.*
F25	1	PEMA	Isolated	Mapped edge of water during flooding; no vegetation; farmed during normal conditions
F26	2	PEMB	Isolated	Same as basin D1, but mapped edge of water during flooding; open water with *R. crispus, P. arundinacea,* and *P. amphibium*
F28	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; *Carex sp., T. latifolia,* and *Scirpus sp with P. arundinacea, P. amphibium,* and *R. crispus* on fringe
F3	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; *Carex sp.* and *Scirpus sp.*
F32	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; open water with *T. latifolia, Scirpus sp.*
F33	2	PEMB	Isolated	Mapped edge of water during flooding; *Carex sp., R. crispus,*

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
				Scirpus sp with open water.
F34	2	PEMB	Isolated	Mapped edge of water during flooding; open water with *P. arundinacea* and *R. crispus.*
F35	1	PEMA	Isolated	Mapped edge of water during flooding; probably not a wetland but has ~2' of open water and is dominated by upland grasses
F36	2	PEMB	Isolated	Mapped edge of water during flooding; open water with Carex sp., *P. amphibium,* and *P. arundinacea*
F37	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; *P. arundinacea, P. amphibium,* and *T. latifolia* with open water
F38	1	PEMA	Isolated	Mapped edge of water during flooding; *P. arundinacea* with very shallow open water
F39	2	PEMB	Isolated	Mapped edge of water during flooding; *P. arundinacea, P. amphibium* with shallow open water; very small depression
F4	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; open water with *P. amphibium*
F46	2	PEMB	Isolated	Mapped edge of water during flooding; *P. amphibium* and *P. arundinacea; Bromus inermis* at edge of water
F51	2/3	PEMB/C	Connected to Tioga Dam	Mapped edge of water during flooding; drainage with mixed wetland/upland during normal conditions; *Juncus sp., Carex sp.*, and various grasses; channelized
F8	2	PEMB	Isolated	Same as C27, but mapped edge of water during flooding *Carex sp., Juncus sp., R. crispus, P. amphibium*
F9	2	PEMB	Isolated	Same as C26, but mapped edge of water during flooding; *Carex sp., Scirpus sp., P. amphibium, R. crispus*
G1	1	PEMA	Isolated	*P. arundinacea, R. crispus, S. pectinata, Carex sp.*
G10	2/3	PEMB/C	Isolated	*T. latifolia* and open water from flooding
G11	2	PEMB	Isolated	*P. amphibium* and *P. arundinacea*
G12	2/3	PEMB/C	Isolated	*C. stricta, Scirpus sp., and P. amphibium;* approximately 1' standing water
G14	2	PEMB	Isolated	*Bidens sp., P. arundinacea,* and *Carex sp.* on fringe
G15	1	PEMA	Isolated	*R. crispus, P. amphibium,* thistle in fringe
G16	2	PEMB	Isolated	*R. crispus, P. amphibium,* with *T. latifolia* and 6" of standing water in center.
G17	3/4	PEMC/F	Isolated	*T. latifolia* with 2–3' of standing water in center; *P.*

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
				arundinacea, C.stricta, and *P. amphibium* on fringe
G18	2	PEMB	Isolated	*Polygonum monoculture*
G19	2/3	PEMB/C	Potentially Isolated	*T. latifolia* in center, *P. arundinace and P. amphibium* in fringe
G2	2	PEMB	Isolated	Small drainage swale dominated by *P. arundinacea, T. latifolia,* and *C. arvense* on the fringe
G20	2	PEMB	Isolated	*R. crispus, P. arundinacea, P, amphibium*
G22	2	PEMB	Isolated	*P. amphibium* and *P. arundiacea*
G23	2	PEMB	Isolated	*R. crispus, Carex sp., P. arundinacea*
G25	1	PEMA	Isolated	*P. amphibium* and *R. Crispus*
G26	1	PEMA	Isolated	*Carex sp.* and *R. crispus*
G27	3/4	PEMC/F	Isolated	*Scirpus sp.* in center with *P. arundinacea and Carex sp.* in fringe. 2–3' of standing water in center
G28	2	PEMB	Isolated	*Carex sp.* with *P. arundinacea* fringe
G29	2	PEMB	Isolated	*Carex sp.* and *R. crispus*
G3	2	PEMB		Drainage swale dominated by *P. arundinacea* and *R. crispus*
G30	3	PEMC	Isolated	*Carex sp., P. amphibium* in 1–2' of standing water; wetland to toe of slope of road
G31	3	PEMC	Isolated	*Carex sp.* and *T. latifolia* with 1' of standing water; wet to toe of slope of road
G32	2/3	PEMB/C	Isolated	Grazed Carex sp. and *T. latifolia* with approximately 1' of standing water
G33	4/5	PUB	Isolated	Open water in grazed area, *T. latifolia and P. arundinacea* on fringe
G34	3	PEMC	Isolated	*T. latifolia* and *Eleocharis sp.,* 1–2' of standing water
G35	1	PEMA	Isolated	*P. amphibium and Carex sp.*
G36	1	PEMA	Isolated	*P. amphibium* and *R. crispus; v*ery small depression, no visible hydrology
G37	2	PEMB	Isolated	*P. amphibium* with some *Carex sp.*; approximately 6" of standing water in center
G38	2	PEMB	Isolated	*P. amphibium* monoculture
G39	2	PEMB	Isolated	*P. amphibium and Carex sp.*; approximately 6" of standing water in center
G4	2/3	PEMB/C	Isolated	*P. amphibium* and bare ground, appears to have been plowed

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
				1–2 seasons ago
G40	2	PEMB	Isolated	*Carex sp. Monoculture;* approximately 6" standing water in center
G41	2	PEMB	Isolated	0
G42	2/3	PEMB/C	Connected to Cottonwood Lake	*T. latifolia, Spartina pectinata,* flows into road ditch system
G5	2	PEMB	Isolated	*P. amphibium* monoculture
G6	2/3	PEMB/C	Isolated	*Carex sp., T. latifolia,* and *Scirpus sp.*
G7/8	2/3	PEMB/C	Potentially Isolated Complex	*T. latifolia, P. arundinacea, Carex sp.,* and *Eliocharis sp.*
G9	3/4	PEMC/F	Isolated	*T. latifolia, Scirpus sp.,* and *P. amphibium;* 2–3' of standing water from flooding
H1	3	PEMC	Connected to drainage/creek	*T. latifolia, Scirpus spp., Carex spp.* on fringe
H1	3	PEMC	Connected to drainage/creek	*T. latifolia, Scirpus spp., Carex spp.* on fringe
H2	2	PEMB	Isolated	*Carex spp., T. latifolia, Scirpus americana*
H3	2	PEMB	Isolated	*Polygonum amphibium, Carex spp.*
H4	2	PEMA	Isolated	*Carex spp., T. laifolia, Polygonum*

ATTACHMENT 2: WETLAND MAPS



Mistral Energy Inc.,
Vantage Pipeline Project

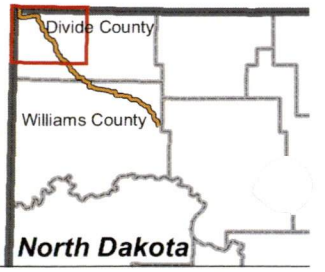
VANTAGE PIPELINE US LP

Survey Mapbook - Map Sheet Index

Date: 12/06/2011 | Version: 2011-7

INDEX MAP 1

- Map Book
- Populated Place
- Abandoned Railroad
- Functioning Railroad
- Secondary Road



N
W E
S

0 1 2 4 mi

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376 Gallatin Park Drive
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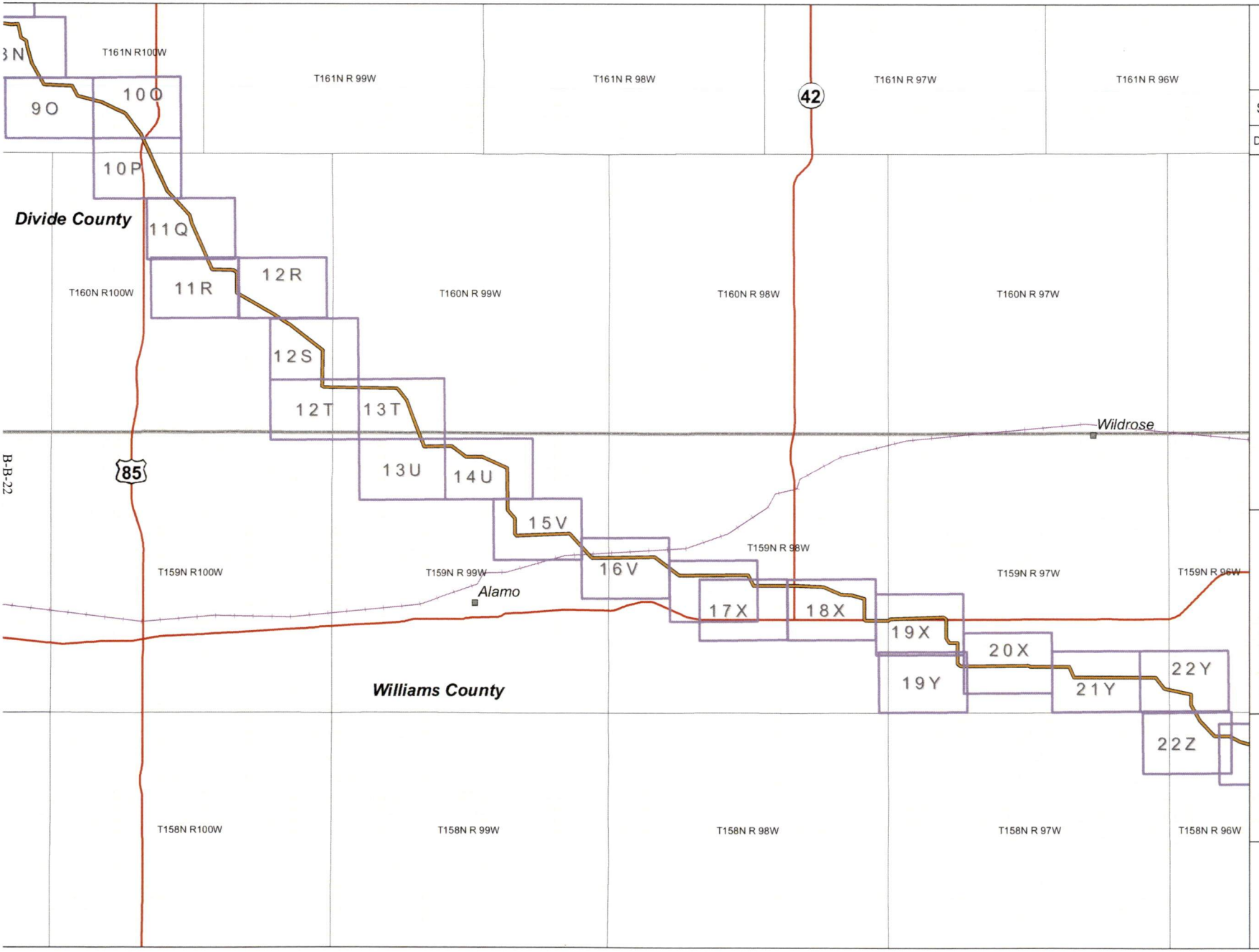
406-585-7402
www.kcharvey.com



Mistral Energy Inc.,
Vantage Pipeline Project

VANTAGE PIPELINE US LP

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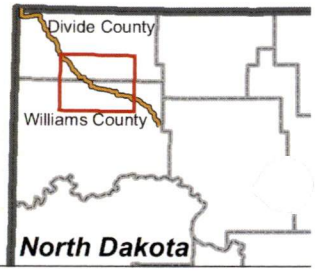
- Map Book
- Populated Place
- Abandoned Railroad
- Functioning Railroad
- Secondary Road



N W E S

0 1 2 4 mi

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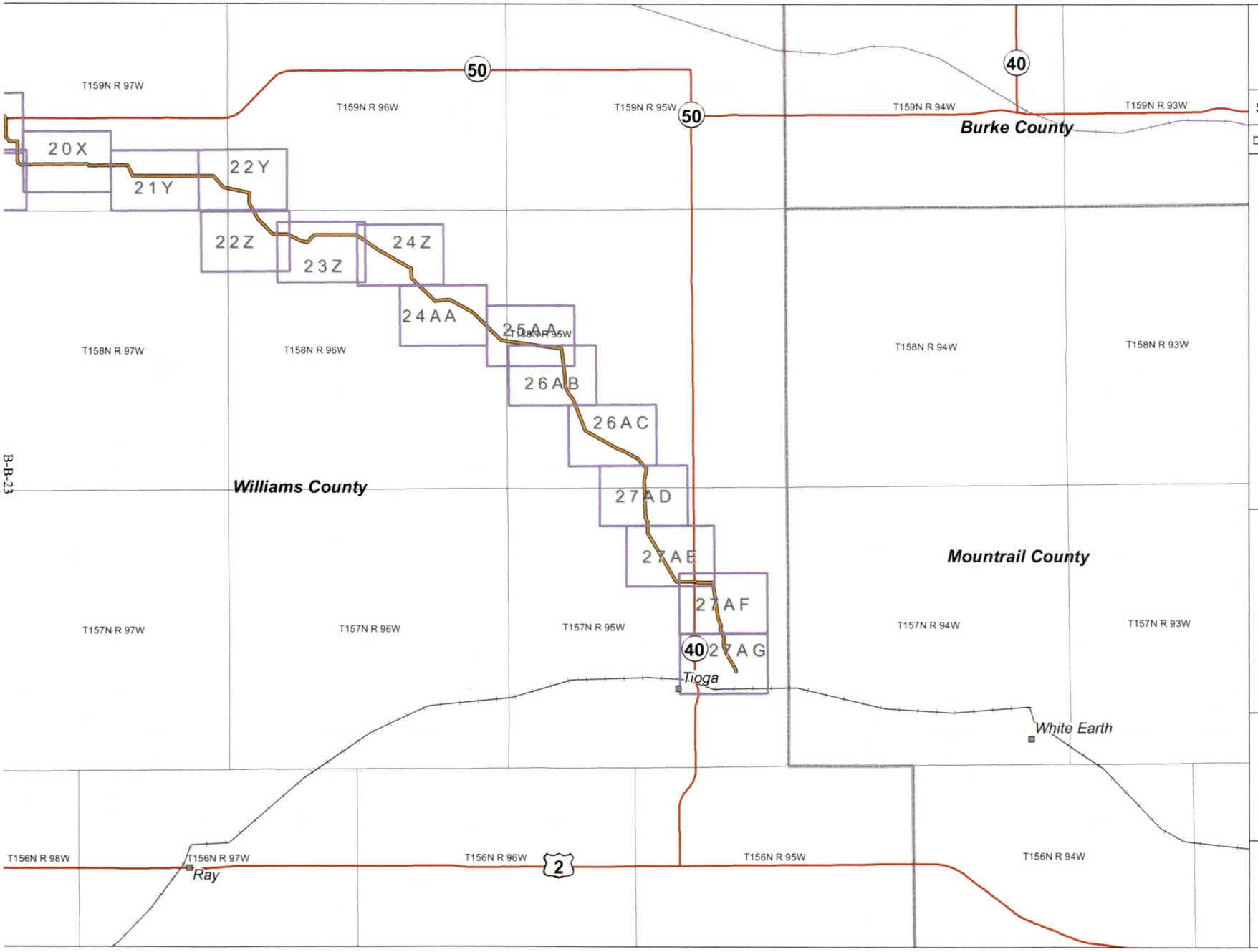

Mistral Energy Inc.,
Vantage Pipeline Project

VANTAGE PIPELINE US LP

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INDEX MAP 3

- Map Book
- Populated Place
- Abandoned Railroad
- Functioning Railroad
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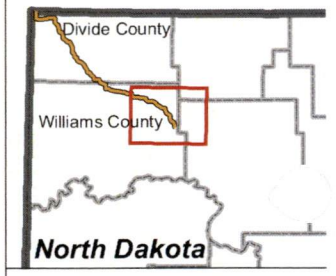

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Fax: 406-585-7428

1 : 12,000 — 1,000 ft = 1 in

N W E S

0 250 500 1,000 ft

- Pipeline with 16ft buffer
- 500 ft corridor
- SEH Confirmed Wetlands
- NWI Wetlands
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- Secondary Road
- Private Road for service vehicles
- Local Neighborhood Road
- Waterfowl Production Area
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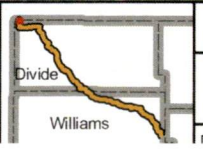
- North Dakota Game and Fish
- North Dakota Land Department
- US Bureau of Land Management



Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 1A

VANTAGE PIPELINE US LP

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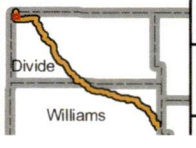

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 1B

VANTAGE PIPELINE US LP

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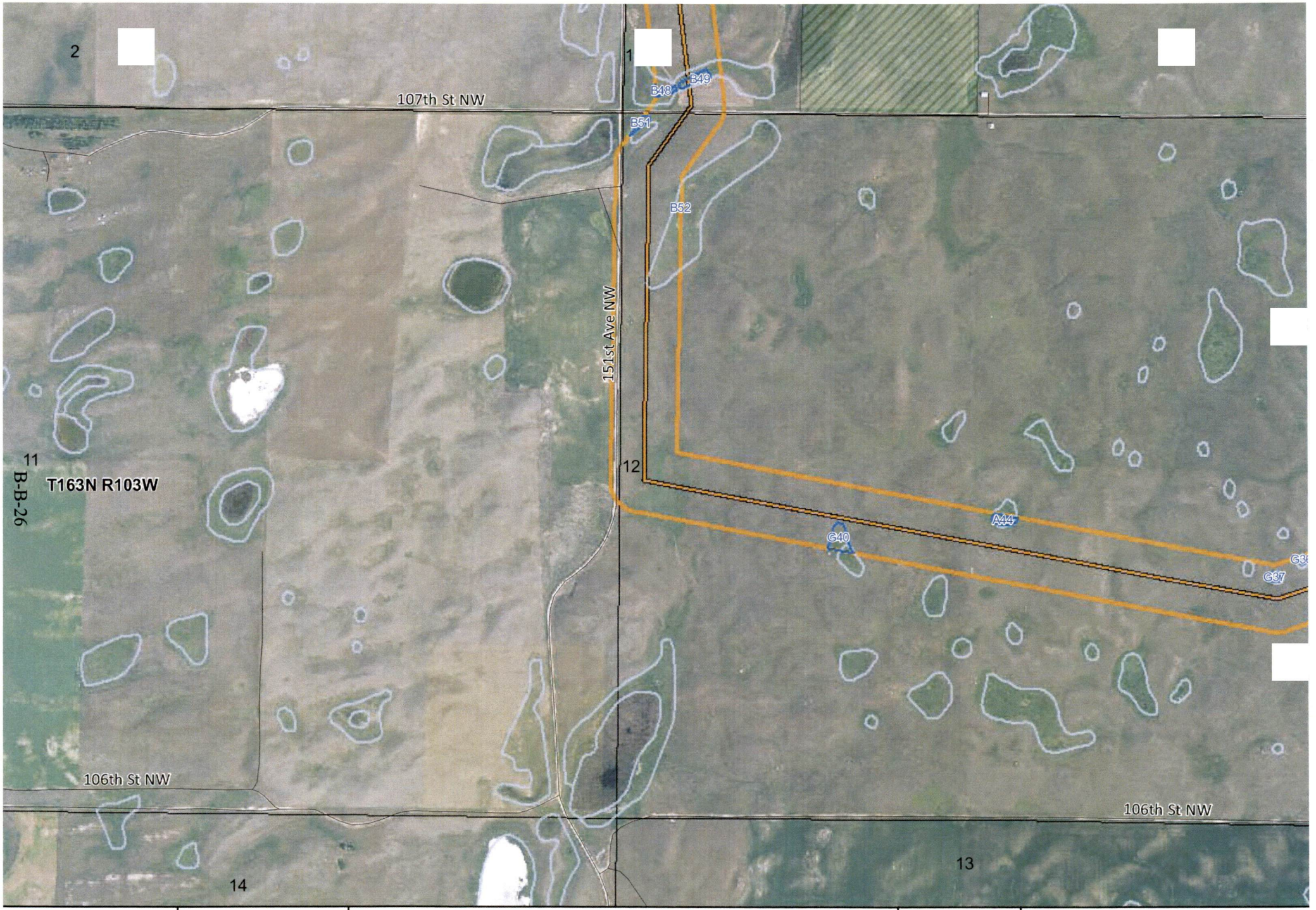

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1 : 12,000 N W E S 1,000 ft = 1 in

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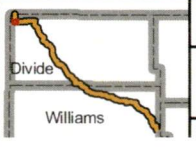

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 1C

VANTAGE PIPELINE US LP

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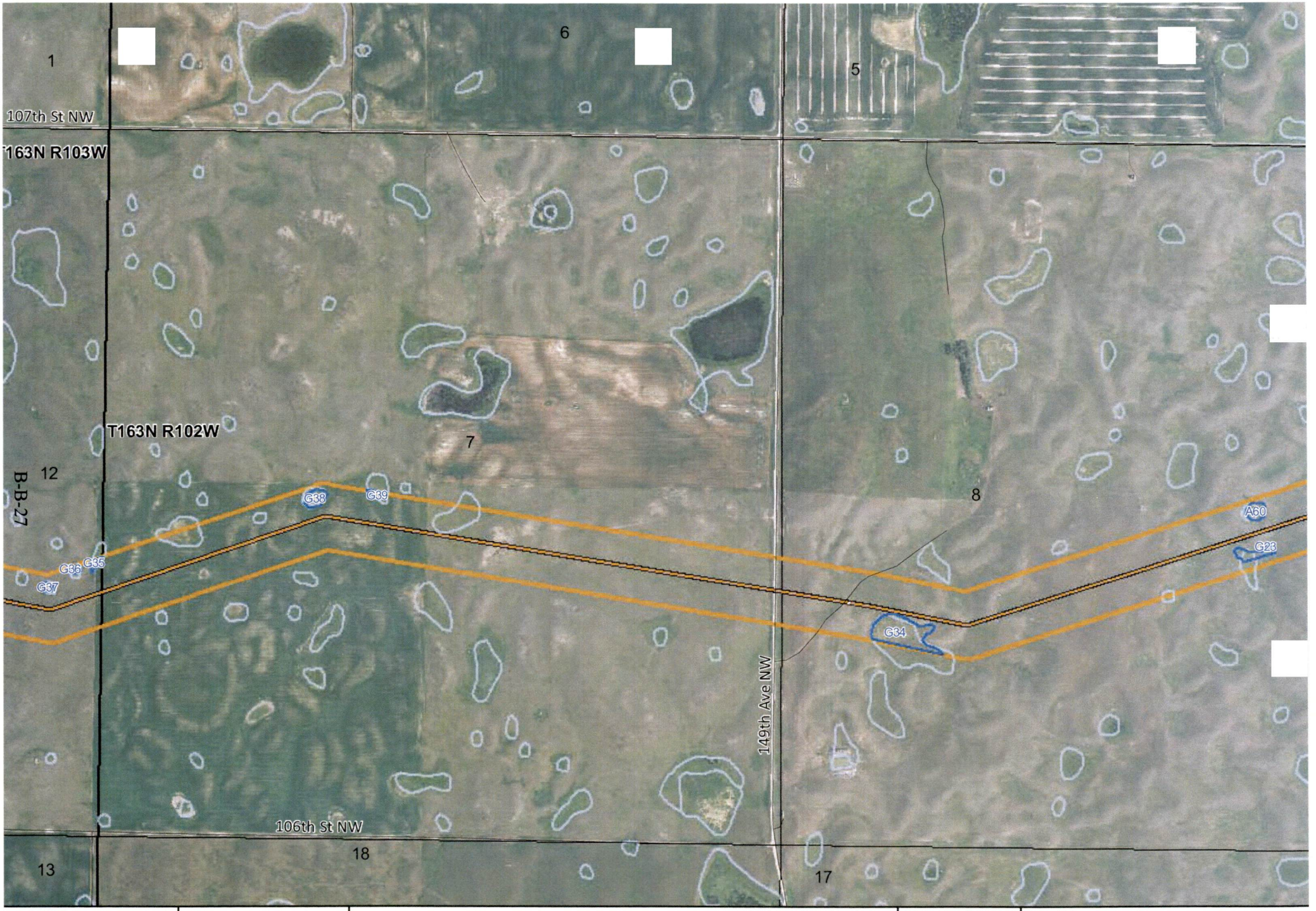

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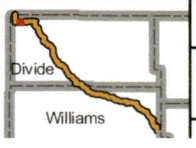

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
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VANTAGE PIPELINE US LP

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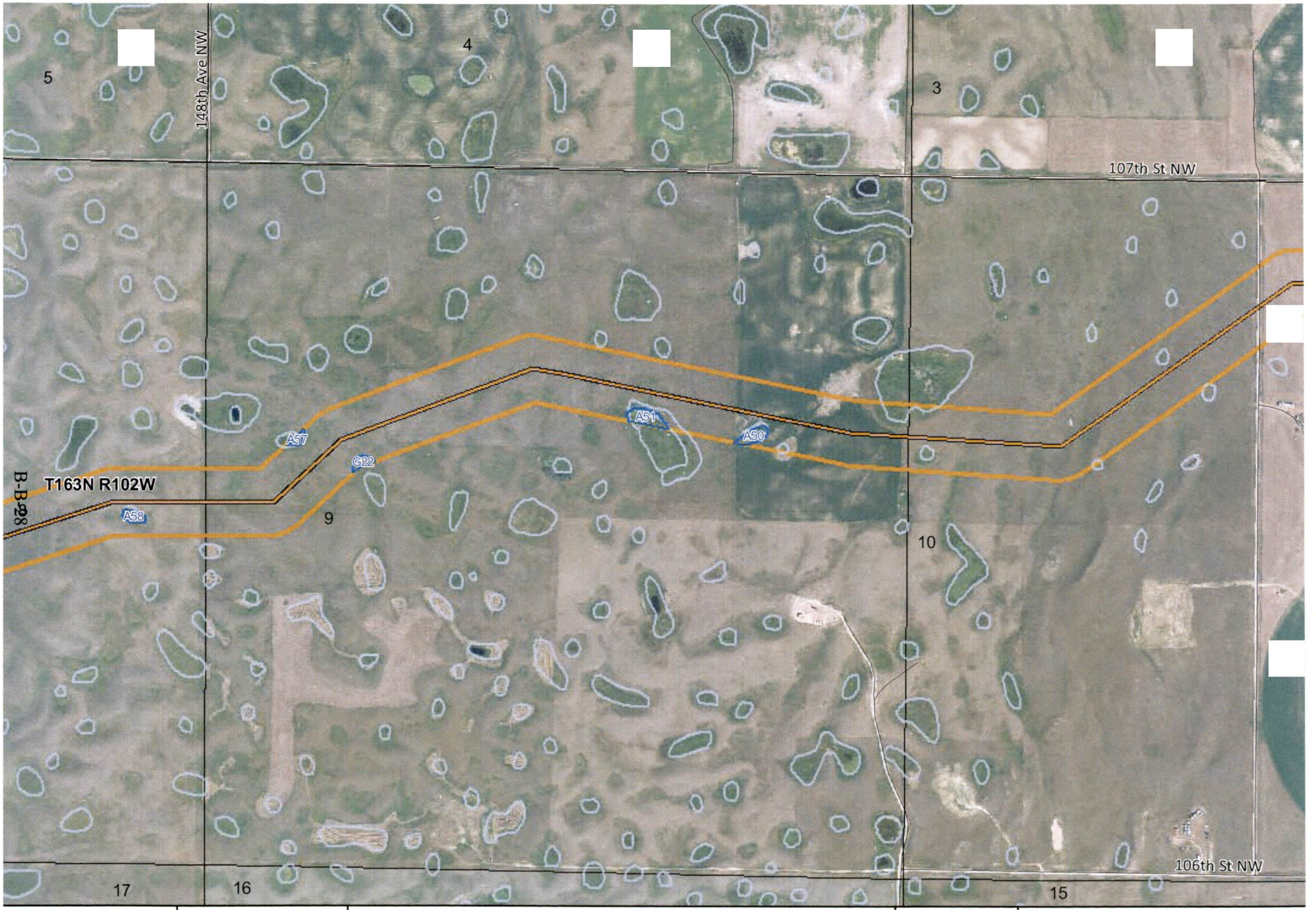

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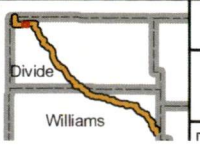

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 3C

VANTAGE PIPELINE US LP

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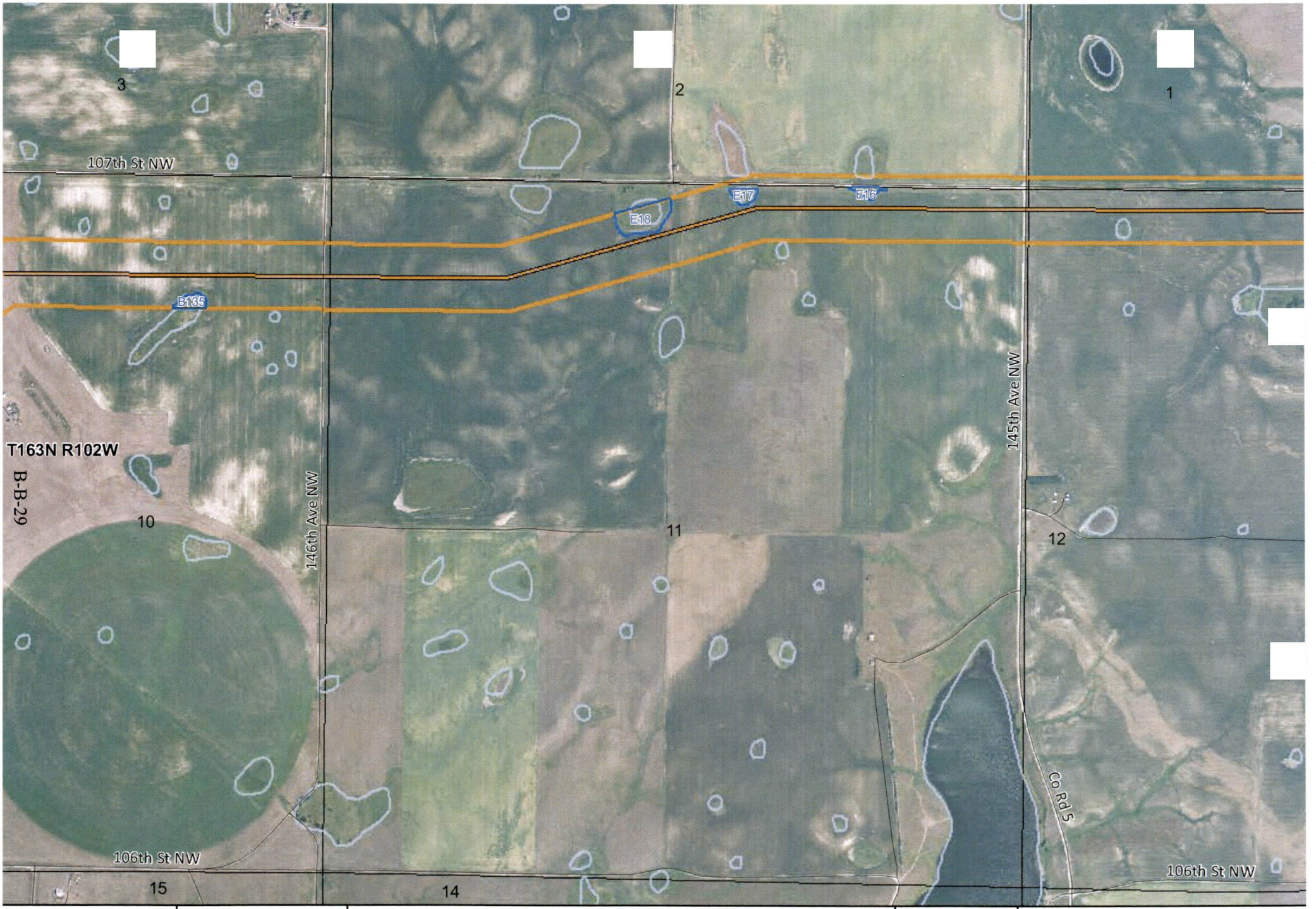

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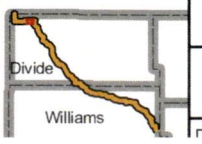

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
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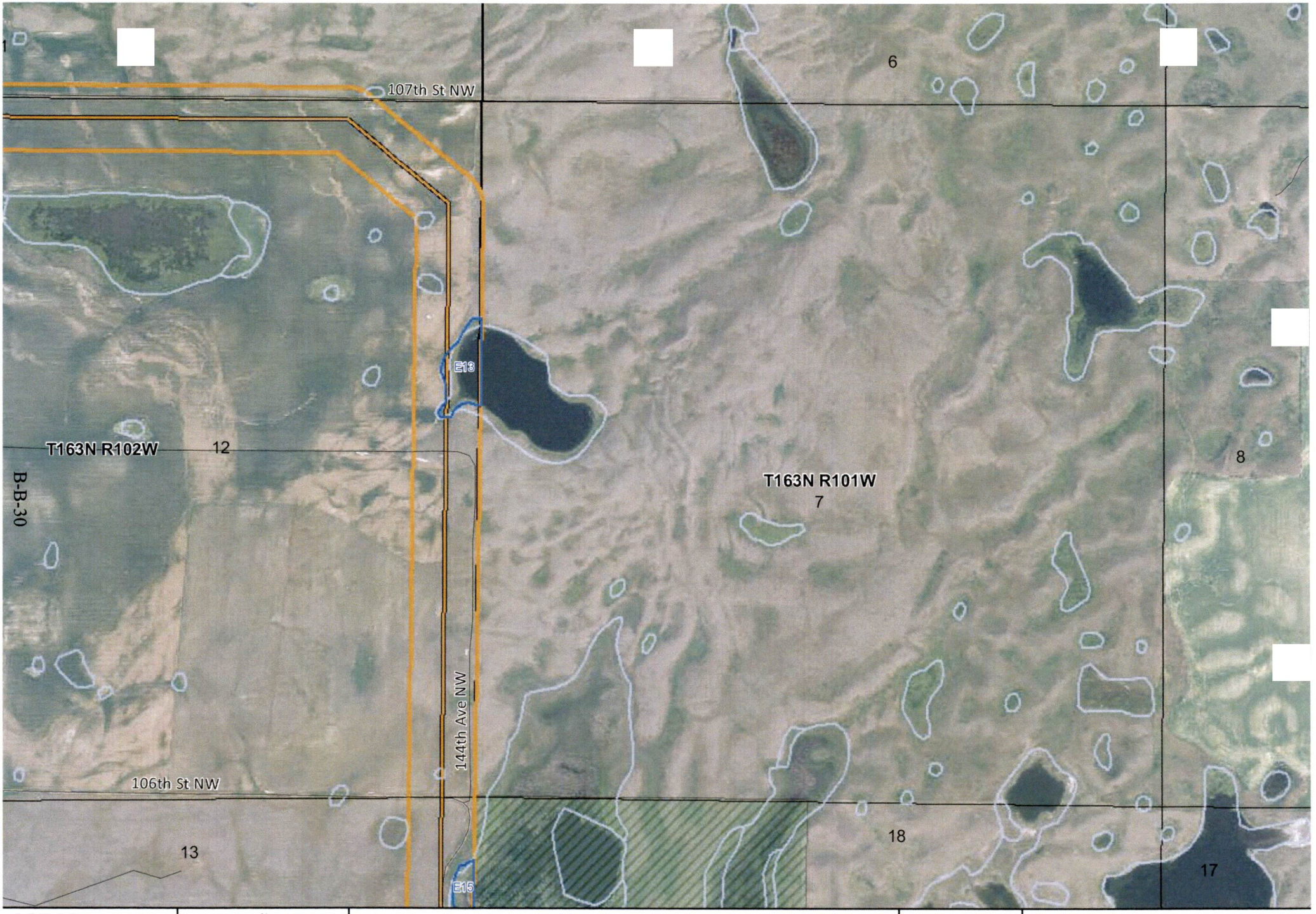
VANTAGE PIPELINE US LP

Date: 12/06/2011 | Version: 2011 - 7



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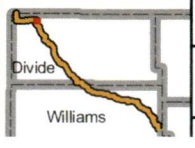

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
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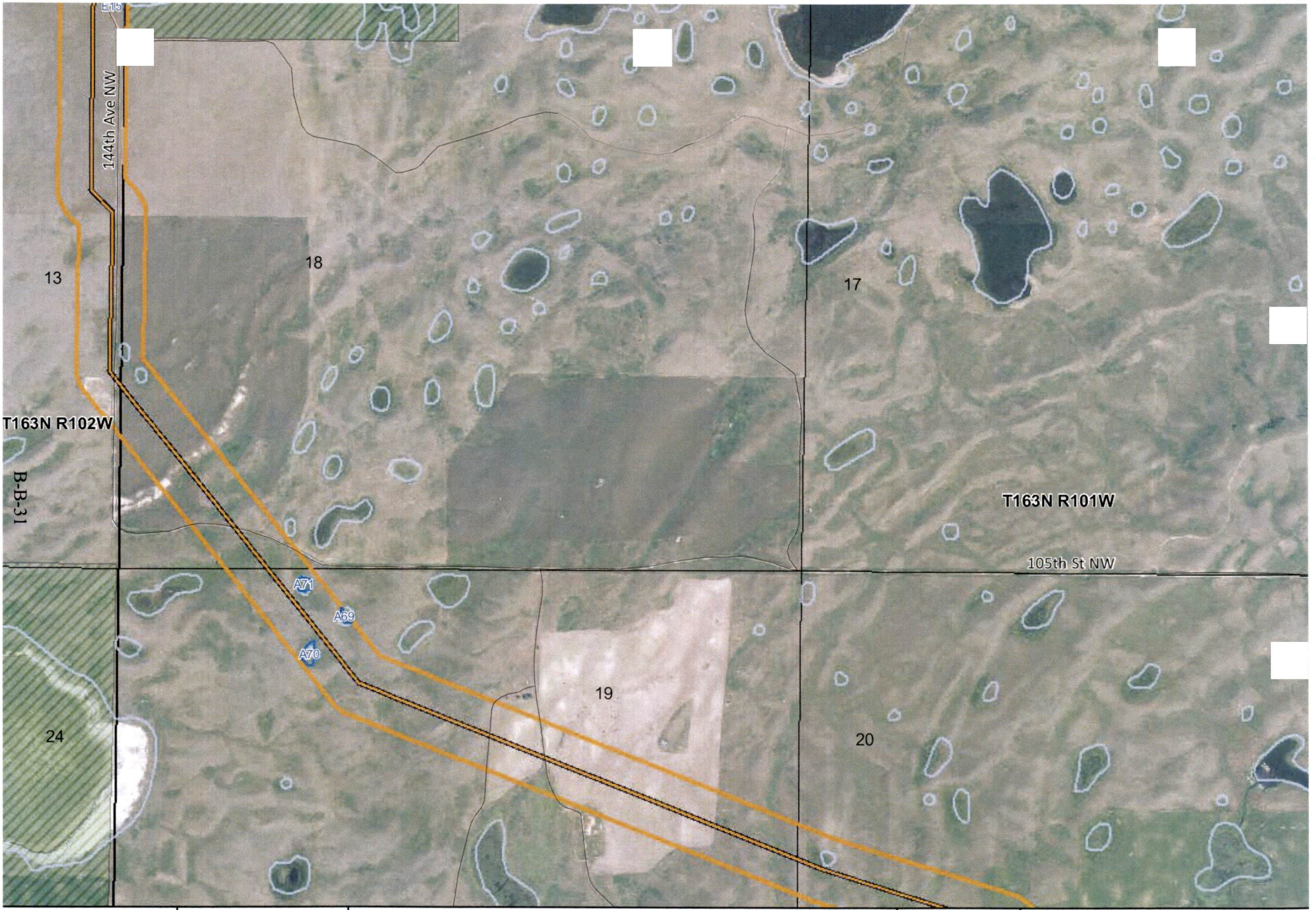
VANTAGE PIPELINE US LP

Date: 12/06/2011 | Version: 2011 - 7



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1 : 12,000 — 1,000 ft = 1 in

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Divide

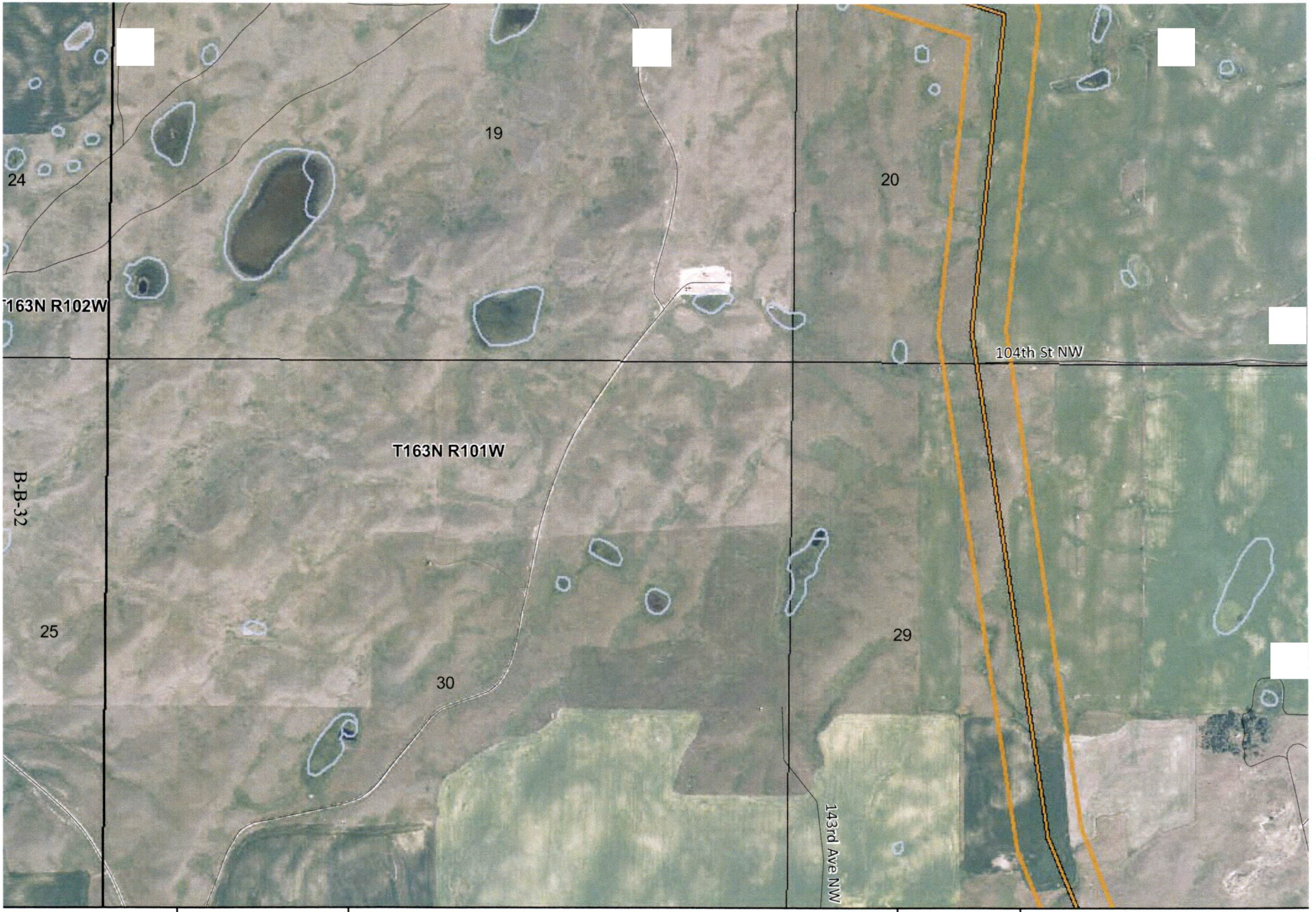
Williams

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 5D

VANTAGE PIPELINE US LP

Date: 12/06/2011 | Version: 2011 - 7



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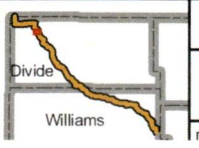

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 5E

VANTAGE PIPELINE US LP

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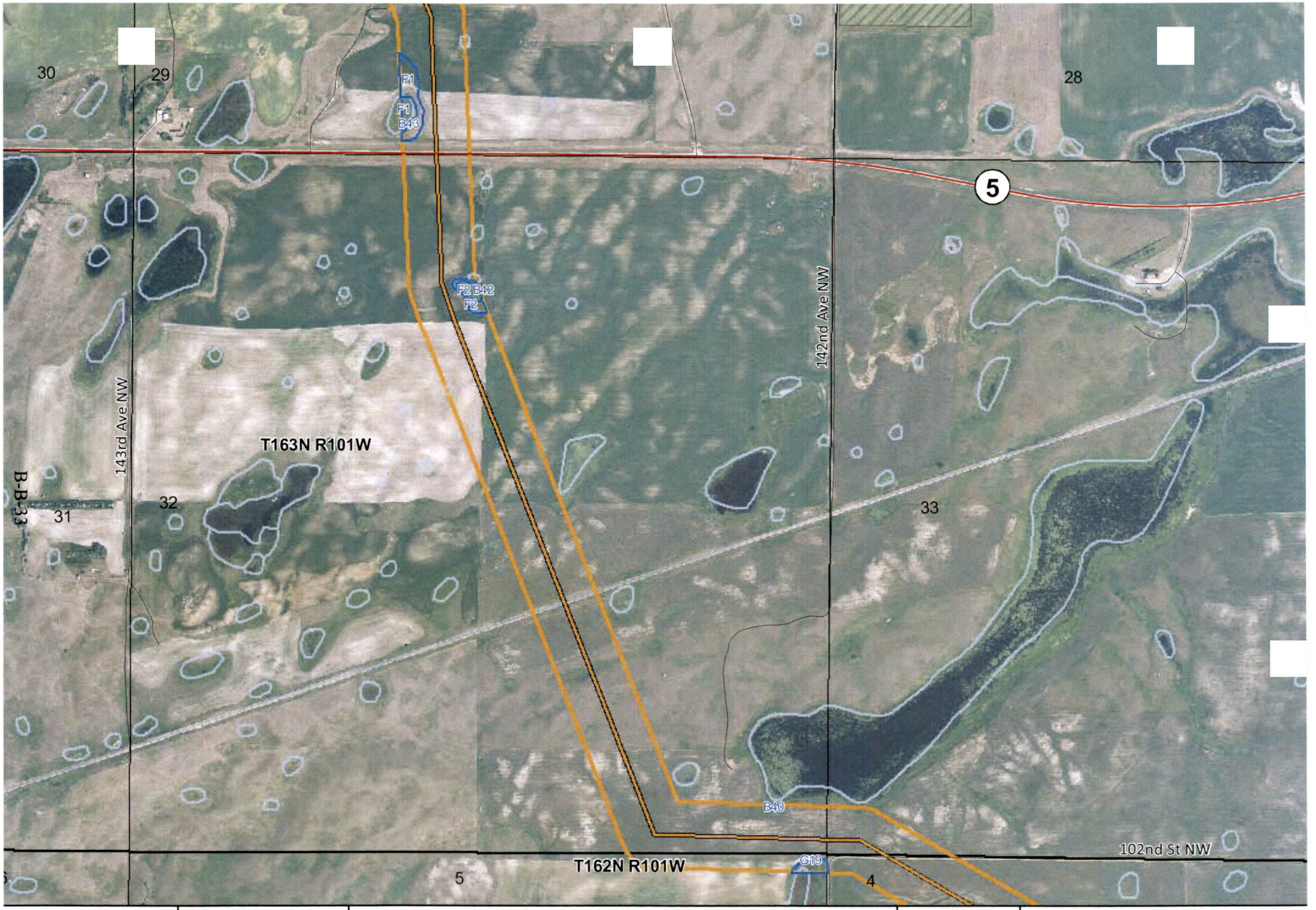

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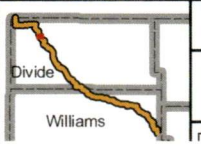
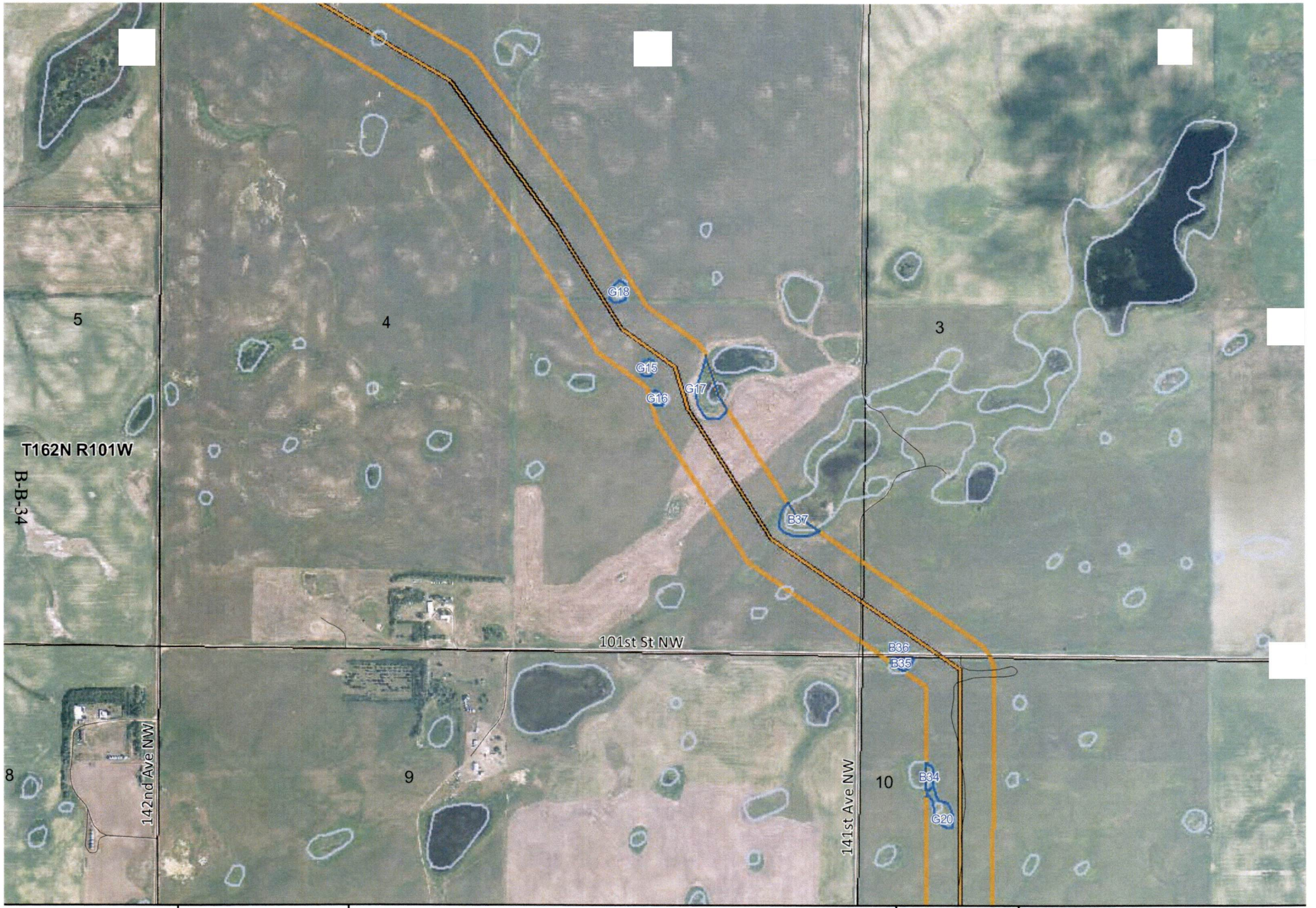


Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 5F

VANTAGE PIPELINE US LP

Date: 12/06/2011 | Version: 2011 - 7



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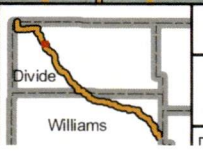
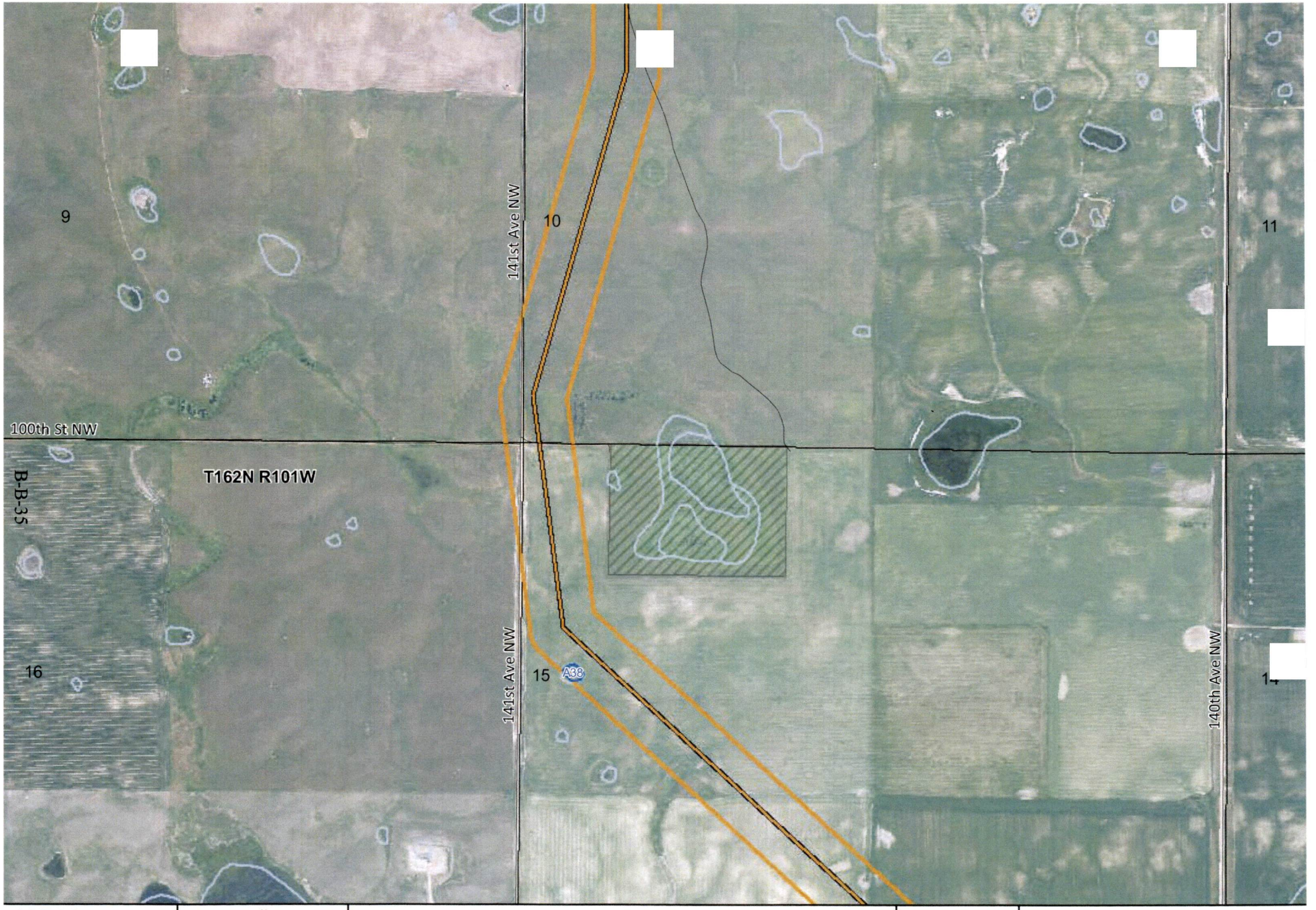


Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 6G

VANTAGE PIPELINE US LP

Date: 12/06/2011 Version: 2011 - 7



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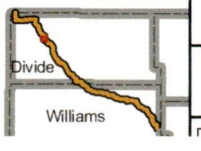
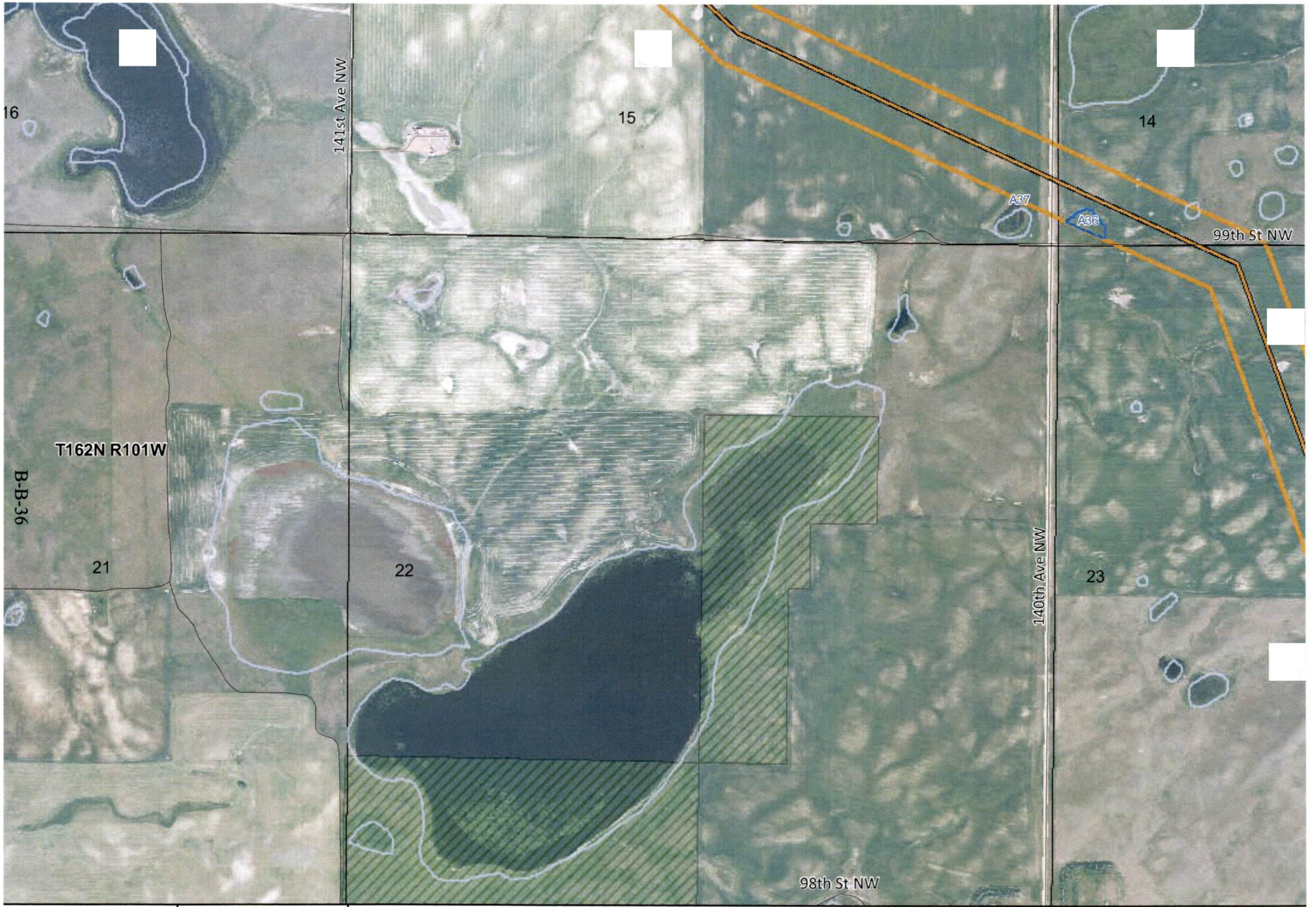


Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 6H

VANTAGE PIPELINE US LP

Date: 12/06/2011 | Version: 2011 - 7



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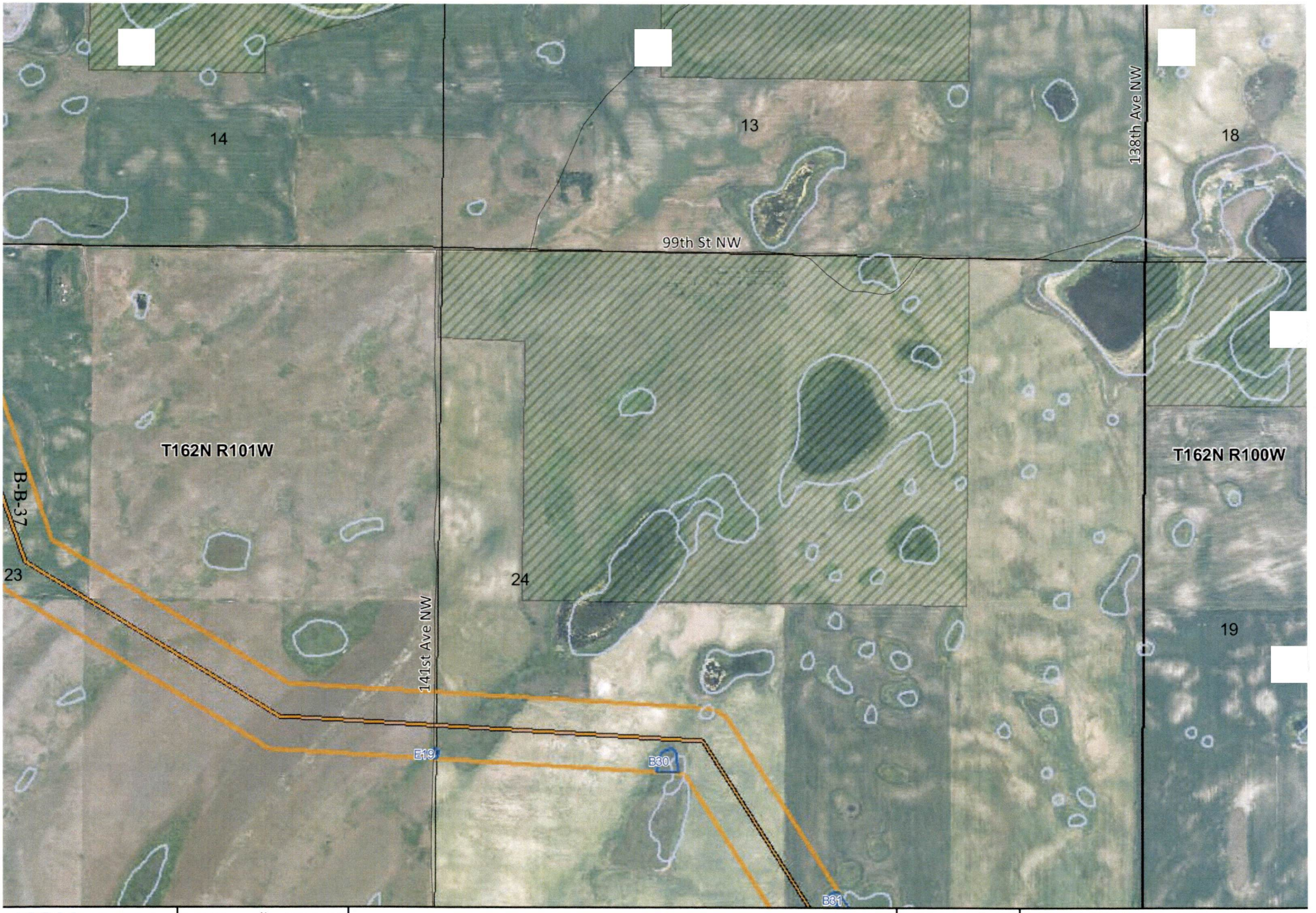
Divide
Williams

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 6I

VANTAGE PIPELINE US LP

Date: 12/06/2011 Version: 2011 - 7



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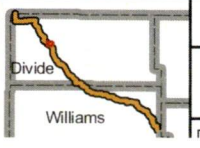

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1:12,000 Map Book
Sheet: 7I

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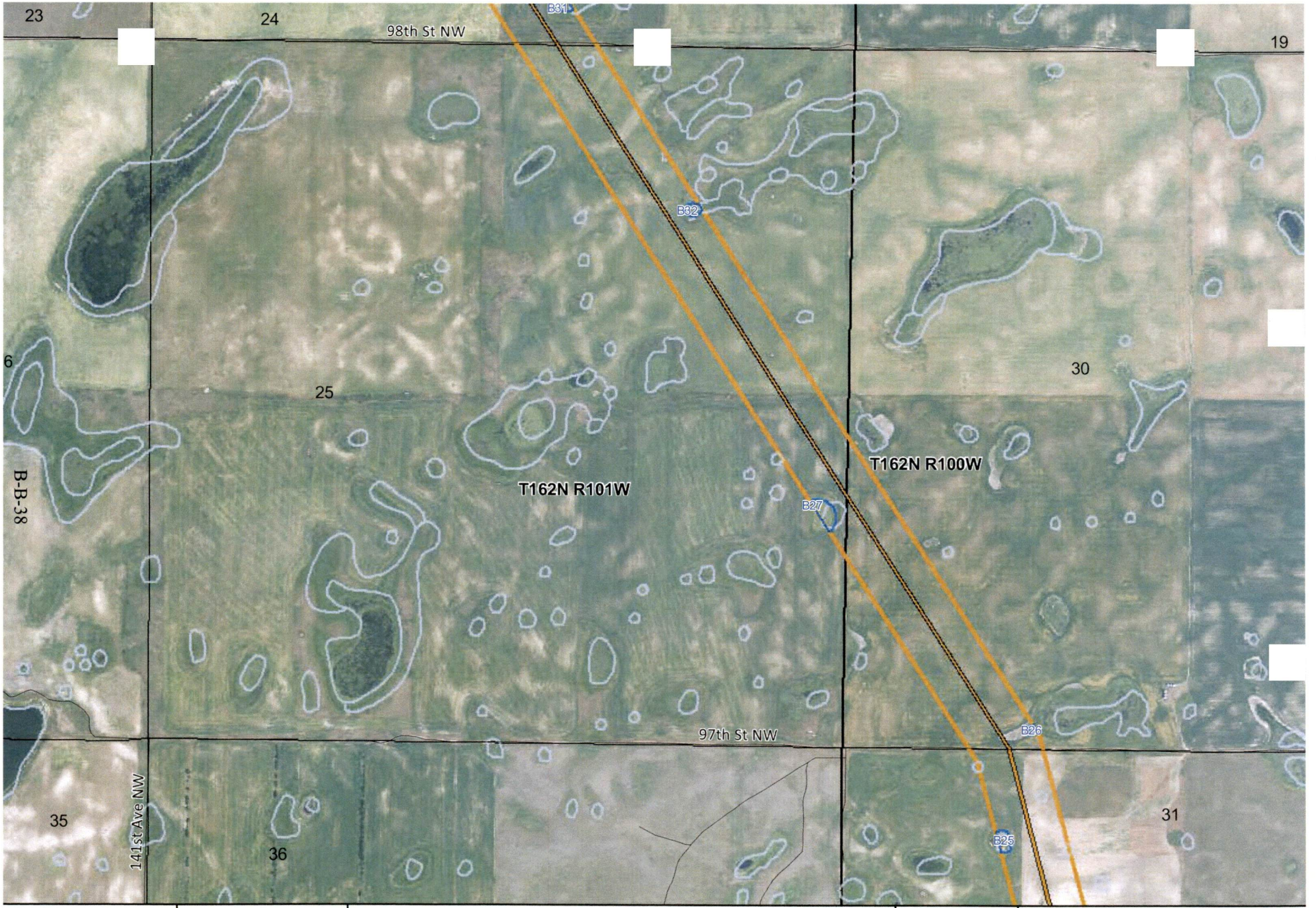

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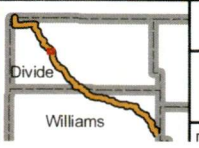

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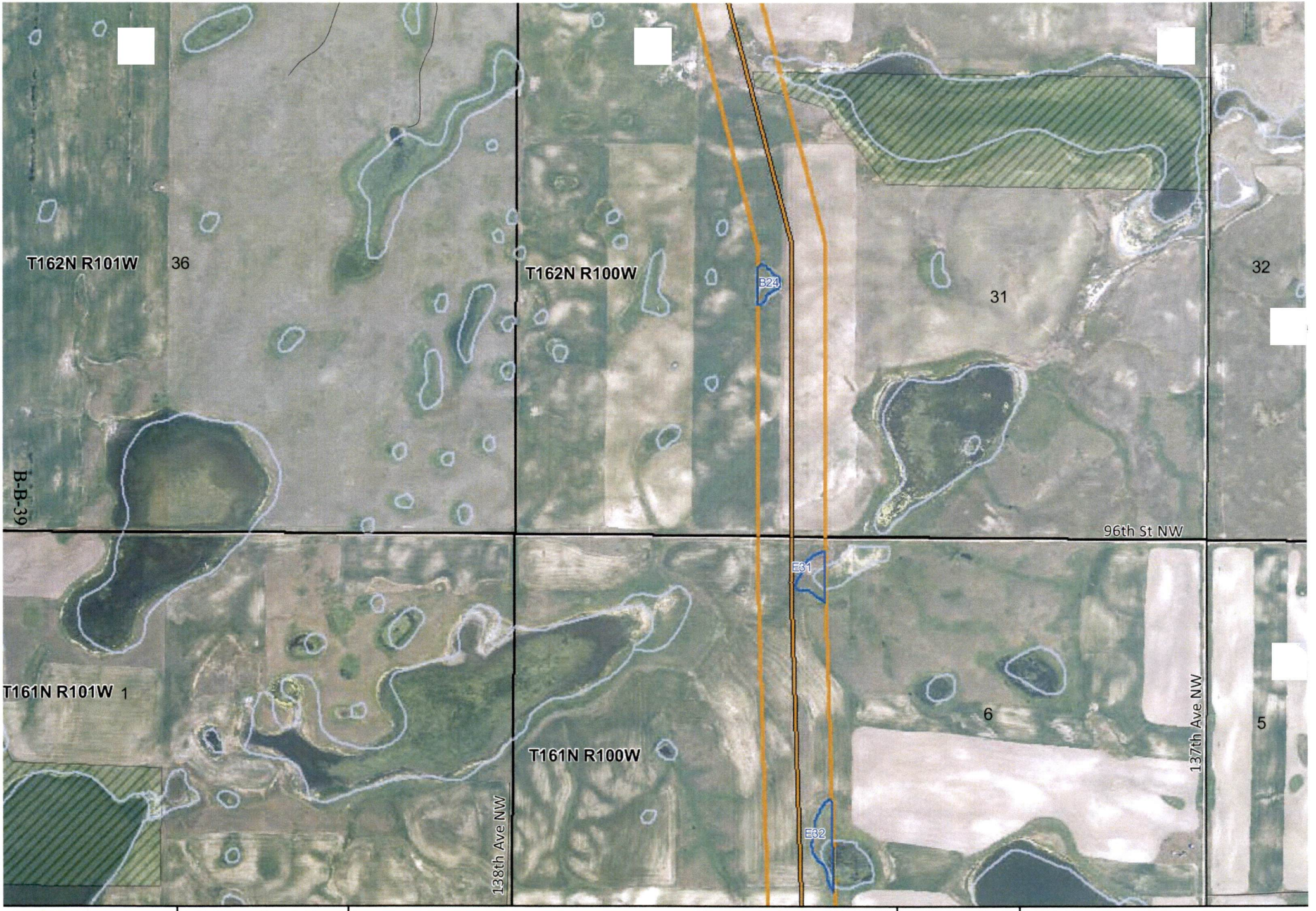
Proposed Pipeline Route
1:12,000 Map Book
Sheet: 7J

VANTAGE PIPELINE US LP

Date: 12/06/2011 Version: 2011 - 7



KC HARVEY
ENVIRONMENTAL, LLC
376 Gallatin Park Drive
Bozeman, Montana 59715
Phone: 406-585-7402
Fax: 406-585-7428

1 : 12,000 N W E S 1,000 ft = 1 in

0 250 500 1,000 ft

- Pipeline with 16ft buffer
- 500 ft corridor
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- NWI Wetlands
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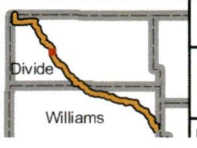

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Proposed Pipeline Route
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Sheet: 8K

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Divide
Williams

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Proposed Pipeline Route
1:12,000 Map Book
Sheet: 8L

VANTAGE PIPELINE US LP

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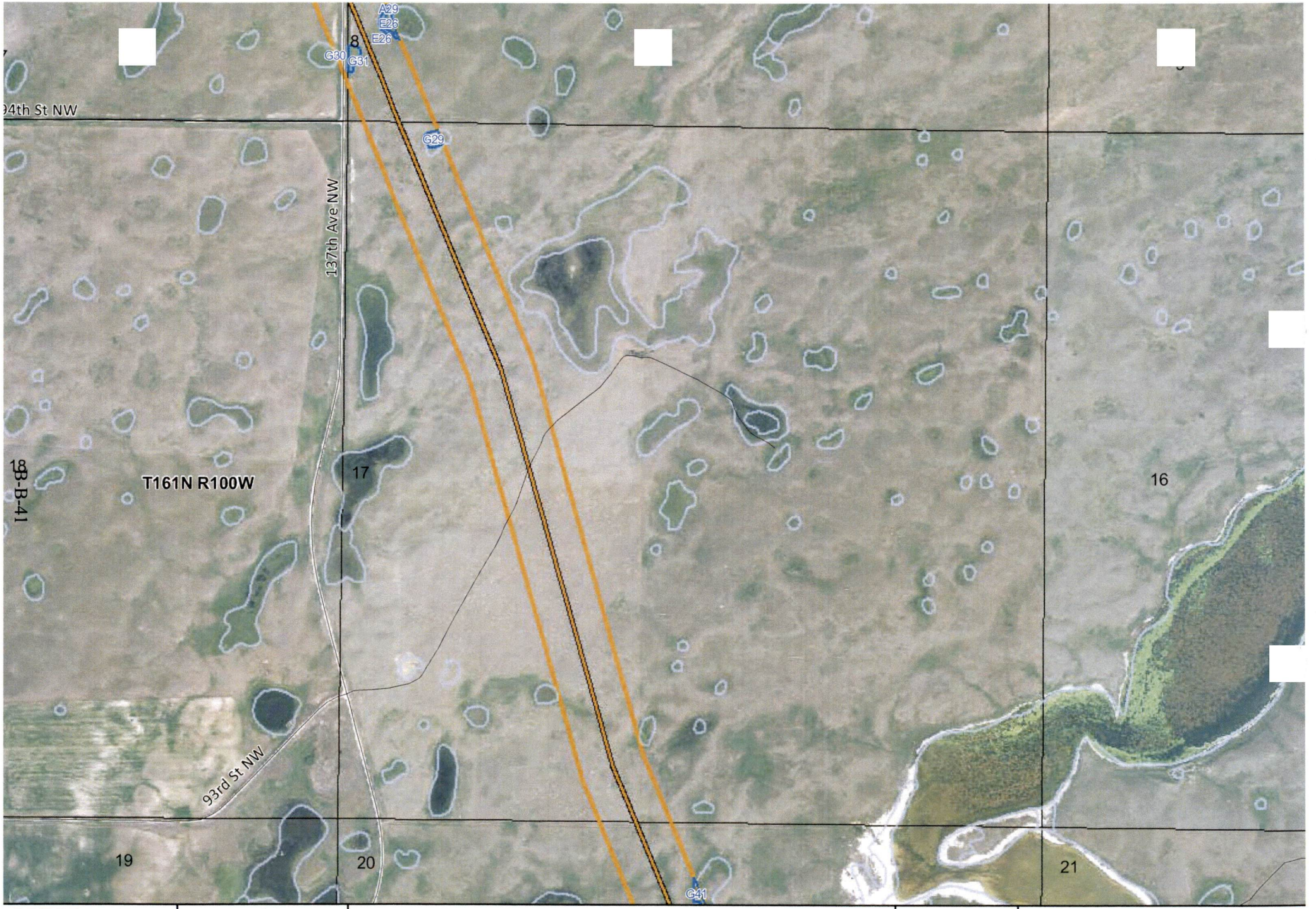

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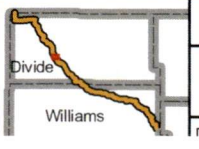

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Proposed Pipeline Route
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VANTAGE PIPELINE US LP

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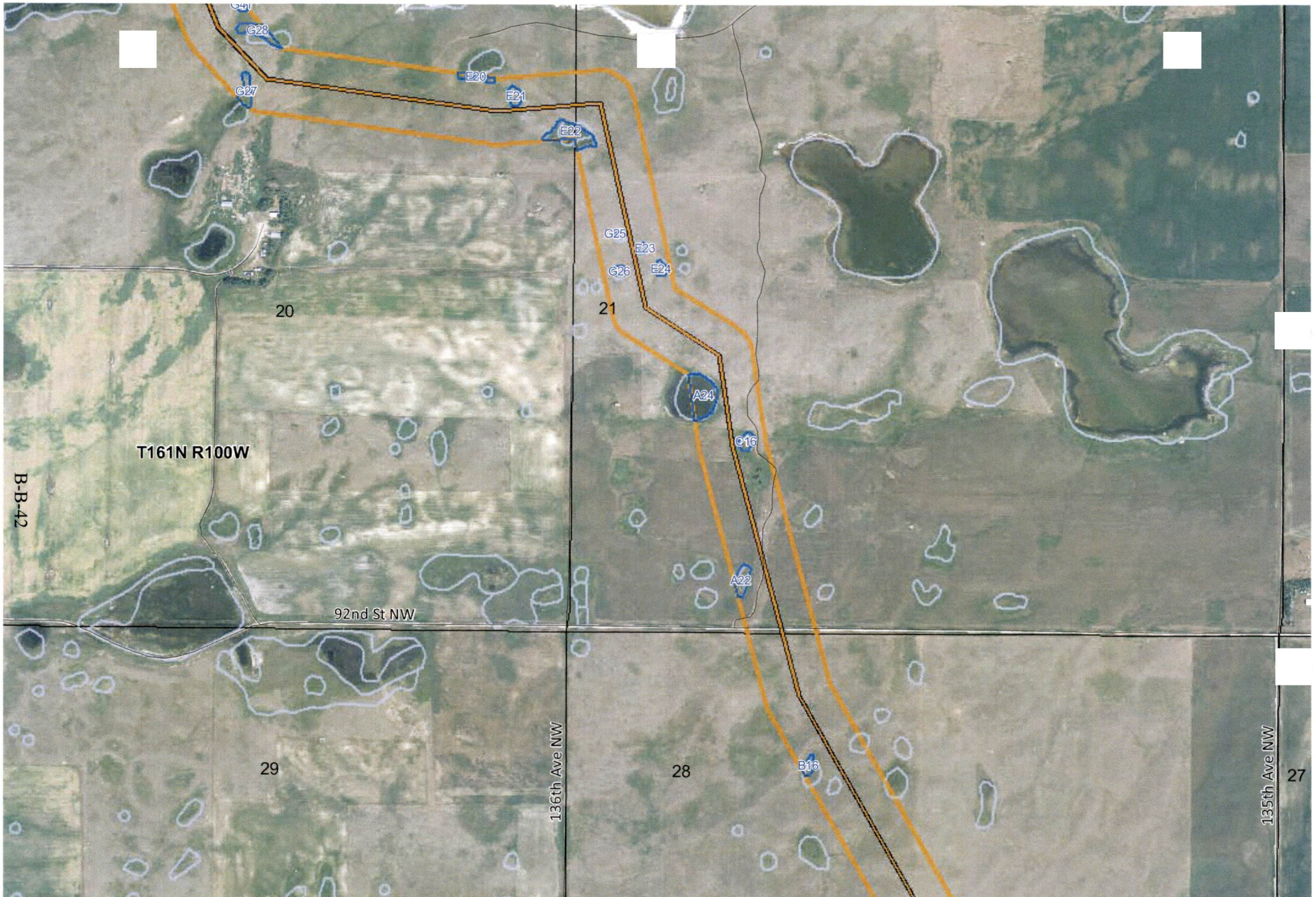

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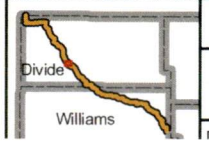

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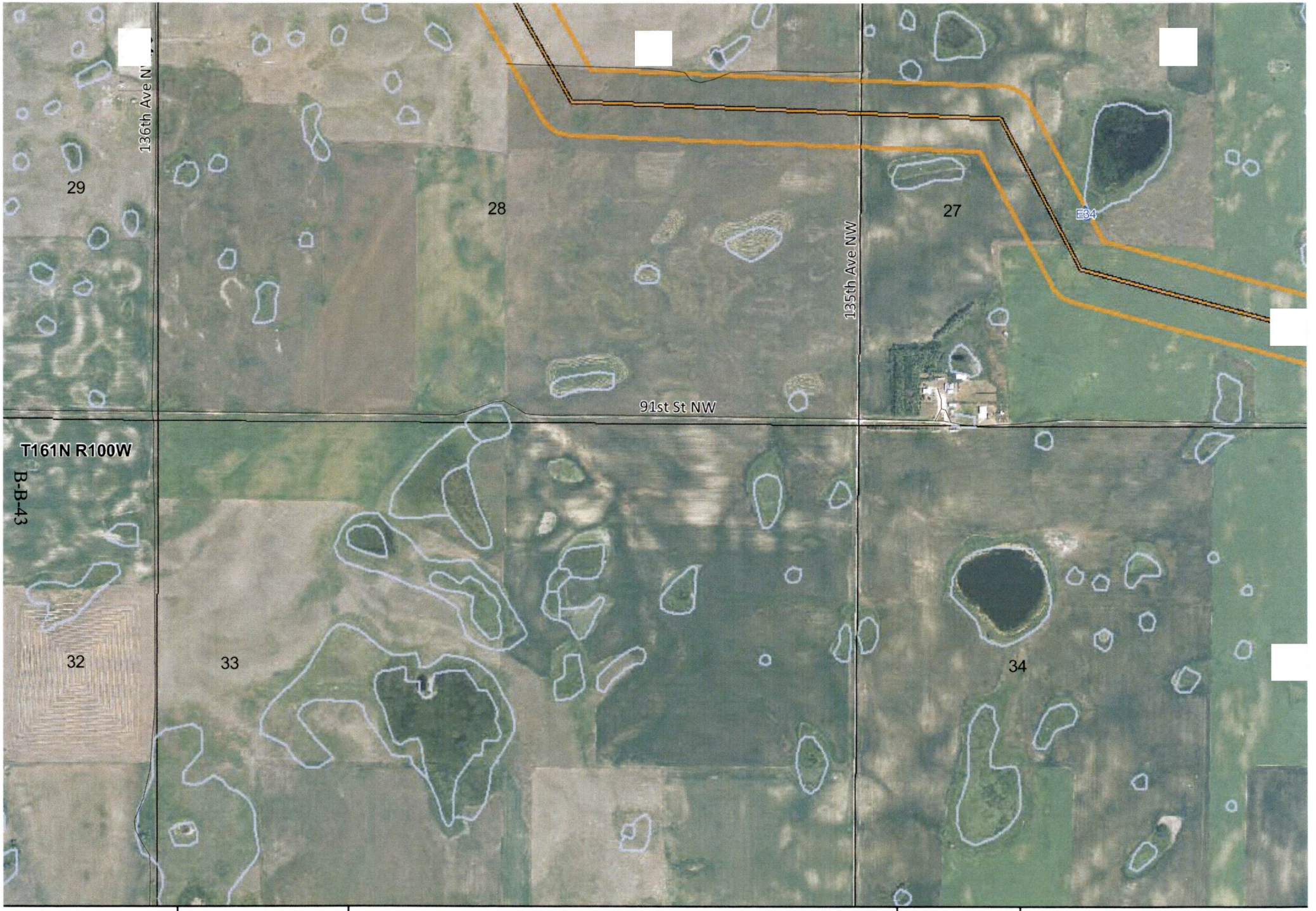

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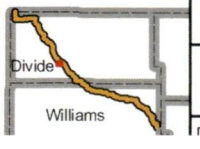

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Proposed Pipeline Route
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Sheet: 9O

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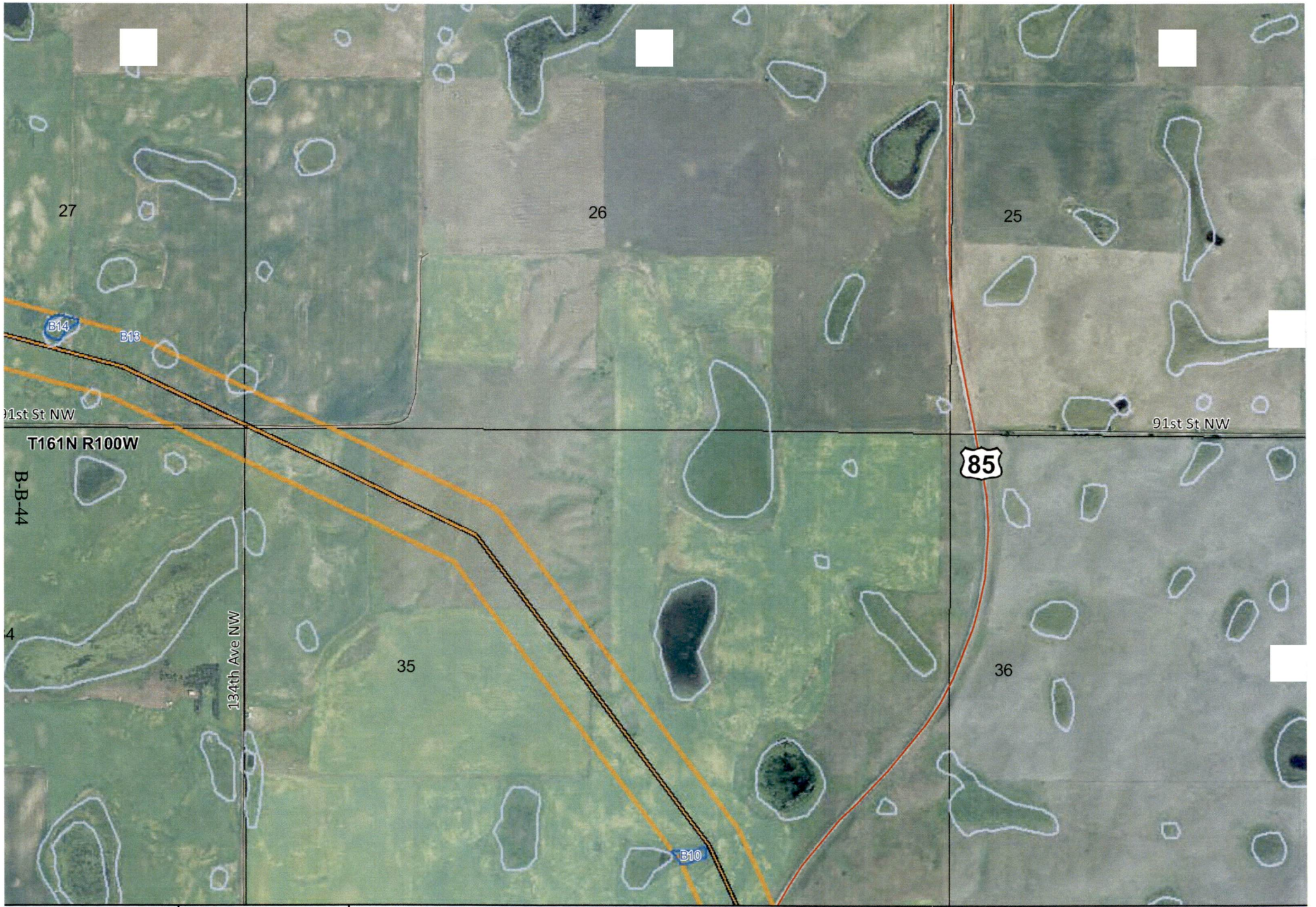

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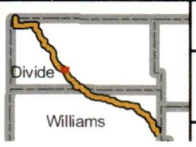

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Proposed Pipeline Route
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Sheet: 10O

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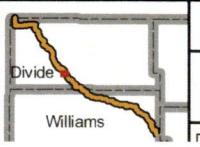

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Proposed Pipeline Route
1:12,000 Map Book
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VANTAGE PIPELINE US LP

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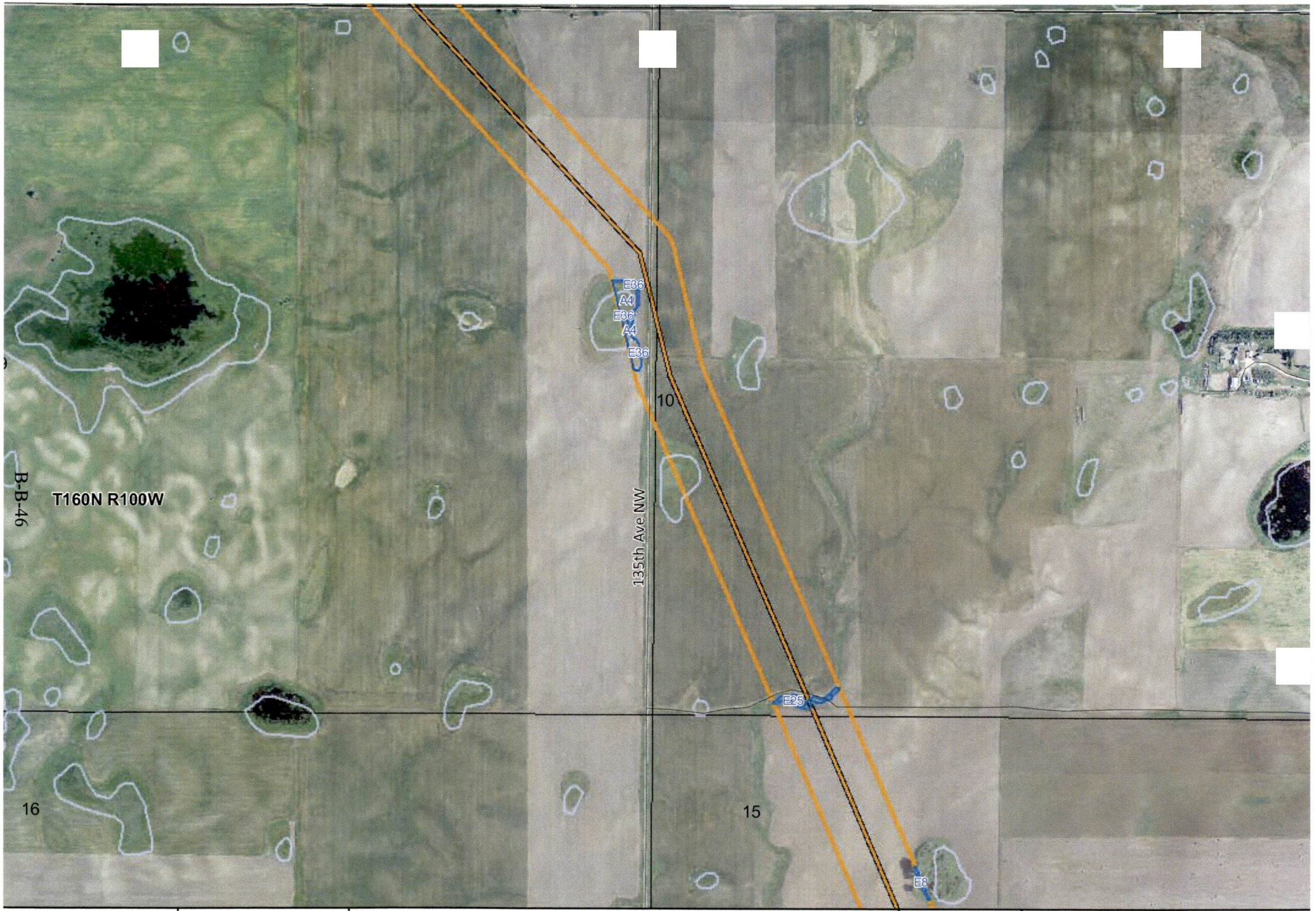

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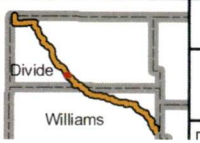

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Proposed Pipeline Route
1:12,000 Map Book
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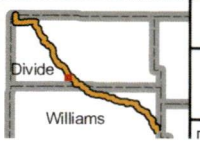

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 11R

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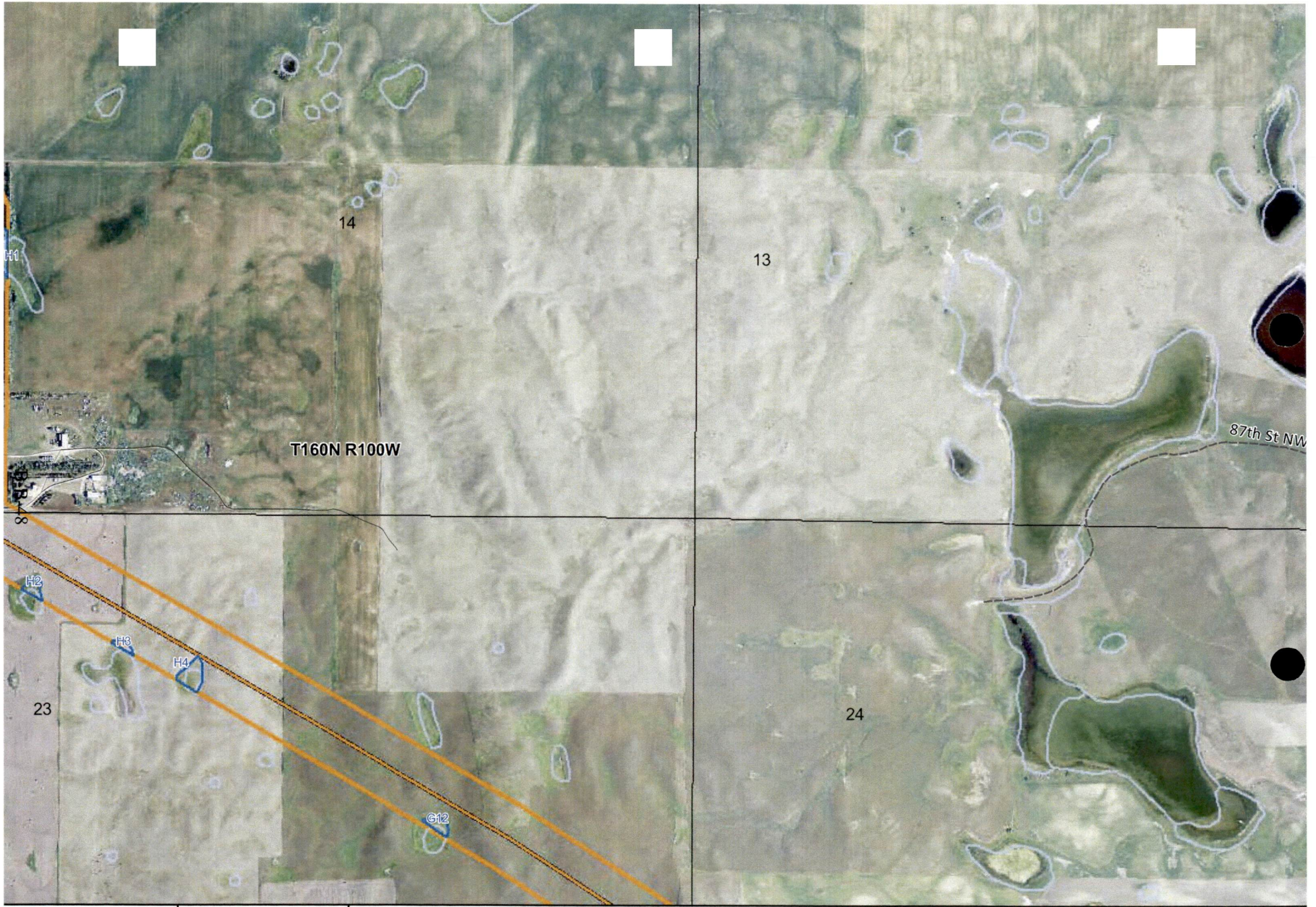

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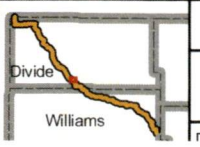

Mistral Energy Inc., Vantage Pipeline Project

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1:12,000 Map Book
Sheet: 12R

VANTAGE PIPELINE US LP

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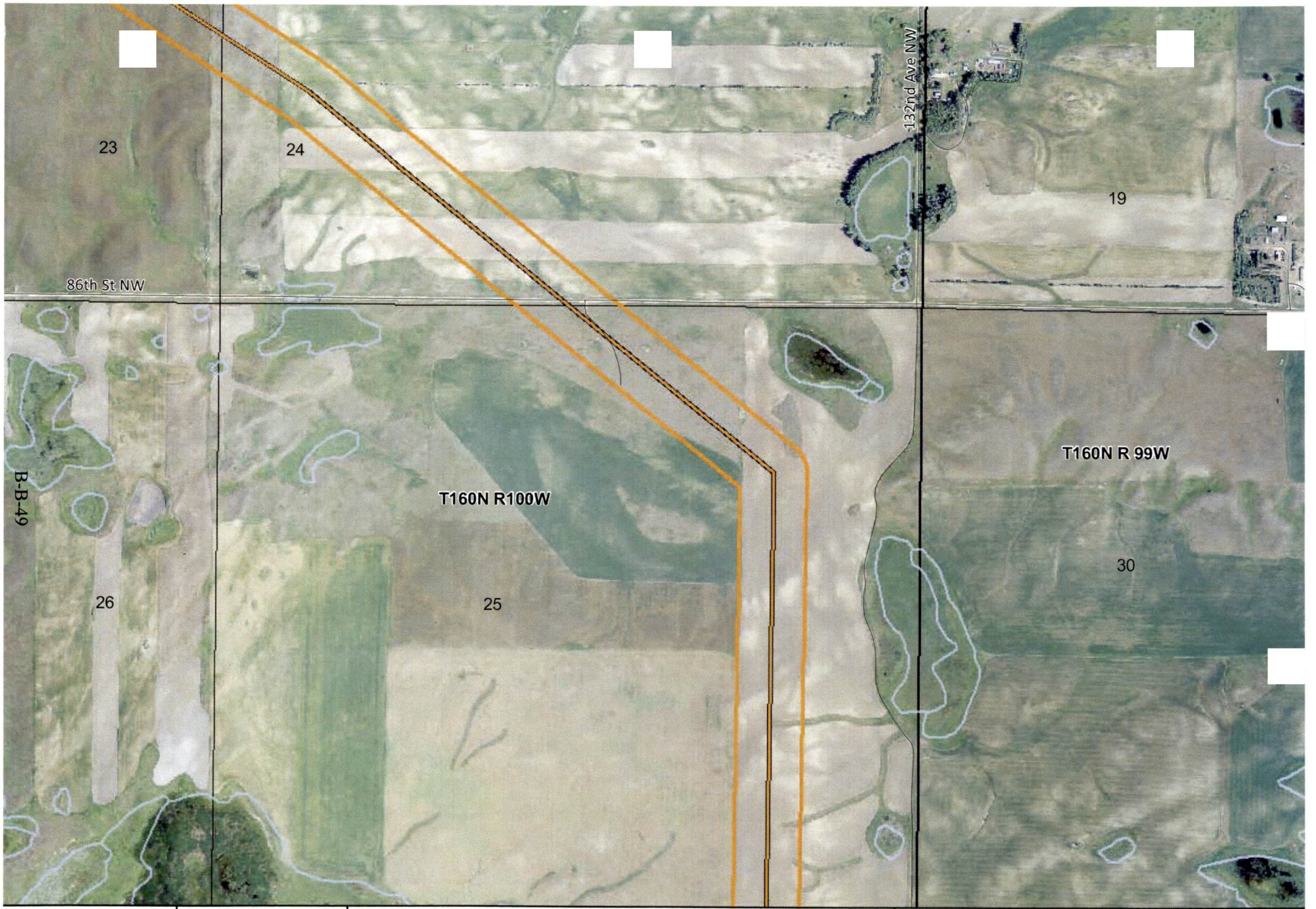

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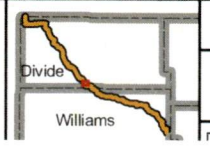

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
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VANTAGE PIPELINE US LP

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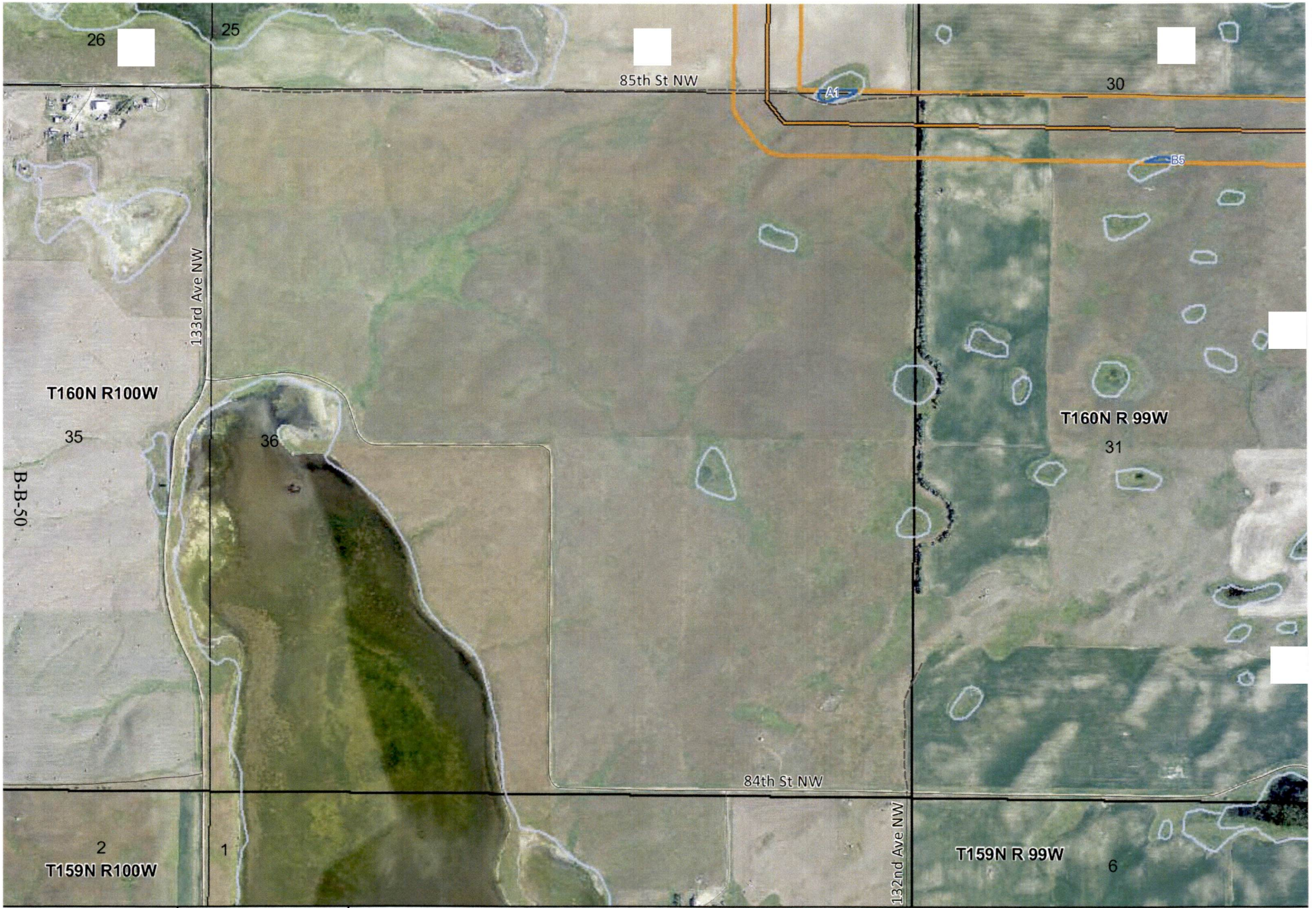

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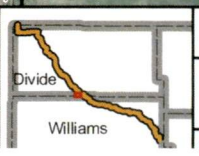

Mistral Energy Inc., Vantage Pipeline Project

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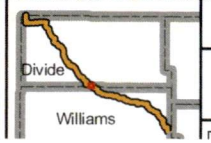

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
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Sheet: 13T

VANTAGE PIPELINE US LP

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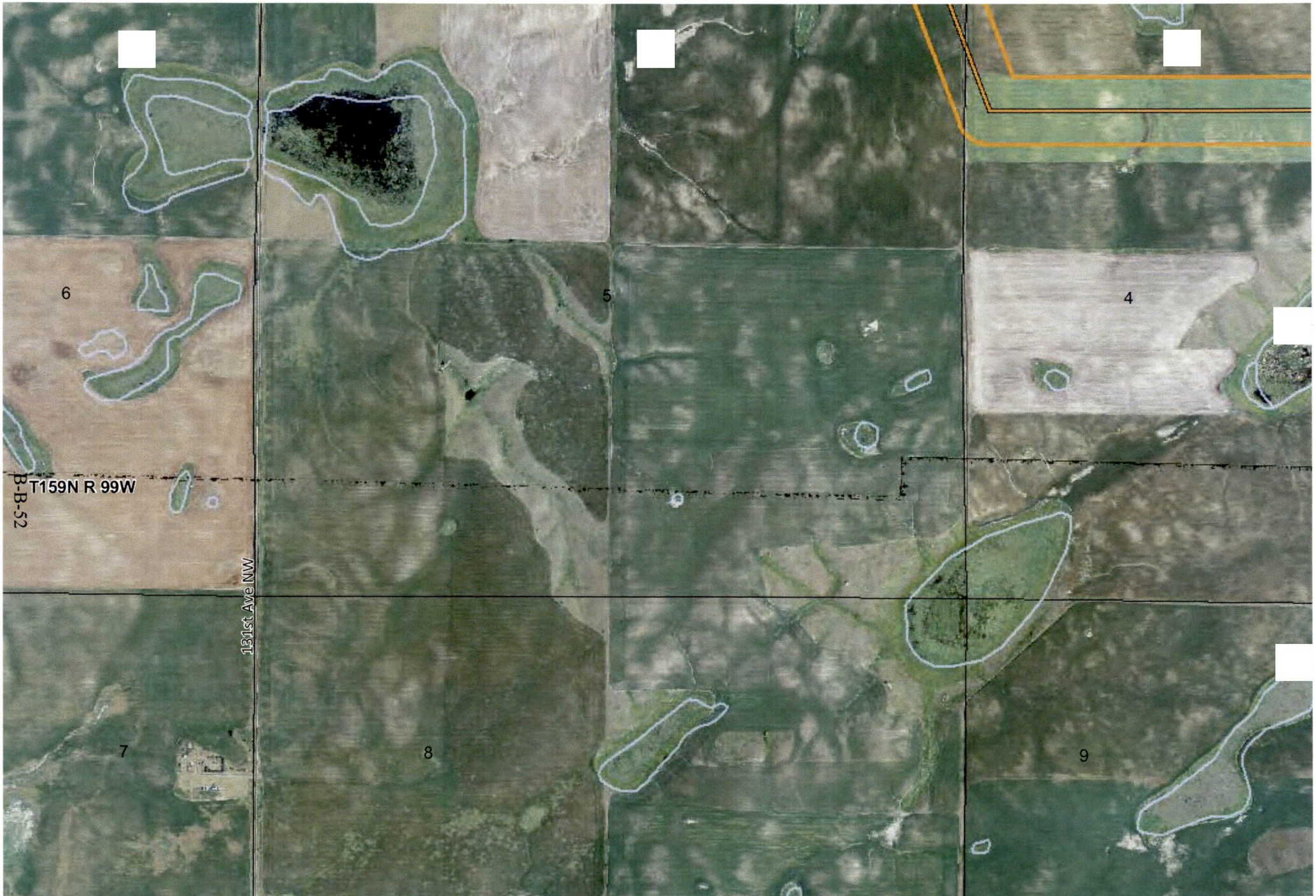

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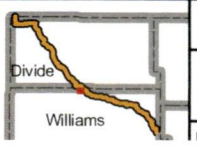

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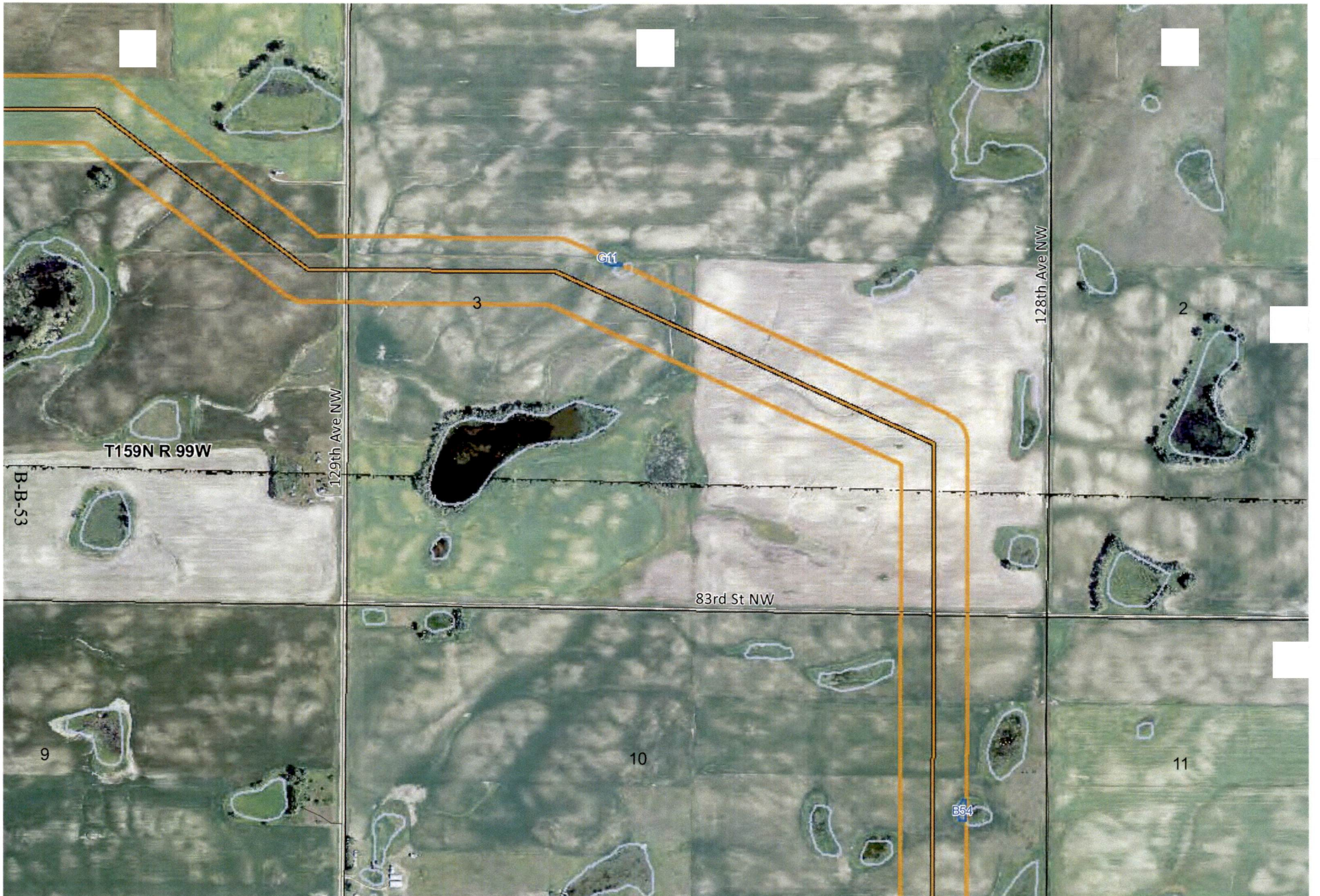

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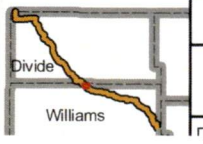

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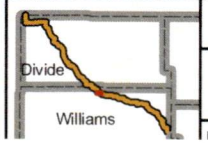

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
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Sheet: 15V

VANTAGE PIPELINE US LP

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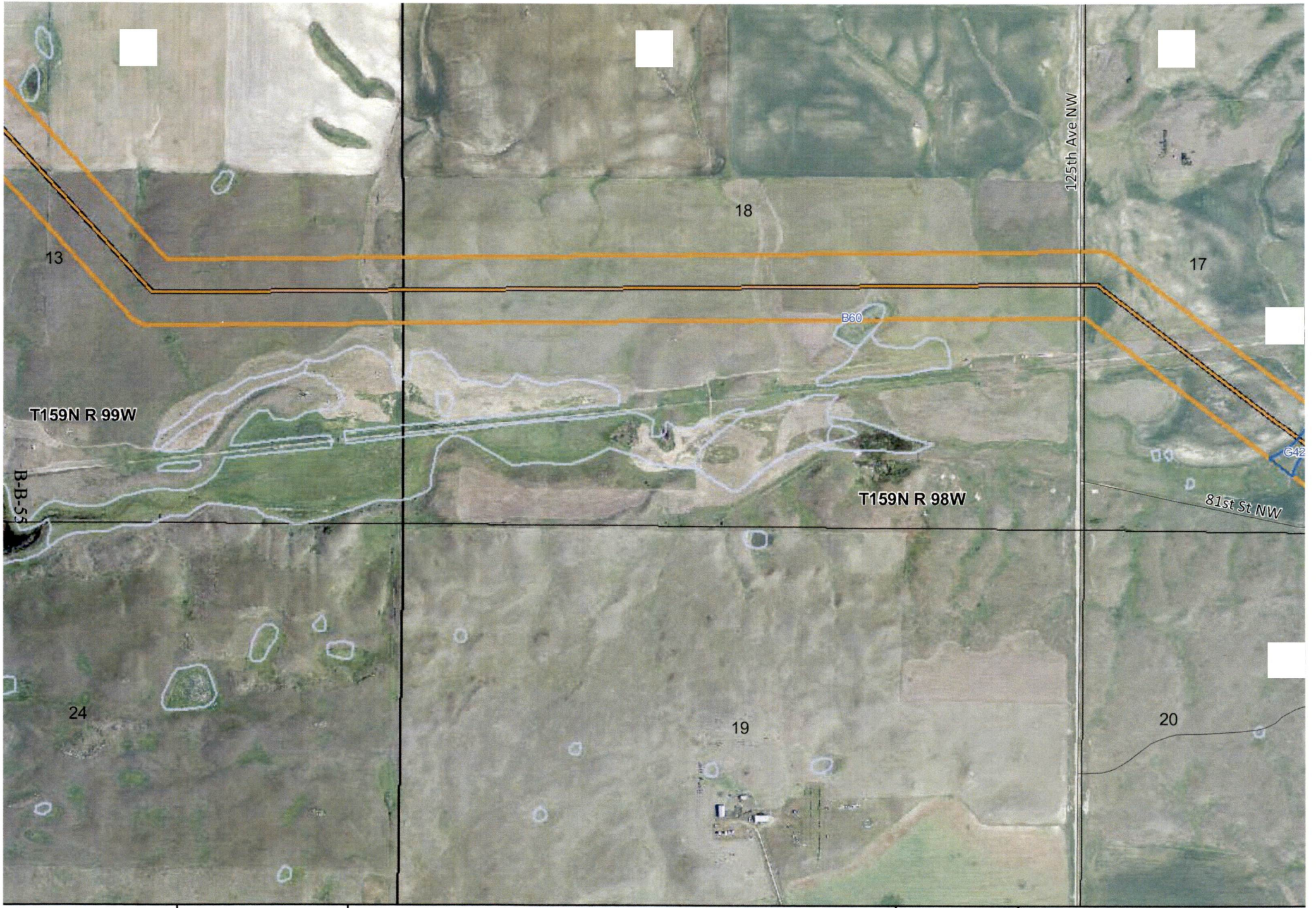

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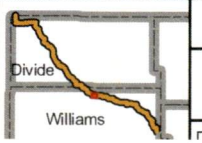

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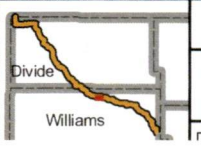
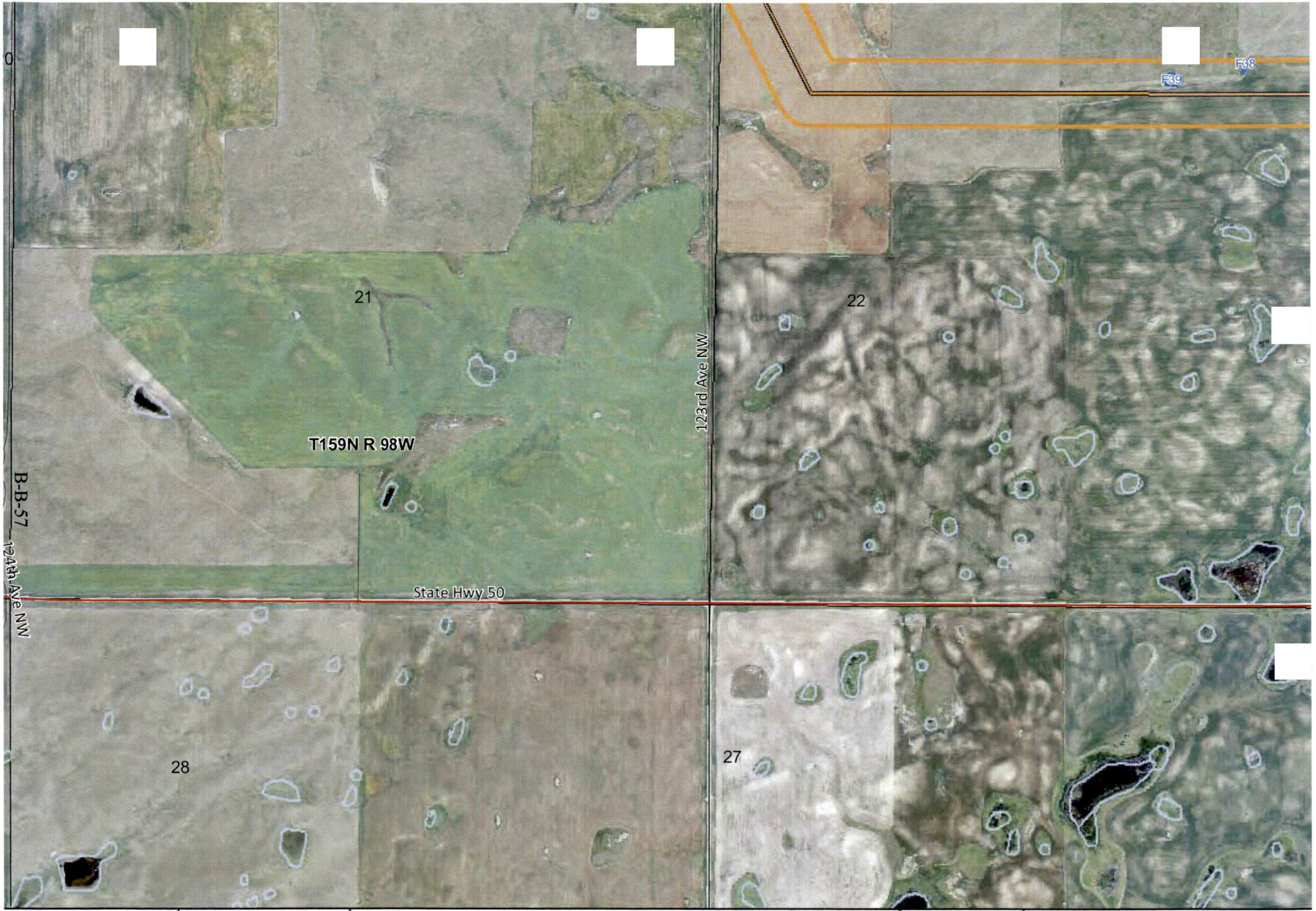


Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 16W

VANTAGE PIPELINE US LP

Date: 12/06/2011 Version: 2011 - 7



KC HARVEY ENVIRONMENTAL, LLC
376 Gallatin Park Drive
Bozeman, Montana 59715
Phone: 406-585-7402
Fax: 406-585-7428

1 : 12,000 — 1,000 ft = 1 in

N W E S

0 250 500 1,000 ft

- Pipeline with 16ft buffer
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- NWI Wetlands
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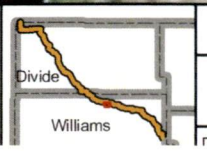
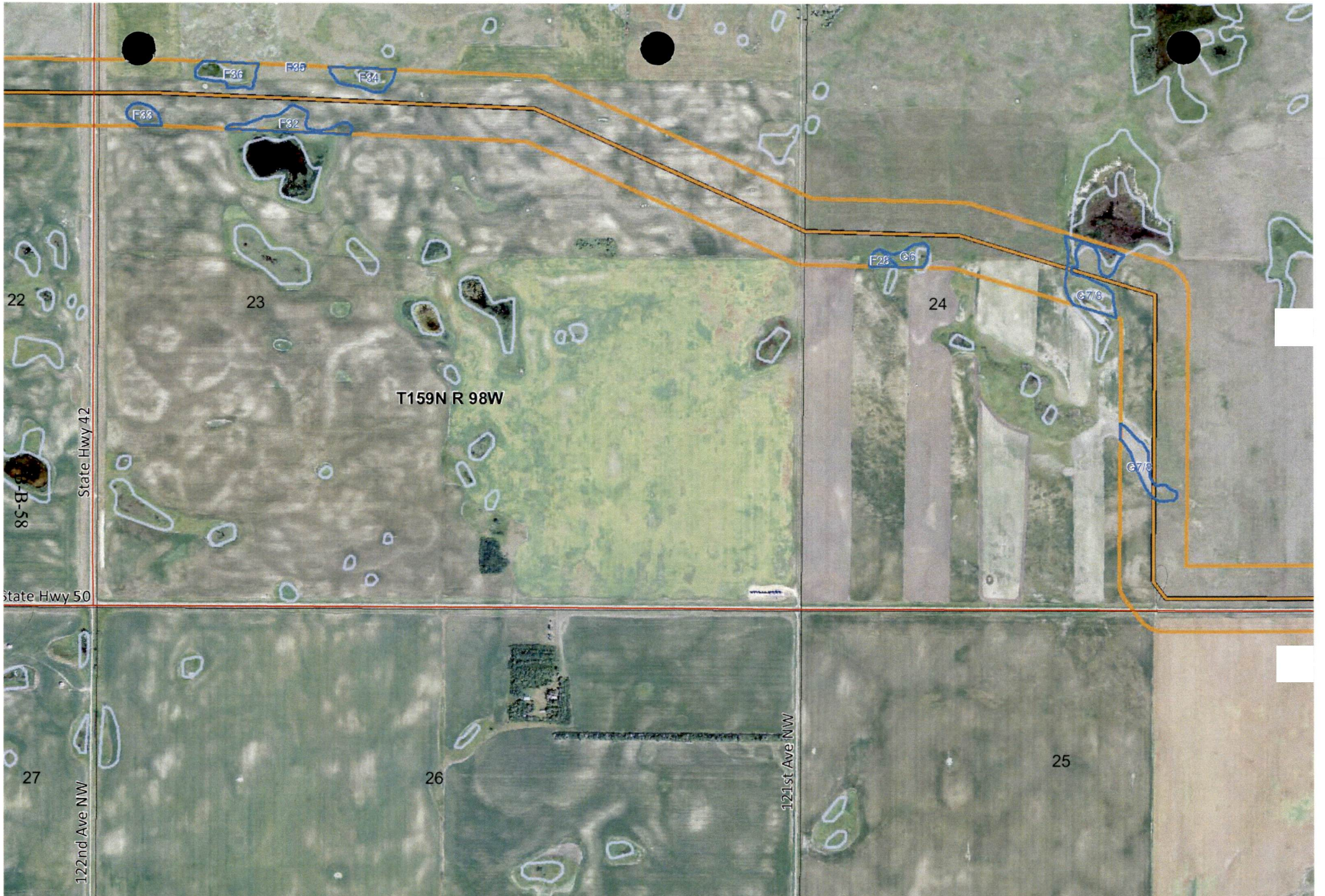


Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 17X

VANTAGE PIPELINE US LP

Date: 12/06/2011 | Version: 2011 - 7



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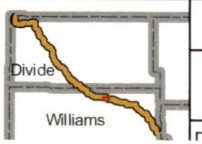

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Proposed Pipeline Route
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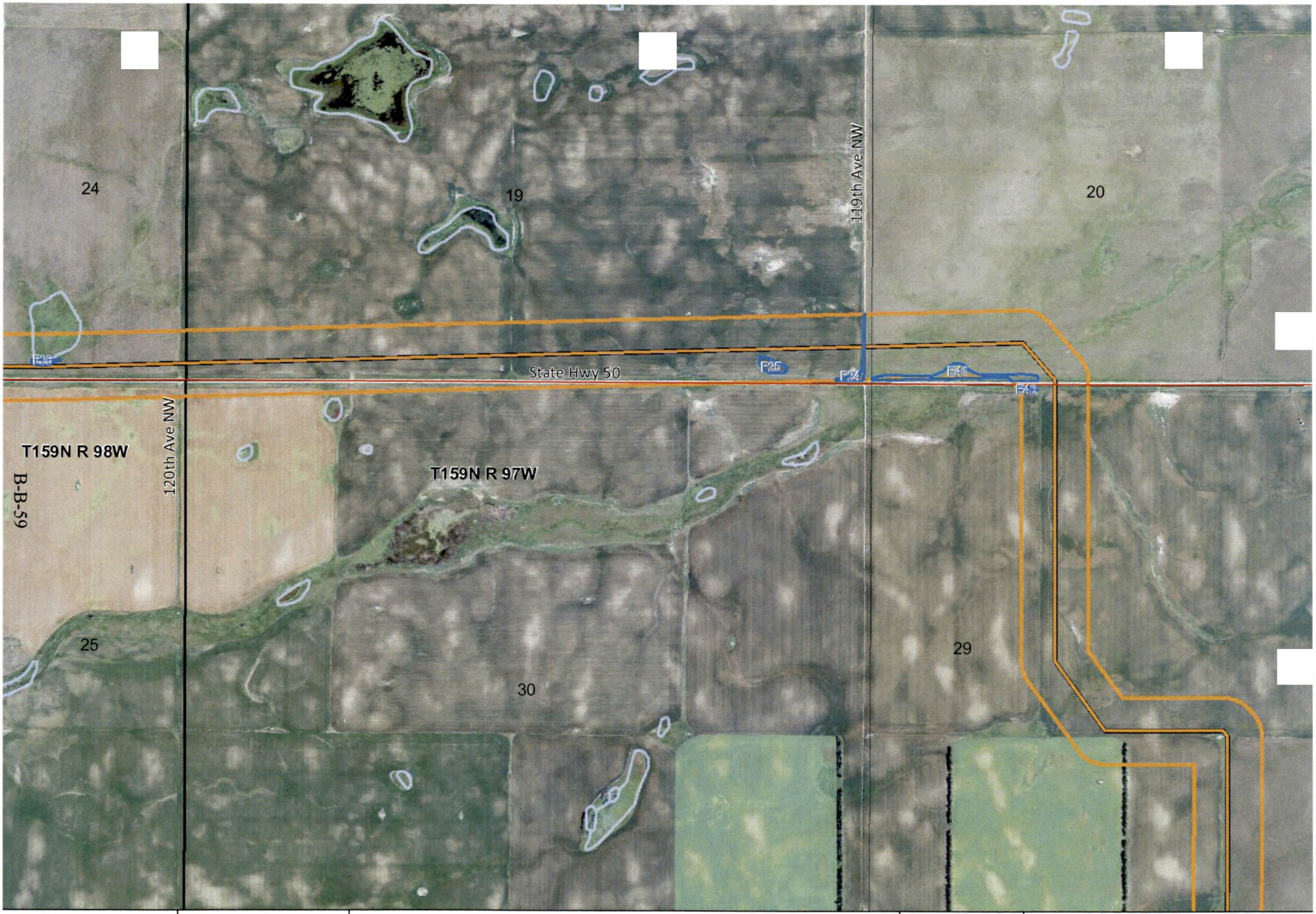
VANTAGE PIPELINE US LP

Date: 12/06/2011 | Version: 2011 - 7



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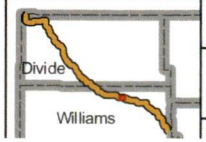

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
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VANTAGE PIPELINE US LP

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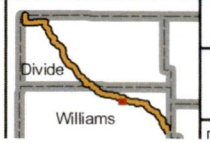

Mistral Energy Inc., Vantage Pipeline Project

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VANTAGE PIPELINE US LP

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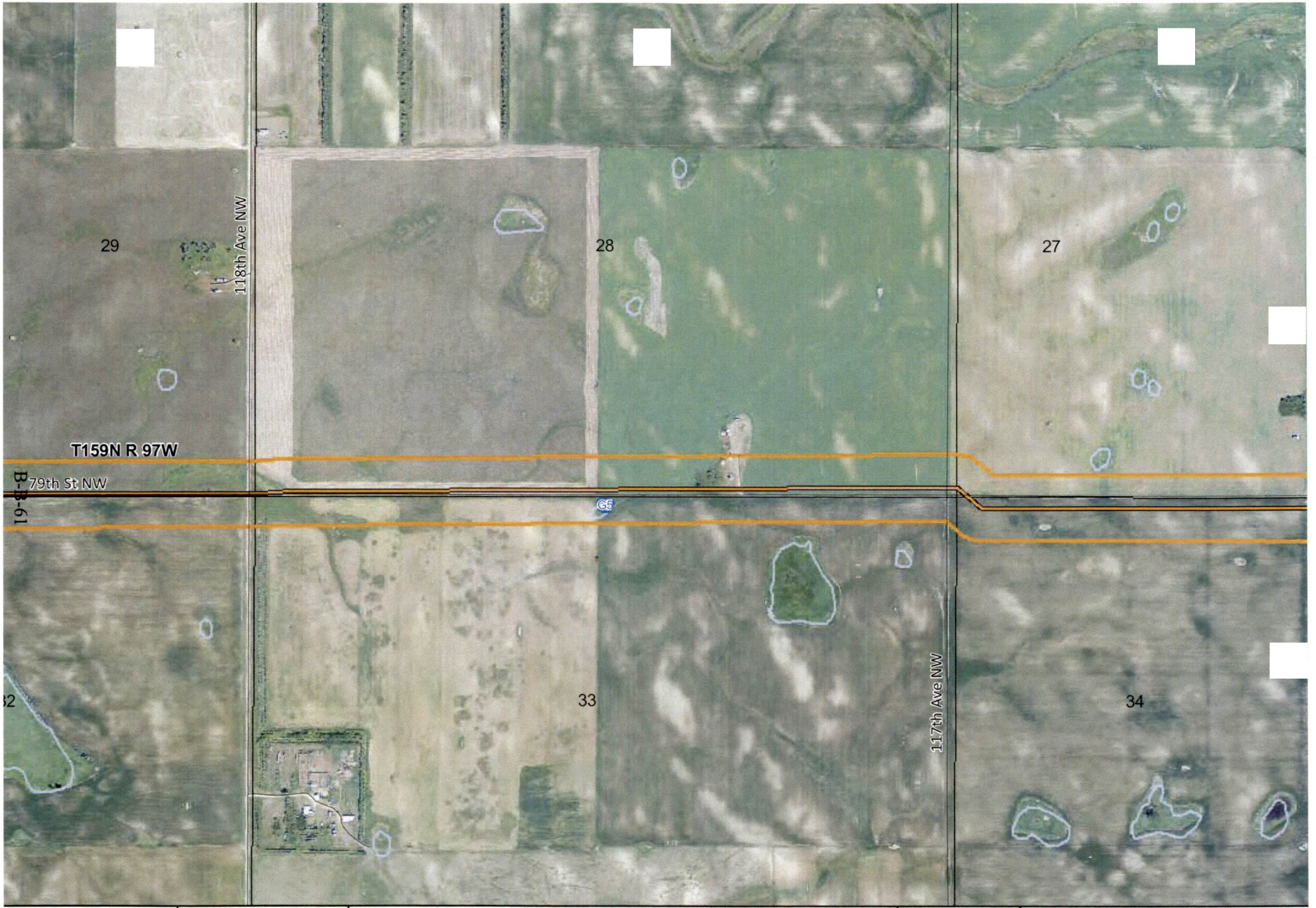

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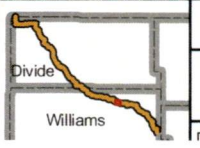

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 20X

VANTAGE PIPELINE US LP

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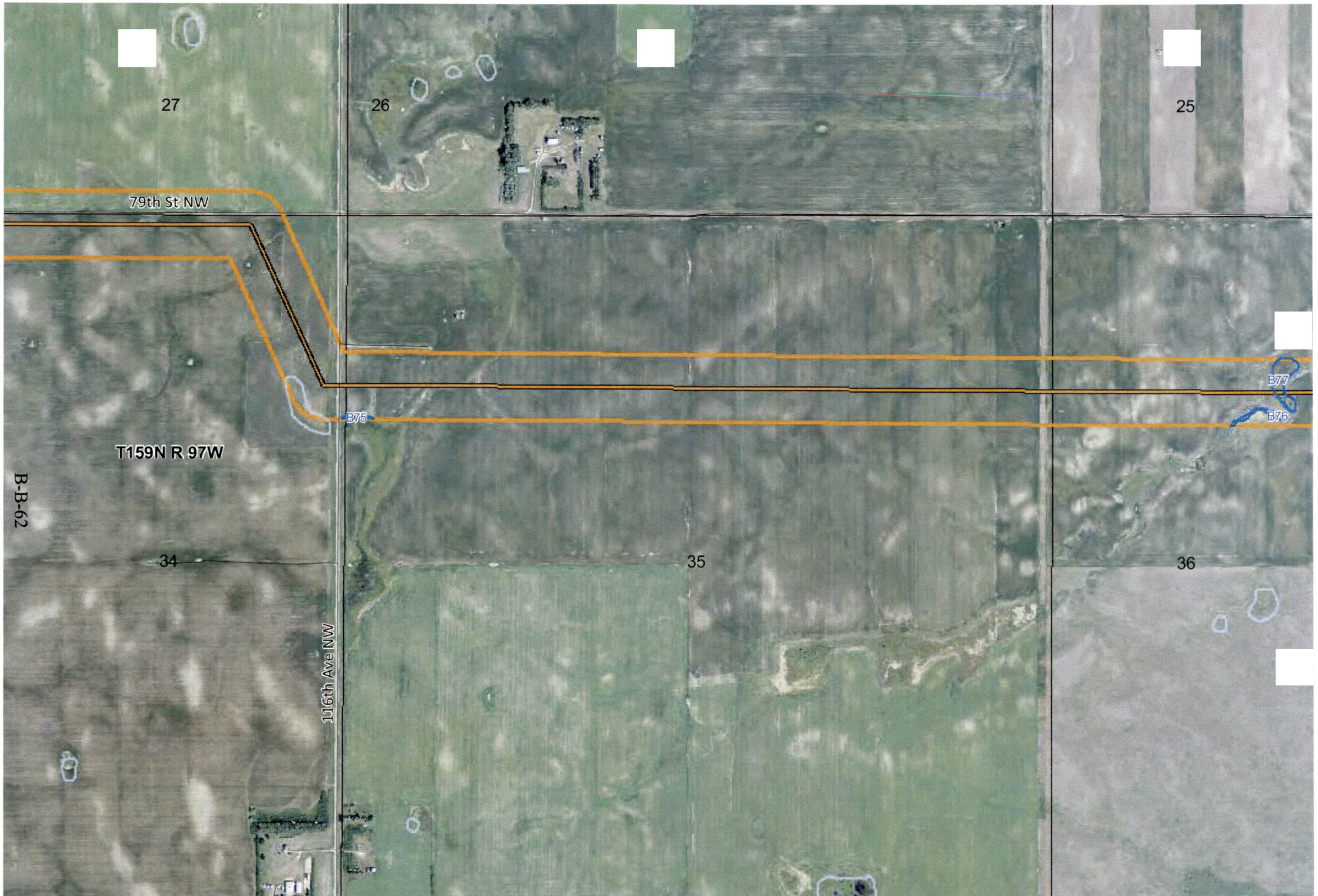

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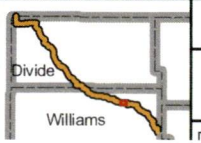

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
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VANTAGE PIPELINE US LP

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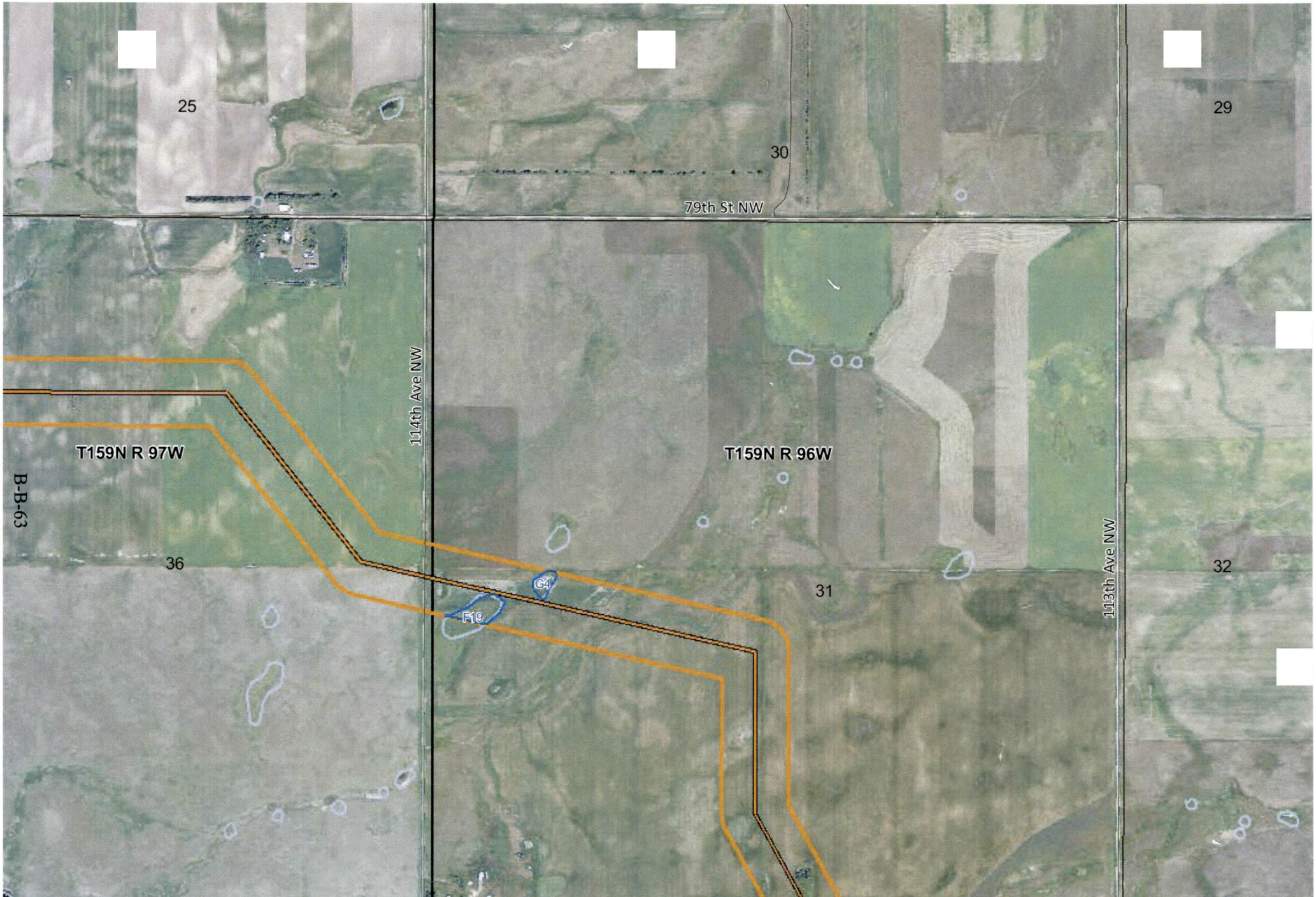

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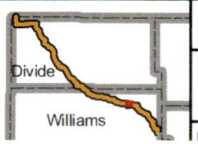

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 22Y

VANTAGE PIPELINE US LP

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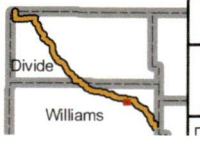

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
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VANTAGE PIPELINE US LP

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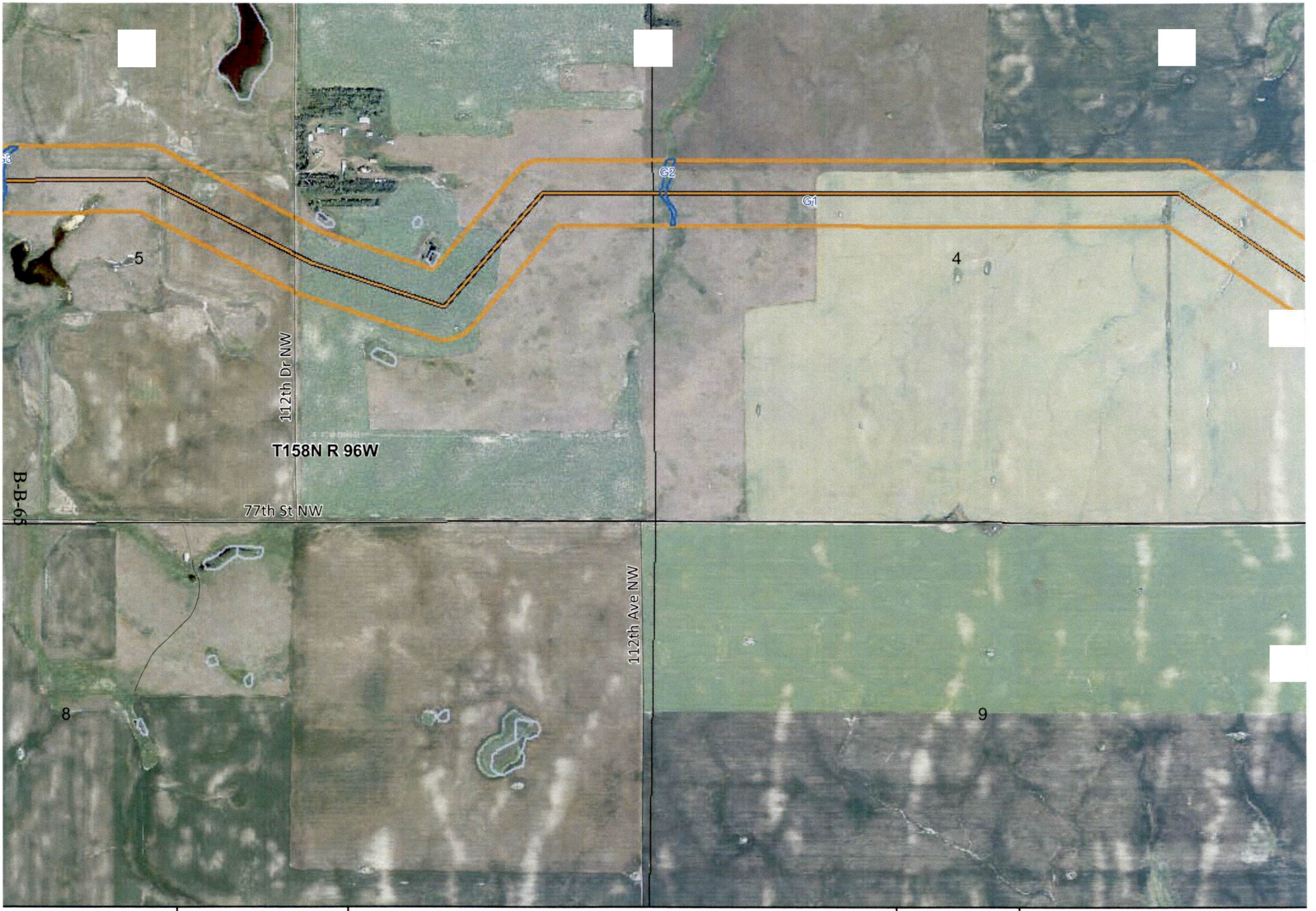

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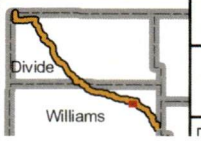

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
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VANTAGE PIPELINE US LP

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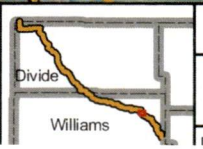

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 24Z

VANTAGE PIPELINE US LP

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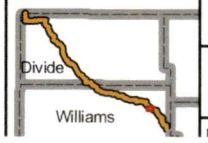

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 24AA

VANTAGE PIPELINE US LP

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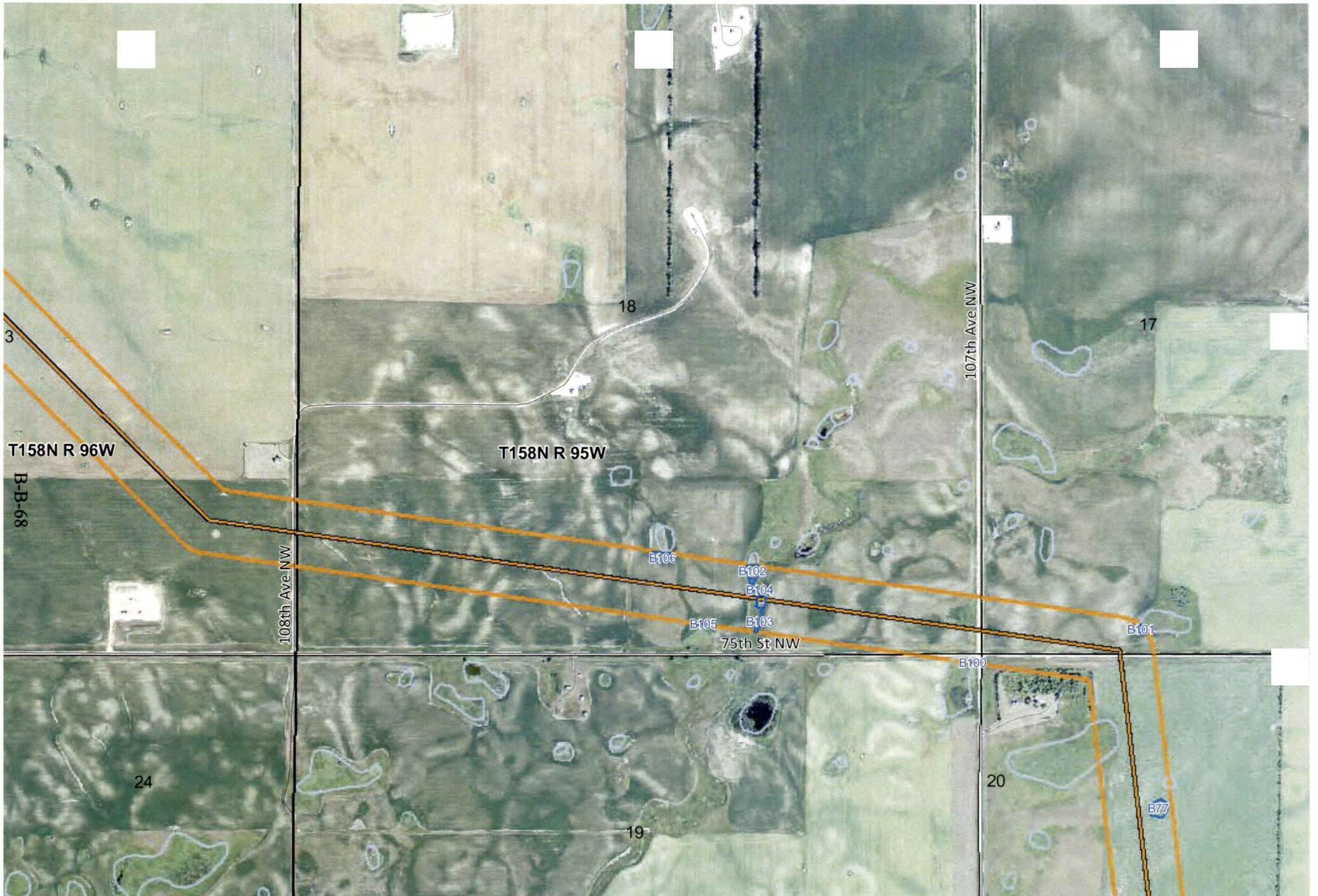

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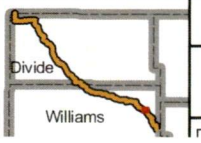

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Proposed Pipeline Route
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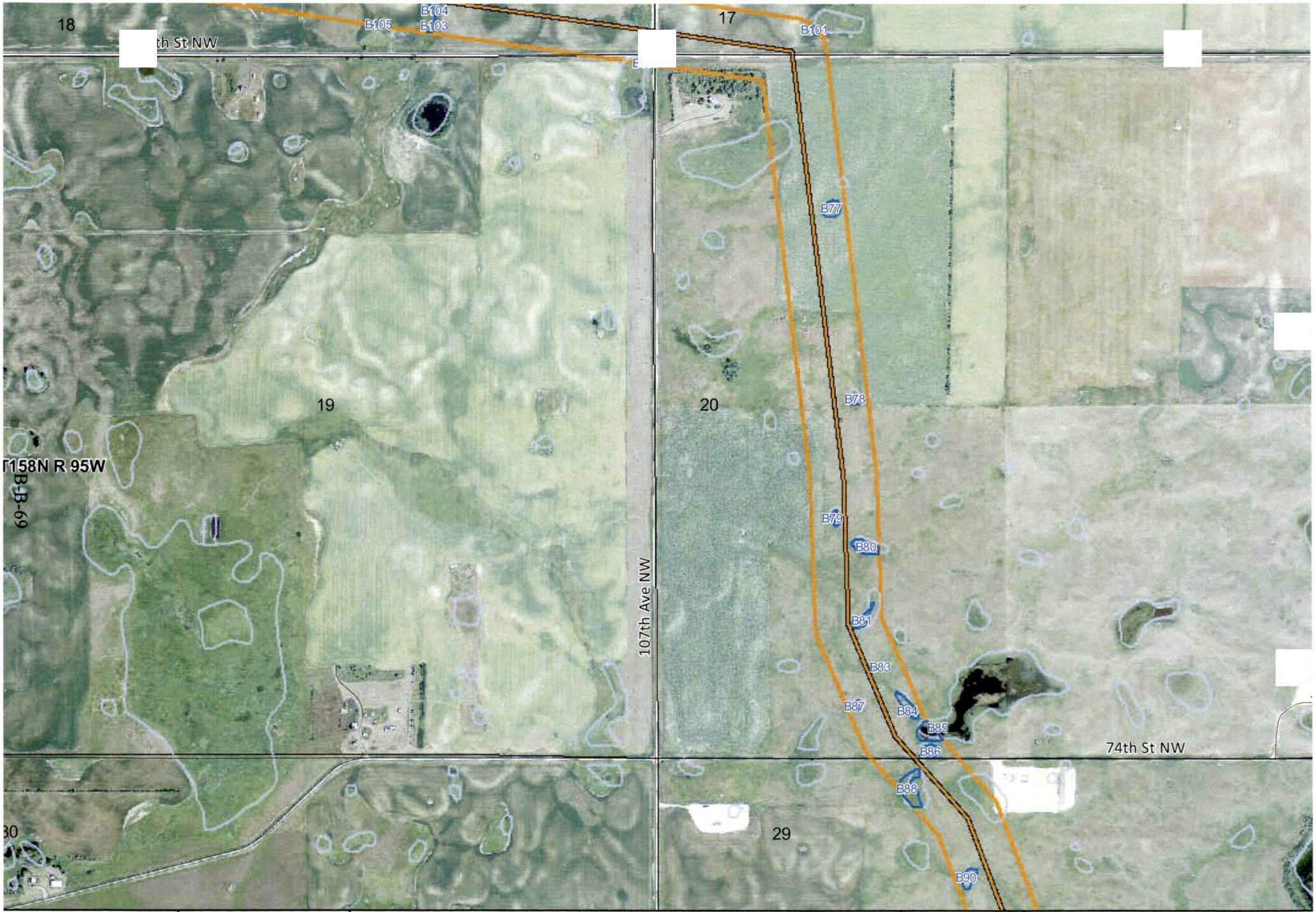
Sheet: 25AA

VANTAGE PIPELINE US LP

Date: 12/06/2011 Version: 2011 - 7



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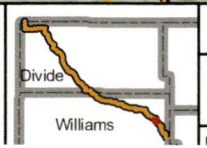

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
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VANTAGE PIPELINE US LP

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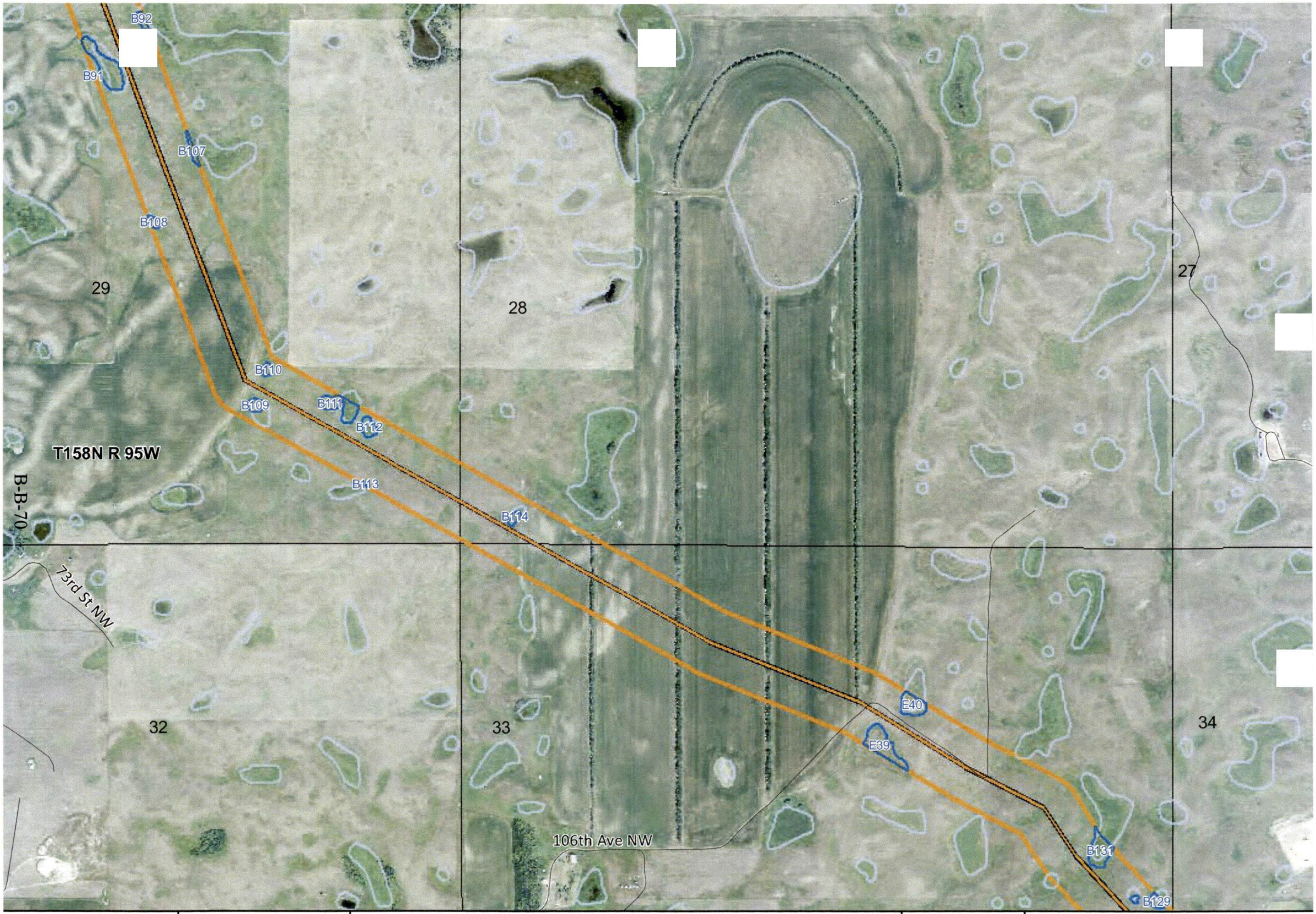

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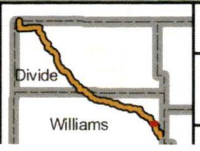

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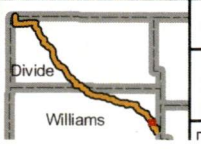

Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 27AD

VANTAGE PIPELINE US LP

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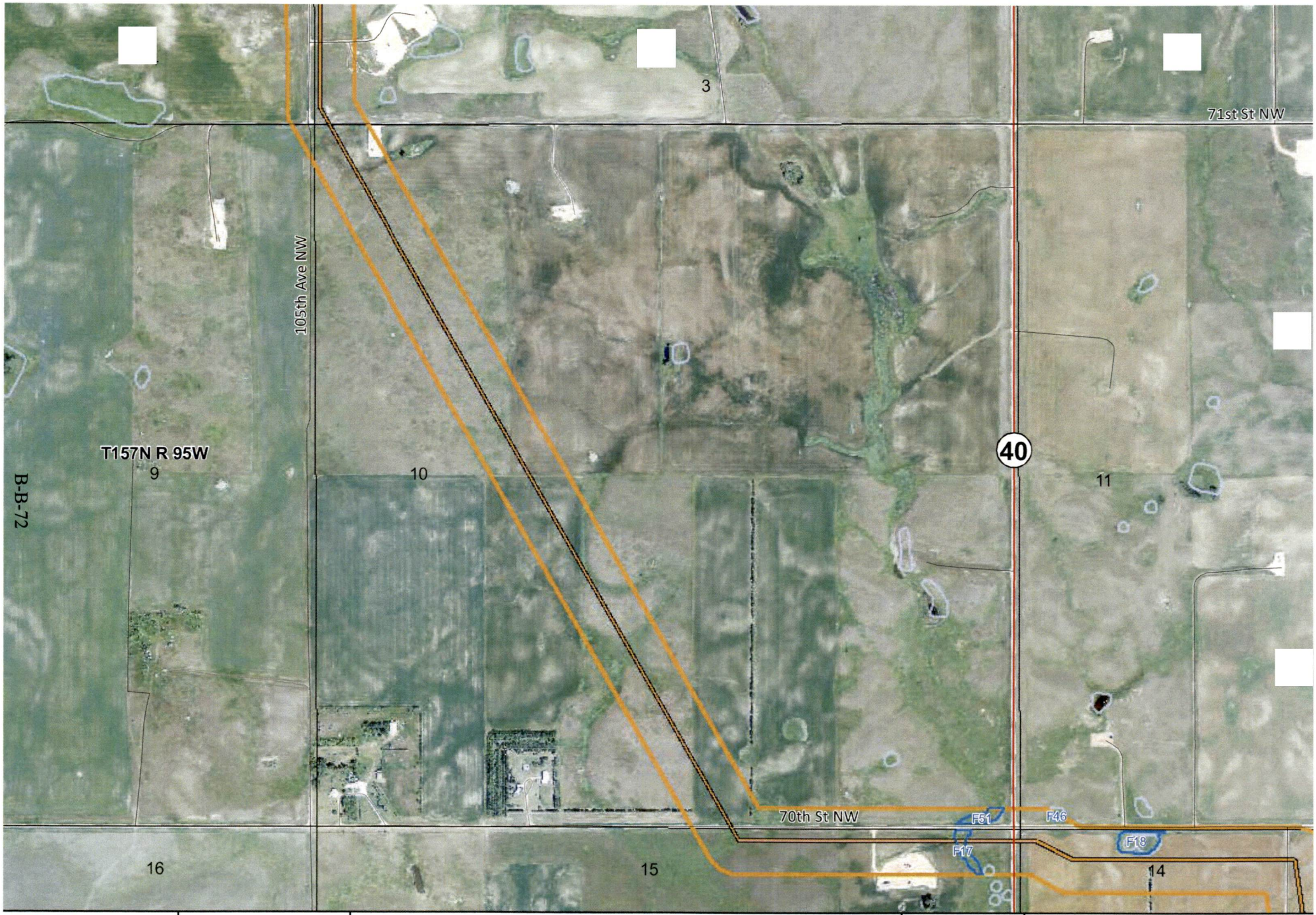

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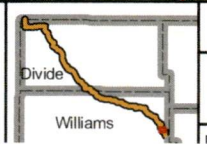

Mistral Energy Inc., Vantage Pipeline Project

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Sheet: 27AE

VANTAGE PIPELINE US LP

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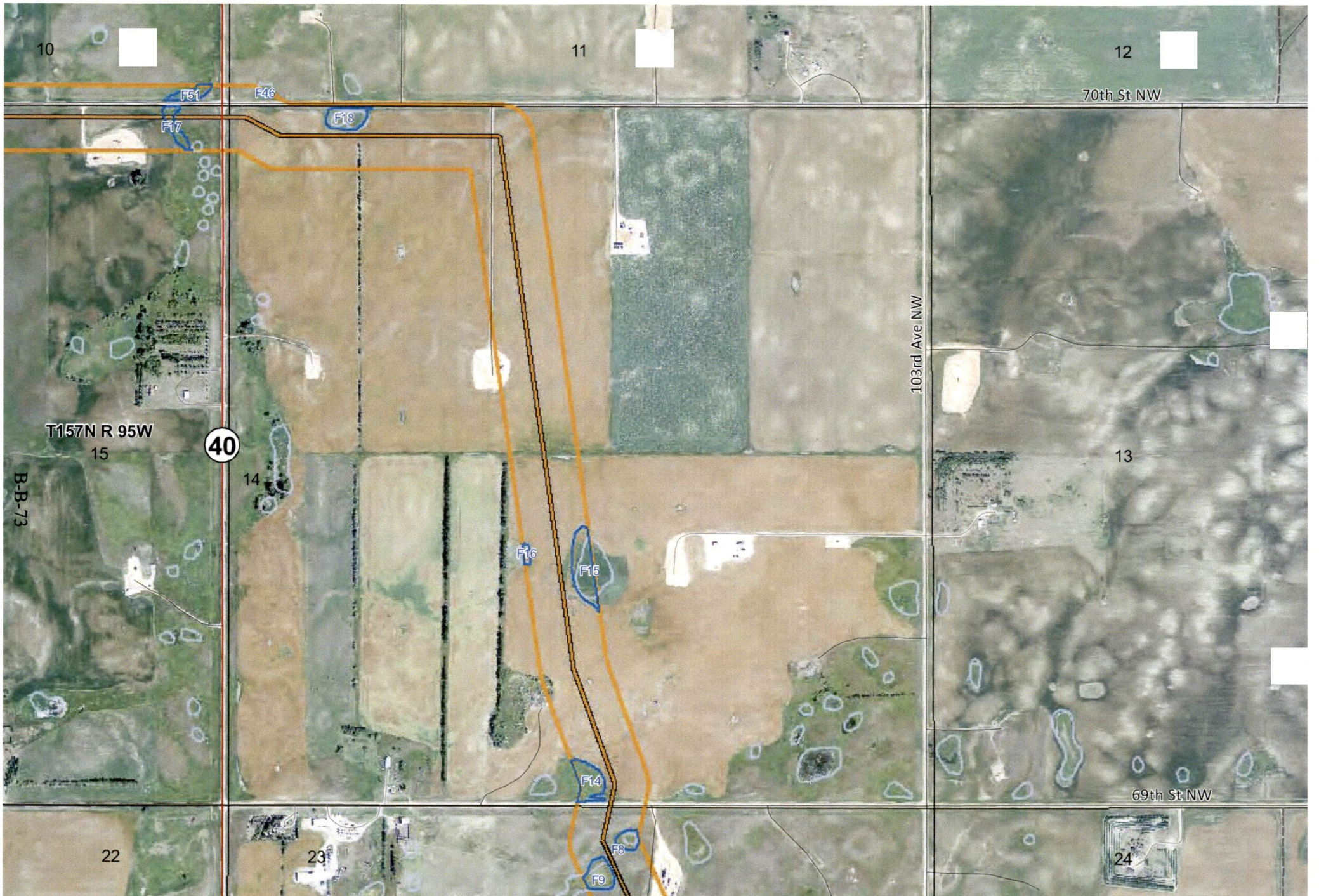

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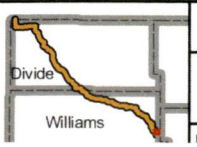
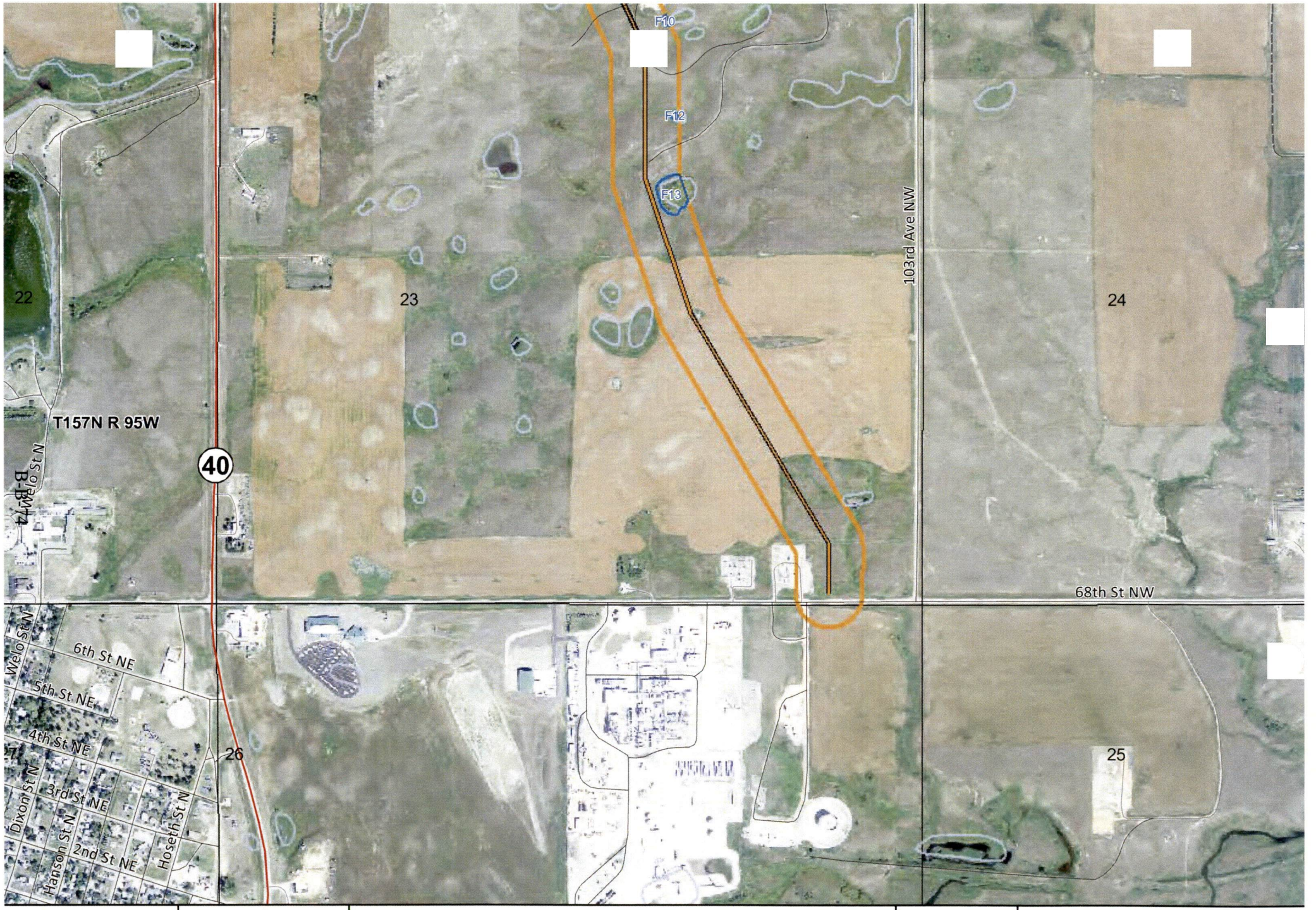


Mistral Energy Inc., Vantage Pipeline Project

Proposed Pipeline Route
1:12,000 Map Book
Sheet: 27AF

VANTAGE PIPELINE US LP

Date: 12/06/2011 | Version: 2011 - 7



KC HARVEY ENVIRONMENTAL, LLC

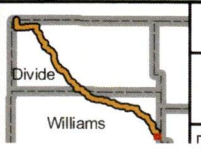
376 Gallatin Park Drive
Bozeman, Montana 59715
Phone: 406-585-7402
Fax: 406-585-7428

1 : 12,000 | 1,000 ft = 1 in

N W E S

0 250 500 1,000 ft

- Pipeline with 16ft buffer
- 500 ft corridor
- SEH Confirmed Wetlands
- NWI Wetlands
- Vehicular Trail (4WD)
- Secondary Road
- Private Road for service vehicles
- Local Neighborhood Road
- Waterfowl Production Area
- National Wildlife Refuge
- North Dakota Game and Fish
- North Dakota Land Department
- US Bureau of Land Management



Mistral Energy Inc., Vantage Pipeline Project

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1:12,000 Map Book
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VANTAGE PIPELINE US LP

Date: 12/06/2011 | Version: 2011 - 7

Commission. The Exchange has requested that the Commission waive the 30-day operative delay period after which a proposed rule change under Rule 19b–4(f)(6) becomes effective. The Commission believes that waiving the 30-day operative delay is consistent with the protection of investors and the public interest because such waiver will afford Exchange members the benefit of the proposal—the prohibition of deceptive and other abusive telemarketing acts or practices—without unnecessary delay. Such waiver will also allow the Exchange to comply with the Commission's directive and implement uniform telemarketing rules across self-regulatory organizations, creating consistency among these rules for investors, as soon as possible. For these reasons, the Commission designates the proposed rule change as operative under upon filing.[65]

At any time within 60 days of the filing of this proposed rule change, the Commission summarily may temporarily suspend such rule change if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Act.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's Internet comment form (*http://www.sec.gov/rules/sro.shtml*); or
- Send an Email to *rule-comments@sec.gov*. Please include File No. SR–EDGA–2012–16 on the subject line.

Paper Comments

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street NE., Washington, DC 20549–1090.

All submissions should refer to File Number SR–EDGA–2012–16. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet Web site (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for Web site viewing and printing in the Commission's Public Reference Room, 100 F Street NE., Washington, DC 20549, on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of such filing also will be available for inspection and copying at the principal office of the Exchange. All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR–EDGA–2012–16 and should be submitted by May 24, 2012.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[66]

Kevin M. O'Neill,

Deputy Secretary.

[FR Doc. 2012–10644 Filed 5–2–12; 8:45 am]

BILLING CODE 8011–01–P

[65] For purposes only of waiving the 30-day operative delay, the Commission has considered the proposed rule's impact on efficiency, competition, and capital formation. *See* 15 U.S.C. 78c(f).

[66] 17 CFR 200.30–3(a)(12).

DEPARTMENT OF STATE

[Public Notice 7867]

Culturally Significant Objects Imported for Exhibition Determinations: "Lygia Clark"

SUMMARY: Notice is hereby given of the following determinations: Pursuant to the authority vested in me by the Act of October 19, 1965 (79 Stat. 985; 22 U.S.C. 2459), Executive Order 12047 of March 27, 1978, the Foreign Affairs Reform and Restructuring Act of 1998 (112 Stat. 2681, *et seq.;* 22 U.S.C. 6501 note, *et seq.*), Delegation of Authority No. 234 of October 1, 1999, and Delegation of Authority No. 236–3 of August 28, 2000 (and, as appropriate, Delegation of Authority No. 257 of April 15, 2003), I hereby determine that the objects to be imported from abroad for temporary study and inclusion in the exhibition "Lygia Clark," within the United States, are of cultural significance. The objects are imported pursuant to loan agreements with the foreign owners or custodians. I also determine that the exhibition or display of the exhibit objects at the Museum of Modern Art, New York, New York, from on or about May 4, 2014 until on or about August 25, 2014, and at possible additional exhibitions or venues yet to be determined, is in the national interest. I have ordered that Public Notice of these Determinations be published in the **Federal Register**.

FOR FURTHER INFORMATION CONTACT: For further information, including a list of the exhibit objects, contact Paul W. Manning, Attorney-Adviser, Office of the Legal Adviser, U.S. Department of State (telephone: (202) 632-6473). The mailing address is U.S. Department of State, SA–5, L/PD, Fifth Floor (Suite 5H03), Washington, DC 20522–0505.

Dated: April 25, 2012.

J. Adam Ereli,

Principal Deputy Assistant Secretary, Bureau of Educational and Cultural Affairs, Department of State.

[FR Doc. 2012–10680 Filed 5–2–12; 8:45 am]

BILLING CODE 4710–05–P

DEPARTMENT OF STATE

[Public Notice 7869]

Notice of Availability of the Environmental Assessment and Request for Comments on Environmental Issues, and the National Interest Determination for the Vantage Pipeline Project

Vantage US LP has applied to the Department of State (DOS) for a Presidential Permit to construct and operate facilities at the border for a proposed pipeline carrying ethane from North Dakota to Canada. The DOS has released an Environmental Assessment (EA) that discusses the potential environmental impacts of the proposed Vantage Pipeline Project. This EA will be used by the DOS in its decision-making process to determine whether the project would serve the national interest and whether the applicant should receive a Presidential Permit. This notice announces the opening of the public comment process the DOS will use to gather input from the public on the proposed project. Your input will help the DOS determine the next steps in the environmental review of this project and whether the project would serve the national interest. The DOS is requesting comments on: (1) The EA, and (2) whether the Vantage Pipeline Project serves the national interest. Please note that the public comment period will close on June 2, 2012.

Summary of the Proposed Project

The proposed Vantage Pipeline Project would be an underground high vapor pressure pipeline that would carry liquid ethane from Tioga, North Dakota to Alberta, Canada. In the United States, Vantage proposes to construct and operate 79.8 miles of 10-inch-diameter ethane pipeline in Williams and Divide Counties, North Dakota. Aboveground, the project would include the installation of mainline valves at seven locations along the pipeline and the use of various ancillary facilities (*e.g.*, access roads, yards).

The Vantage Pipeline would export ethane to Canada that is extracted from North Dakota-produced natural gas and compressed to a liquid form at an existing natural gas facility in North Dakota. The ethane that would be transported in the Vantage Pipeline is a flammable liquid that is non-corrosive, odorless, and colorless. It has similar characteristics to natural gas, the fuel that is used in furnaces to heat homes. Ethane is currently used as a petrochemical feedstock and is ultimately converted to plastics, anti-freeze, rubber, detergents, solvents, and like products. Vantage anticipates that the ethane transported through the proposed pipeline would be used for these purposes by the Alberta petrochemical industry. The Canadian National Energy Board approved the Canadian portion of the pipeline system on January 19, 2012.

The Presidential Permit Process

The Secretary of State is designated and empowered under Executive Order 13337 to receive all applications for Presidential permits for the construction, connection, operation, or maintenance at the borders of the United States, of facilities for the exportation or importation of petroleum, petroleum products, coal, or other liquid or solid fuels to or from a foreign country. As a part of the review of an application for a Presidential Permit, the Secretary of State must determine whether or not the project would be in the national interest. The determination of national interest involves consideration of many factors, which can include energy security, environmental, cultural, economic and foreign policy impacts. The EA that is the subject of this notification is considered in the national interest determination.

The Environmental Review Process

Consistent with the National Environmental Policy Act (NEPA) of 1969, as amended, regulations developed by the Council on Environmental Quality (40 CFR 1500), and DOS regulations for implementing NEPA (22 CFR 161), the DOS is undertaking an environmental review of the proposed pipeline in the United States. DOS now has issued an EA for the proposed Vantage Pipeline Project.

In the EA, the DOS discusses impacts that could occur as a result of the construction and operation and maintenance of pipeline facilities of natural gas liquids and also evaluates reasonable alternatives to the proposed project. The potential environmental impacts of the Project are based on currently available information.

In addition, the DOS is carrying out the Section 106 review process under Section 101(d)(6)(b) of the National Historic Preservation Act of 1966 through which it consults with any Indian tribe that attaches religious or cultural significance to historic properties that may be affected by construction of the Vantage Pipeline.

The EA is available to the public from the Web site *http://vantagepipeline.state.gov/* and by mail. Following the 30-day public comment period, and after taking into account any comments received during that period, the DOS will decide whether to issue a Finding of No Significant Impact (FONSI) or proceed with further environmental review through an Environmental Impact Statement (EIS). To ensure that your comments are considered, please carefully follow the instructions detailed in the Public Participation section below.

Public Participation

You are encouraged to become involved in this process and provide your comments or concerns about the proposed project. As noted above, we are requesting comments on two aspects of the Vantage Pipeline Project. First, we request comments on the EA that focus on the potential environmental impacts of the project, reasonable alternatives, and measures to avoid or lessen environmental impacts. The EA is available on the DOS Web site for the project at *http://vantagepipeline.state.gov/.*

Second, we are requesting comments on whether this project is in the national interest. The determination of national interest involves consideration of many factors, which can include energy security, environmental, cultural, and economic impacts.

To ensure that we have the opportunity to consider your comments, please make sure that comments on one or both of these issues described above are postmarked by June 2, 2012.

For your convenience, there are two methods that you can use to submit your comments. In all instances please reference the project (i.e., Vantage) with your submission. We encourage electronic filing of comments.

(1) You may mail your comments to the following address: State Department Vantage Comments, 2020 Pennsylvania Avenue NW., Box #501, Washington, DC 20006.

(2) You may enter your comments directly on the DOS Web site at: *http://vantagepipeline.state.gov/.*

Environmental Mailing List

The DOS sends information related to this environmental review to individuals, organizations, and government entities interested in and/or potentially affected by the proposed project and maintains an environmental mailing list for this purpose. The environmental mailing list includes: Federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; Native American Tribes; other interested parties; and local libraries and newspapers. This list also includes all affected landowners who are potential right-of-way grantors, whose property may be used temporarily for project purposes, and anyone who submits comments on the project. The DOS will update the environmental mailing list as the analysis proceeds. If you would like to be included on the mailing list, please submit your address by accessing the DOS Web site at *http://vantagepipeline.state.gov/.*

Additional Information

The EA and related documents to be considered by the DOS in connection with this application, including environmental information and associated maps, are downloadable at: *http://www.vantagepipeline.state.gov.* The Vantage Pipeline Project toll free number is 1–877–918–6818 (United States).

Dated: Issued in Washington, DC on May 1, 2012.

George N. Sibley,

Director, Office of Environmental Policy, Bureau of Oceans and International Environmental and Scientific Affairs, U.S. Department of State.

[FR Doc. 2012–10812 Filed 5–2–12; 8:45 am]

BILLING CODE 4710–09–P