E3 ENVIRONMENTAL
Enhancing Execution with Experience

North Dakota Public Service Commission
Consolidated Application

Amendment of Application for Route Permit
Lonesome Creek NGL Pipeline Project
PU-15-137

Prepared for:
ONEOK Bakken Pipeline, L.L.C

Prepared by:
E3 Environmental, L.L.C.

June 2015

Volume 1

ONEOK
BAKKEN PIPELINE

A SUBSIDIARY OF ONEOK

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INTRODUCTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK) a wholly owned subsidiary of ONEOK Partners, L.P., submitted to the North Dakota Public Service Commission (Commission) a Consolidated Application for Certificate of Corridor Compatibility and Route Permit (Application) for the Lonesome Creek NGL Pipeline Project (Project) on April 6, 2015 (PU-15-137). Since this original submittal, ONEOK has identified the need to alter the proposed pipeline route at one location. ONEOK has prepared this Amended Application for the Route Permit (Amendment) to address these route modifications.

The route modification falls entirely within the original 1-mile corridor described in the initial application for the Project. The Certificate of Corridor Compatibility portion of the Application remains unchanged and, as such, is not part of this Application.

This Amended Application for Route Permit provides the requisite information as required by:

- North Dakota Century Code, Energy Conversion and Transmission Facility Siting Act, Chapter 49-22-08.1 and,
- North Dakota Administrative Code, Chapter 69-06-05, Transmission Facility Permit.

SECTION 1: DESCRIPTION

1.1 TYPE OF TRANSMISSION FACILITY

Refer to the Application as filed; no changes have resulted from the route modifications.

1.2 PURPOSE OF TRANSMISSION FACILITY

Refer to the Application as filed; no changes have resulted from the route modifications.

1.3 LENGTH, SIZE AND DESIGN OF PIPELINE FACILITY

1.3.1 LENGTH OF FACILITY

The previously filed Application detailed the Project to be approximately 4 miles in length; the proposed route modification will not increase the total project length.

1.3.2 PIPE SIZE

Refer to the Application as filed; no changes have resulted from the route modifications.

1.3.3 OPERATING PRESSURE AND THROUGHPUT

Refer to the Application as filed; no changes have resulted from the route modifications.

1.4 ABOVEGROUND FACILITIES

Refer to the Application as filed; no changes have resulted from the route modifications.

1.5 WIDTH OF RIGHT-OF-WAY

Refer to the Application as filed; no changes have resulted from the route modifications.

1.6 LOCATION

The proposed Project is approximately 4 miles in total length and is located entirely within McKenzie County, North Dakota.

The proposed route modification begins at mile post 2.15 and ends at mile post 3.65 with a total length of 1.5 miles. Refer to Appendix B of this Amendment for Project location maps.

1.7 PROJECT SCHEDULE

1.7.1 ROUTE PERMIT

Refer to the Application as filed; no changes have resulted from the route modifications.

1.7.2 CERTIFICATE OF CORRIDOR COMPATIBILITY

Refer to the Application as filed; no changes have resulted from the route modifications.

1.7.3 CONSTRUCTION SCHEDULE

Refer to the Application as filed; no changes have resulted from the route modifications.

SECTION 2: ROUTE ANALYSIS AND ENVIRONMENTAL STUDIES

2.1 PIPELINE ROUTE

Subsequent to the filing of the initial Application, ONEOK identified one location along the proposed route where an alternative alignment is necessary. This minor route alteration closely follows the original alignment as previously filed. ONEOK has commissioned and completed environmental field surveys for the re-route. The results of these field surveys are summarized within this document and detailed survey results are provided in Appendices D and E (Natural Resources Report and Cultural Resources Report Abstract). The full Cultural Resources Report Addendum and associated maps located in Volume 2 are privileged and not for internet publication. See Appendix B for maps depicting the locations of each route modification and below for a description.

Re-route #1 (MP 2.15 to 3.65):

The route modification was developed to address landowner concerns and secure the necessary easements for construction. Easements have been secured by ONEOK from the landowner(s) affected by this proposed re-route. ONEOK has commissioned and completed environmental field surveys along the entire length of this segment. Refer to Appendix B for a map depicting the location of the re-route, Appendix D for the natural resources survey report, and Volume 2 for the cultural resources survey report.

2.2 ROUTE ALTERNATIVES

Re-route #1 (MP 2.15 to 3.65):

ONEOK considered two alternatives; an eastern and western alignment. The alignment (eastern alignment) was chosen due to landowner considerations and facilitated the procurement of the related easements for the Project.

2.3 ENVIRONMENTAL SURVEY

Field surveys were conducted with a typical 250-foot corridor centered upon the proposed re-route pipeline alignments. Natural resource and cultural resource surveys were conducted on April 13 and May 18, 2015.

2.3.1 NOXIOUS WEEDS

Refer to the Application as filed; no changes have resulted from the route modifications.

2.3.2 TREE/SAPLING/SHRUB SURVEY

During field survey, crews performed a detailed tree/shrub inventory. This inventory recorded the pre-construction status of these resources, which would form the baseline for restoration and mitigation reconciliation. Based on this effort, eleven additional naturally occurring wooded areas were observed within the re-route survey area. Including the re-route, approximately 480 trees were identified within the Survey Corridor; 136 of these features were located within the surveyed 100-foot wide construction right-of-way (ROW). Refer to Appendix D for the Natural Resources Report and Section 5 of the Application filed on April 7, 2015 for planned mitigation measures.

2.3.3 WETLAND AND WATERBODIES SURVEY

The proposed re-routes and additional survey areas were inventoried for wetland and waterbody features. Field crews identified features, characterized the features as wetland or waterbody and recorded feature boundaries relative to the proposed centerline.

2.3.3.1 WETLAND SURVEY

Field surveys of the re-route identified four additional potentially jurisdictional wetland features within the 100-foot wide construction ROW. Refer to the Project maps in Appendix B for the location of each feature, and Appendix D for the Natural Resources Report.

2.3.3.2 WATERBODIES SURVEY

Refer to the Application as filed; no changes have resulted from the route modifications.

2.3.4 WILDLIFE INVENTORY

Refer to the Application as filed; no changes have resulted from the route modifications.

2.3.4.1 FEDERALLY PROTECTED SPECIES SURVEY

Refer to the Application as filed; no changes have resulted from the route modifications.

2.3.5 NORTH DAKOTA STATE HISTORIC PRESERVATION OFFICE

ONEOK commissioned a Class I cultural resources literature review of records from the SHPO to identify previously completed cultural resource investigations and recorded cultural resources within the Project re-route. The Class I literature review was completed on May 18, 2015, and the results of the investigation identified one previously recorded cultural site within the Survey Corridor of the proposed re-route. The cultural

resource (32MZX1487) is an isolated find that is unevaluated for inclusion into the National Register of Historic Places (NRHP) and will not be affected by the re-route.

The ensuing Class III Cultural Resource Inventory of the re-route was completed on May 18, 2015. During the inventory, no new cultural resources were recorded.

ONEOK will submit the Cultural Resources Report Addendum requesting the recommendation of *No Significant Sites Affected* for the Project (date pending). Refer to Appendix E for the Cultural Resources Survey Report Abstract. The full cultural resources report and associated maps located in Volume 2 are privileged and not for internet publication.

2.3.6 U.S. FISH AND WILDLIFE SERVICE MANAGED LANDS

Refer to the Application as filed; no changes have resulted from the route modifications.

SECTION 3: NEED FOR FACILITY

3.1 ANALYSIS OF NEED BASED ON PRESENT AND PROJECTED DEMAND, INCLUDING SYSTEM STUDIES

Refer to the Application as filed; no changes have resulted from the route modifications.

SECTION 4: SITING CRITERIA ANALYSIS

4.1 FACTORS TO BE CONSIDERED IN EVALUATING APPLICATIONS AND DESIGNATIONS OF SITES, CORRIDORS AND ROUTES (NDCC 49-22-09)

4.1.1 AVAILABLE RESEARCH AND INVESTIGATION RELATING TO THE EFFECTS OF THE LOCATION, CONSTRUCTION, AND OPERATION OF THE PROPOSED FACILITY ON PUBLIC HEALTH AND WELFARE, NATURAL RESOURCES AND THE ENVIRONMENT:

Refer to the Application as filed; no changes have resulted from the route modifications.

4.1.2 ADVERSE DIRECT AND INDIRECT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED SHOULD THE PROPOSED SITE OR ROUTE BE DESIGNATED:

Refer to the Application as filed; no changes have resulted from the route modifications.

4.1.3 ALTERNATIVES TO THE PROPOSED CORRIDOR OR ROUTE WHICH ARE DEVELOPED DURING THE HEARING PROCESS AND WHICH MINIMIZE ADVERSE EFFECTS:

Refer to the Application as filed; no changes have resulted from the route modifications.

4.1.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF NATURAL RESOURCES SHOULD THE PROPOSED CORRIDOR AND ROUTE BE DESIGNATED:

Refer to the Application as filed; no changes have resulted from the route modifications.

4.1.5 DIRECT AND INDIRECT ECONOMIC IMPACTS OF THE PROPOSED FACILITY:

Refer to the Application as filed; no changes have resulted from the route modifications.

4.1.6 EXISTING PLANS OF THE STATE, LOCAL GOVERNMENT, AND PRIVATE ENTITIES FOR OTHER DEVELOPMENTS AT OR IN THE VICINITY OF THE PROPOSED ROUTE:

Refer to the Application as filed; no changes have resulted from the route modifications.

4.1.7 THE EFFECT OF THE PROPOSED ROUTE ON EXISTING SCENIC AREAS, HISTORIC SITES AND STRUCTURES AND PALEONTOLOGICAL OR ARCHAEOLOGICAL SITES:

Refer to the Application as filed; no changes have resulted from the route modifications.

4.1.8 THE EFFECT OF THE PROPOSED ROUTE ON AREAS WHICH ARE UNIQUE BECAUSE OF BIOLOGICAL WEALTH OR BECAUSE THEY ARE HABITATS FOR RARE AND ENDANGERED SPECIES:

ONEOK commissioned a Class III cultural resource survey of the proposed re-route. No scenic areas, historic sites or structures or paleontological or archaeological sites were

identified. The full cultural resources report and associated maps located in Volume 2 are privileged and not for internet publication.

4.1.9 PROBLEMS RAISED BY FEDERAL AGENCIES, OTHER STATE AGENCIES AND LOCAL ENTITIES:

Refer to the Application as filed; no changes have resulted from the route modifications.

4.2 EXCLUSION AREAS (NDAC 69-06-08-02(1))

Refer to the Application as filed; no changes have resulted from the route modifications.

4.3 AVOIDANCE AREAS (NDAC 69-06-08-02(2))

Refer to the Application as filed; no changes have resulted from the route modifications.

4.4 SELECTION CRITERIA (NDAC 69-06-08-02.3)

Refer to the Application as filed; no changes have resulted from the route modifications.

4.4.1 AGRICULTURAL IMPACTS

Agricultural Production: The previously filed Application detailed the Project would affect approximately 48 acres of private land in North Dakota. The proposed route modification will increase the total affected acres to approximately 56 acres of private cultivated land. Refer to the Application as filed for details on restoration.

Family Farms and Ranches: The previously filed Application detailed the Project would affect approximately 48 acres of private land in North Dakota. The proposed route modification will increase the total affected acres to approximately 56 acres of private cultivated land. Refer to the Application as filed for details on restoration and pipeline markers on private land.

Lands Suitable for Irrigation: Refer to the Application as filed; no changes have resulted from the route modifications.

Surface Drainage: Refer to the Application as filed; no changes have resulted from the route modifications.

Ground Water: Refer to the Application as filed; no changes have resulted from the route modifications.

4.4.2 THE IMPACTS UPON OTHER RESOURCES

Refer to the Application as filed; no changes have resulted from the route modifications.

4.5 POLICY CRITERIA (NDAC 69-06-08-02(4))

Refer to the Application as filed; no changes have resulted from the route modifications.

SECTION 5: MITIGATIVE MEASURES

5.1 LOCATION

The proposed route modifications have been chosen to address landowner concerns and secure the necessary easements for construction. ONEOK has commissioned field surveys of the re-route to assess the environmental resources that may be impacted as well as to confirm the modified alignment conforms to the siting requirements established by the state of North Dakota.

Trees and shrubs: A tree and shrub inventory was completed of the route modification. Refer to the Application as filed; no changes have resulted from the route modification.

Wetlands and Waterbodies: Additional wetlands were identified during field surveys of the re-route. Refer to the maps in Appendix B for the location of these features.

Whooping crane: Refer to the Application as filed; no changes have resulted from the route modifications.

Least tern: Refer to the Application as filed; no changes have resulted from the route modifications.

Piping plover: Refer to the Application as filed; no changes have resulted from the route modifications.

Rufa red knot: Refer to the Application as filed; no changes have resulted from the route modifications.

Bald and Golden Eagle: Refer to the Application as filed; no changes have resulted from the route modifications.

Migratory Bird Treaty Act: Refer to the Application as filed; no changes have resulted from the route modifications.

Cultural Resources: The Addendum to the Cultural Resource Survey Report will be submitted to the SHPO requesting concurrence of *No Significant Sites Affected for the Project* (date pending). The full Cultural Resources Report Addendum and associated maps located in Volume 2 are privileged and not for internet publication.

5.2 CONSTRUCTION

Refer to the Application as filed; no changes have resulted from the route modifications.

5.3 OPERATION

Refer to the Application as filed; no changes have resulted from the route modifications.

SECTION 6: DESCRIPTION OF RIGHT-OF-WAY PREPARATION, CONSTRUCTION AND RECLAMATION PROCEDURES

6.1 PIPELINE CONSTRUCTION

Refer to the Application as filed; no changes have resulted from the route modifications.

SECTION 7: EASEMENT, ACQUISITION, LANDOWNER NOTIFICATION AND EASEMENT COMPENSATION PLAN

7.1 LANDOWNER INFORMATION REGARDING EASEMENT ACQUISITION, AND NECESSARY EASEMENT CONDITIONS AND RESTRICTIONS

Refer to the Application as filed; no changes have resulted from the route modifications.

7.2 COMPENSATION POLICY

Refer to the Application as filed; no changes have resulted from the route modifications.

SECTION 8: LIST OF PREPARERS

Todd Kelvington, CEP
Environmental Project Manager
ONEOK Partners, 100 West 5th Street, Tulsa, OK 74103

M.S. Environmental Policy and Management, American Military University; and B.S. Biology, Norwich University. Mr. Kelvington is an environmental specialist with 17 years of environmental planning experience in a wide range of development projects. He has both performed and managed the assessment, siting, permitting, and construction of a wide range of federal, state, and municipal infrastructure projects throughout the mid-west and east coast regions. He is a Certified Environmental Professional with the Academy of Board Certified Environmental Professionals. As Environmental Project Manager for ONEOK, Mr. Kelvington leads and directs the activities of ONEOK's third party consultants in the Rockies and Great Plains regions.

Matt Turpin
Project Supervisor
ONEOK Partners, 100 West 5th Street, Tulsa, OK 74103

B.S. Mechanical Engineering University of Oklahoma. Mr. Turpin has performed a wide range of gathering and processing projects for ONEOK Rockies Midstream in the Williston Basin. Most of Mr. Turpin's eight year career at ONEOK involved managing pipeline and facility projects. As Project Supervisor for ONEOK Mr. Turpin leads and directs project managers supporting high pressure steel pipeline construction and design projects for ONEOK, Inc.

Jim Kline, P.E.
Project Manager
7K Services PLLC, 20398 South 4092 Road, Claremore, OK 74019

B.S. Civil Engineering University of Oklahoma. Mr. Kline is a Project Manager with 35 years of managing pipeline projects and has been a project consultant to ONEOK for four years managing pipelines in the Williston Basin. Mr. Kline is a Licensed Professional Engineer in the State of Oklahoma.

Jacob Yokum
Field Engineer
ONEOK Partners, 100 West 5th Street, Tulsa, OK 74103

B.S. Mechanical Engineering – Texas Tech University. Mr. Yokum has one year of large projects and pipeline construction experience. Mr. Yokum has fulfilled the project engineer and project manager roles on gathering and processing and natural gas liquids pipeline and facility projects for ONEOK Partners Large Projects group. He also serves as project engineer for the proposed pipeline project.

William McCarthy, C.W.B.
Senior Environmental Compliance Analyst
E3 Environmental, LLC, 871 Jefferson Avenue, St. Paul, MN 55102

M.S. Wildlife Biology, University of Minnesota – Twin Cities; and B.S. Wildlife Biology, Michigan State University. Mr. McCarthy is an environmental compliance analyst with 15 years of environmental consulting experience working with various energy assets and regulatory agencies. As a compliance analyst, he has managed the environmental requirements for facility siting, pipeline routing, federal licensing and various federal, state and local permits. Mr. McCarthy is a certified wildlife biologist, and in this role conducts and coordinates field studies, agency consolations, mitigation and avoidance plans.

Melissa Schmit
Consultant
E3 Environmental, LLC, 871 Jefferson Avenue, St. Paul, MN 55102

B.A. in Environmental Studies and Geography, Gustavus Adolphus College; and J.D., Hamline University School of Law. Ms. Schmit has over six years of environmental consulting experience. Ms. Schmit has pursued a career focused on regulatory compliance and supports energy clients by providing regulatory review and permitting services. Ms. Schmit's experience includes authoring technical reports in compliance with NEPA requirements for a variety of infrastructure projects across the Midwest and coordination with federal, state, and local agencies.

Dan Woodward, RPA
Senior Archaeologist
E3 Environmental, LLC, 871 Jefferson Ave St Paul, MN 55102

M.A. Anthropology (archaeology focus), California State University - Fullerton; and B.A. History, University of Florida. Mr. Woodward is a secretary of the interior qualified archaeologist with 15 years of environmental consulting experience working with various energy assets and regulatory agencies. As a senior archaeologist, he has overseen all phases of archaeological fieldwork from class I record searches and class III intensive surveys to detailed excavations and archaeological damage assessments. He has authored dozens of cultural resource technical reports fulfilling NHPA and NEPA cultural resource requirements. Mr. Woodward has also coordinated with multiple Native American groups and has met with interested Tribal representatives in the field to address project concerns. Mr. Woodward has performed historic building analysis and authored built-environment technical reports. Mr. Woodward has also assisted with extensive paleontological fieldwork including paleontological surveys, monitoring, and salvage activities.

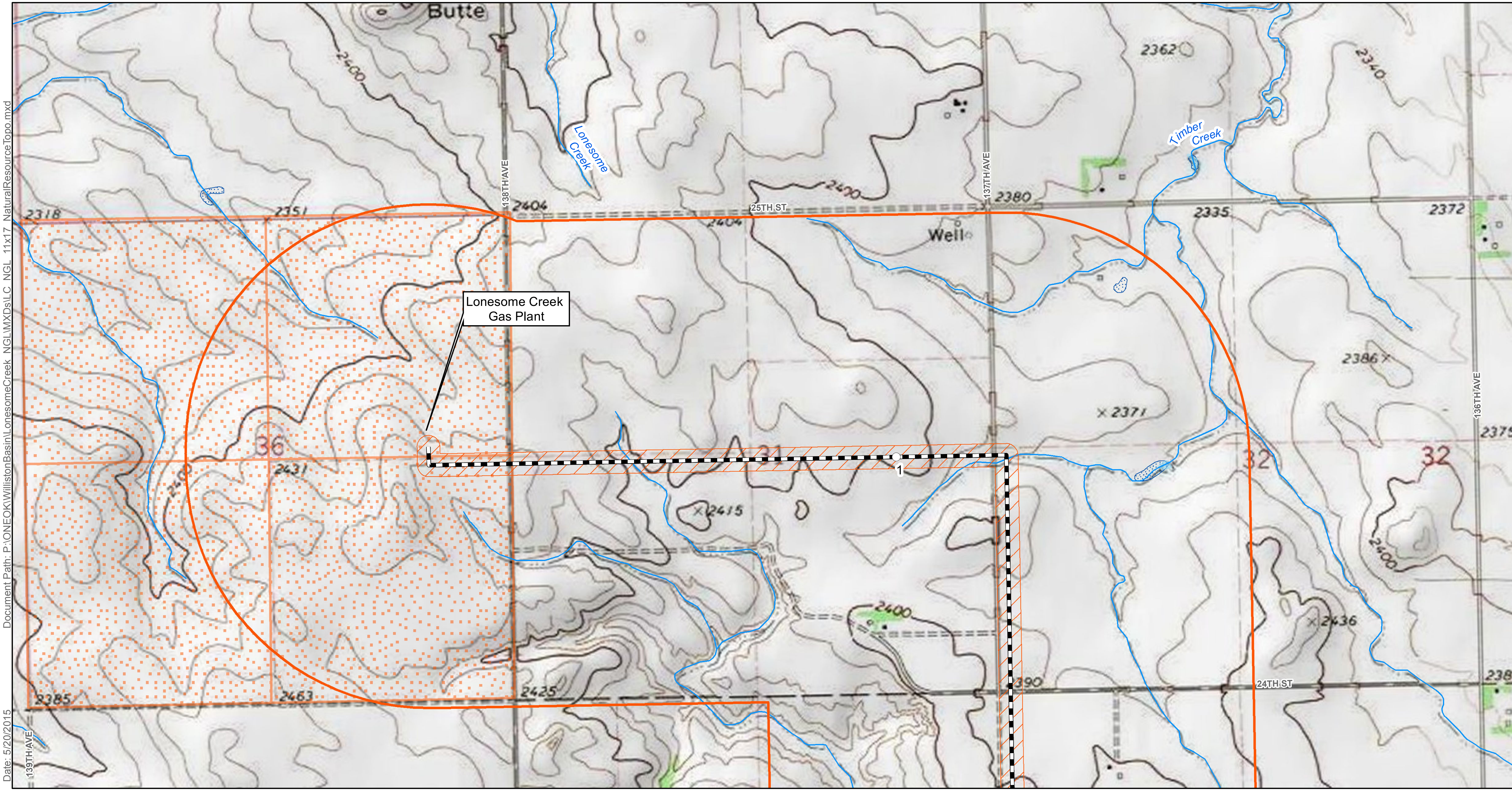
Appendix A

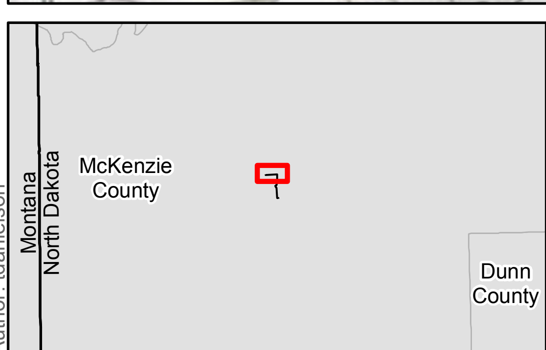
Engineering Documents

Refer to Consolidated Application filed with ND PSC on April 7, 2015

Appendix B

Project Maps





- Milepost
- Centerline
- Previous Alignment
- Survey Corridor
- Corridor (1 mile)
- NHD Waterways
- NHD Waterbody
- NWI Wetland

Criteria Data

- Federal Land
- State Land
- North Dakota Mineral Trust Lands
- NDGS Landslide Deposit

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N

0 500 1,000 2,000 Feet

1:12,000

Map not to scale, for environmental review purposes only.

ONEOK Bakken Pipeline, L.L.C.

Lonesome Creek NGL Pipeline Project

Siting Criteria

Natural Resource - Topo Map

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McKenzie County, North Dakota

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Date: 5/20/2015

Author: tdanielson

Landslide Deposit

Garden Creek NGL Pipeline

Timber Creek

Cherry Creek

23RD ST

21ST ST

22ND ST

137TH AVE

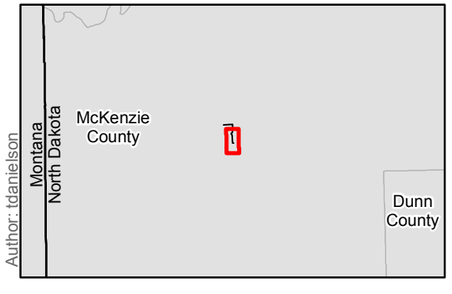
2

3

Milepost
Centerline
Previous Alignment
Survey Corridor
Corridor (1 mile)
NHD Waterways
NHD Waterbody
NWI Wetland

Criteria Data

Federal Land
State Land
North Dakota Mineral Trust Lands
NDGS Landslide Deposit



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0 500 1,000 2,000 Feet

1:12,000

Map not to scale, for environmental review purposes only.

ONEOK Bakken Pipeline, L.L.C.

Lonesome Creek NGL Pipeline Project
Siting Criteria
Natural Resource - Topo Map
Page 2 of 2
McKenzie County, North Dakota

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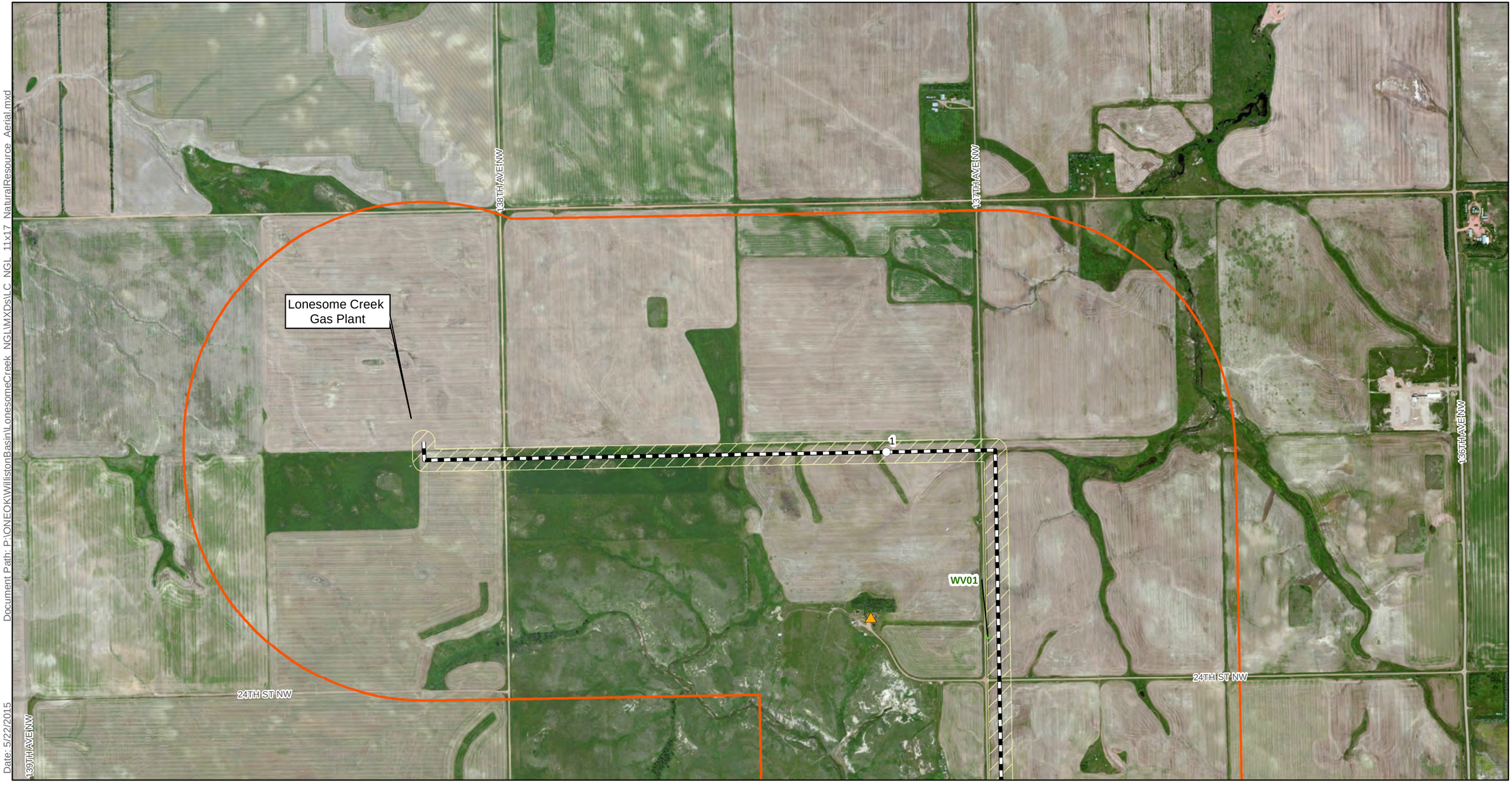

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Date: 5/22/2015

Author: tdanielson

Centerline
Milepost
Previous Alignment
Survey Corridor
Corridor (1 mile)

Criteria Data

Occupied Structure
Occupied Structure w/in 500ft of Alignment

Survey Data

Wetland
Wood Vegetation

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N

0 500 1,000 2,000 Feet

1:12,000

Map not to scale, for environmental review purposes only.

ONEOK Bakken Pipeline, L.L.C.

Lonesome Creek NGL Pipeline Project

Siting Criteria

Natural Resource - Aerial Map

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McKenzie County, North Dakota

Garden Creek NGL Pipeline

See Inset for Detail

23RD ST NW

21ST ST NW

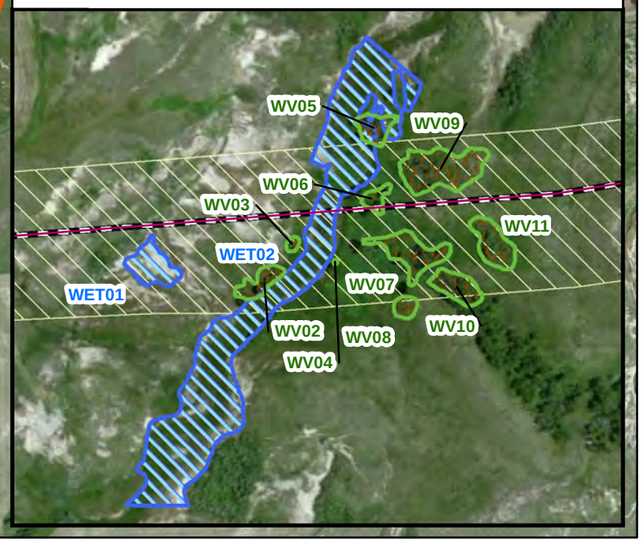
137TH AVE NW

22ND ST NW

WET04 WV12 WV05 WV04 WV06 WV11 WV03 WV02 WET01 WET02 WV07 WV09 WV08 WV10 WET03

2 3

Wetland Detail Map



Author: tdanielson
Date: 5/22/2015
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Centerline
Milepost
Previous Alignment
Survey Corridor
Corridor (1 mile)

Criteria Data
Occupied Structure
Occupied Structure w/in 500ft of Alignment

Survey Data
Wetland
Wood Vegetation

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0 500 1,000 2,000 Feet

1:12,000

Map not to scale, for environmental review purposes only.

ONEOK Bakken Pipeline, L.L.C.

Lonesome Creek NGL Pipeline Project
Siting Criteria
Natural Resource - Aerial Map
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McKenzie County, North Dakota

Appendix C

Agency Notifications

State Historic Preservation Office (SHPO) Transmittal and Concurrence Letters Pending

Appendix D

Natural Resources Report

SWCA®
ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.

May 21, 2015

Mr. William McCarthy
E3 Environmental, LLC
871 Jefferson Avenue
St. Paul, Minnesota 55102

RE: Lonesome Creek NGL – Dwyer Reroute

Dear Mr. McCarthy,

This letter presents the results of the natural resources field surveys conducted by SWCA Environmental Consultants (SWCA) for the Dwyer reroutes of the Cherry Creek to Lonesome Creek Pipeline. E3 Environmental, LLC (E3) on behalf of ONEOK, Inc. contacted SWCA and requested professional natural and cultural resource services be conducted in order to identify exclusion and avoidance areas as specified in North Dakota Administrative Code 69-06-08-02. SWCA surveyed approximately 48.83 additional acres to accommodate for the Dwyer reroutes.

SWCA conducted natural resources field surveys of the Dwyer reroutes on April 13 and May 18, 2015, to determine the potential presence and extent of wetlands and waterbodies. This includes jurisdictional waters of the U.S., commonly referred to as wetland and ordinary high water mark (OHWM) determinations. Concurrently with the wetland determination, SWCA conducted a cursory threatened and endangered species survey and habitat assessment; a tree, sapling, and shrub enumeration survey; and a noxious weed survey. The attached site layout map illustrates the survey area and natural resource features identified during the field surveys.

This letter is written in support of the natural resources and wetland determination report submitted by SWCA for the Lonesome Creek NGL Pipeline project in McKenzie County, North Dakota (Bivens 2015[1]) and presents the results of the aforementioned surveys. Survey methodologies followed those described in Bivens (2015) and included wetland and waterbody determinations; tree, sapling, and shrub counts; and wildlife surveys including threatened and endangered species.

Wetlands and Waterbodies

SWCA recorded an additional 4 PEM wetlands totaling approximately 1.37 acres within the new survey area. Approximately 0.43 acres of PEM wetlands would be temporarily impacted in

[1] Bivens, Jason. 2015. Natural Resources and Wetland Determination Report for the Lonesome Creek NGL Pipeline, McKenzie County, North Dakota. Prepared by SWCA Environmental Consultants for Plains All American Pipeline, L.P.

the proposed 100-foot-wide construction ROW (Table 1). The wetlands are all more than 75 river miles from the nearest navigable water body, and numerous stock dams located near the project area. However, all four wetlands are potentially jurisdictional due to their eventual connectivity with waters of the U.S. The USACE has the final authority to determine jurisdictional status.

Table 1. PEM Wetland Acreage within the Survey Area

Feature ID	Wetland Type	USACE Jurisdiction*	Total PEM Size (acres)	Temporarily Impacted Area within 100-foot-wide ROW (acres)	Length of Required Crossing (feet)
WET01	Seasonal	Likely jurisdictional	0.08	0.05	70
WET02	Semipermanent	Likely jurisdictional	0.34	0.10	53
WET03	Semipermanent	Likely jurisdictional	0.18	0.00	0
WET04	Semipermanent	Likely jurisdictional	0.76	0.27	156
Total			**1.37**	**0.43**	**279**

* The USACE has the final authority on the jurisdictional status of a water body.
PEM = palustrine emergent, ROW = right-of-way, USACE = U.S. Army Corps of Engineers

Soils

Based on Natural Resources Conservation Service (NRCS) mapping (NRCS 2014) 9 soil types are present in the reroute construction corridor. The project area analyzed for soils covers the 100-foot-wide construction corridor. Table 2 lists all soil units within the reroute area. The most prevalent soil series are described in Bivens (2015).

Table 2. NRCS Derived Soil Series Present within the 100-foot-wide ROW

Soil Types	Slopes (%)	Acres within 100-foot-wide ROW	Percent within Map Unit
Cabba-Chama-Sen silt loams	9 to 15	4.29	24.70
Cabba-Badland complex	6 to 70	4.06	23.36
Daglum-Belfield complex	0 to 6	2.15	12.37
Moreau-Wayden silty clays	6 to 9	1.81	10.41
Chama-Cabba-Sen silt loams	6 to 9	1.77	10.19
Rhoades-Daglum complex	0 to 6	1.67	9.60
Reeder-Werner loams	6 to 9	0.68	3.94
Chama-Sen-Cabba silt loams	3 to 6	0.54	3.11
Cabba-Chama-Havrelon	2 to 70	0.40	2.31
Total		**17.36**	**100.00**

Source: Natural Resources Conservation Service (2014).
ROW = right-of-way

Wildlife Observations

SWCA conducted a cursory threatened and endangered species habitat assessment concurrently with the wetland determination. Ecologists did not observe any primary (i.e., actual sighting) or secondary (i.e., tracks, scat, fur) indication of the presence of threatened or endangered species. The additional survey area does contain suitable foraging and stopover habitat for the whooping crane (*Grus americana*). Affects determinations do not differ from those proposed in the original report (Bivens 2015).

Vegetation

Eleven additional upland tree and shrubland areas were geographically referenced within the reroute survey area. All trees and shrubs with a DBH of greater than 1 inch were recorded (Table 3). The North Dakota Public Service Commission requires 2:1 post-to pre-construction mitigation for all trees, saplings, and shrubs impacted during the construction of the proposed pipeline. Therefore, SWCA estimates that approximately 269 2-year-old sapling individuals would need to be replanted in order to fulfill the 2:1 mitigation requirement.

Table 3. Tree, Sapling, and Shrub Count

Woody Vegetation (WV) ID	Species	Type	Number of Trees		Estimated Mitigation Commitment
			Survey Corridor	100-foot-wide Construction ROW*	
WV02	Green ash (*Fraxinus pennsylvanica*) Common Buckthorn (*Rhamnus cathartica*) Chokecherry (*Prunus virginiana*)	Natural	9 15 3	0 0 0	0 0 0
WV03	Green ash Buckthorn	Natural	1 10	1 10	2 20
WV04	Green ash	Natural	1	0	0
WV05	Green ash Peachtree willow (*Salix amygdaloides*)	Natural	19 1	0 0	0 0
WV06	Siberian Elm *(Ulmus pumila)*	Natural	5	5	10
WV07	Green ash Buckthorn Chokecherry	Natural	9 15 3	2 13 0	4 26 0
WV08	Chokecherry	Natural	1	0	0
WV09	Green ash Silver-buffalo berry *(Shepherdia argentea)* Buckthorn Chokecherry	Natural	23 37 - 3	2 2 - 1	4 4 - 2
WV10	Green ash American elm (*Ulmus Americana*)	Natural	23 14	0 0	0 0
WV11	Green ash Rocky Mountain Juniper (*Juniperus scopulorum*) Silver-buffalo berry Chokecherry	Natural	7 1 11 3	4 1 6 3	8 2 12 3
WV12	Green ash Silver-buffalo berry Chokecherry	Natural	11 192 63	4 62 20	8 124 40
Total			**480**	**136**	**269**

* Estimated value based on the observed density of trees.
ROW = right-of-way

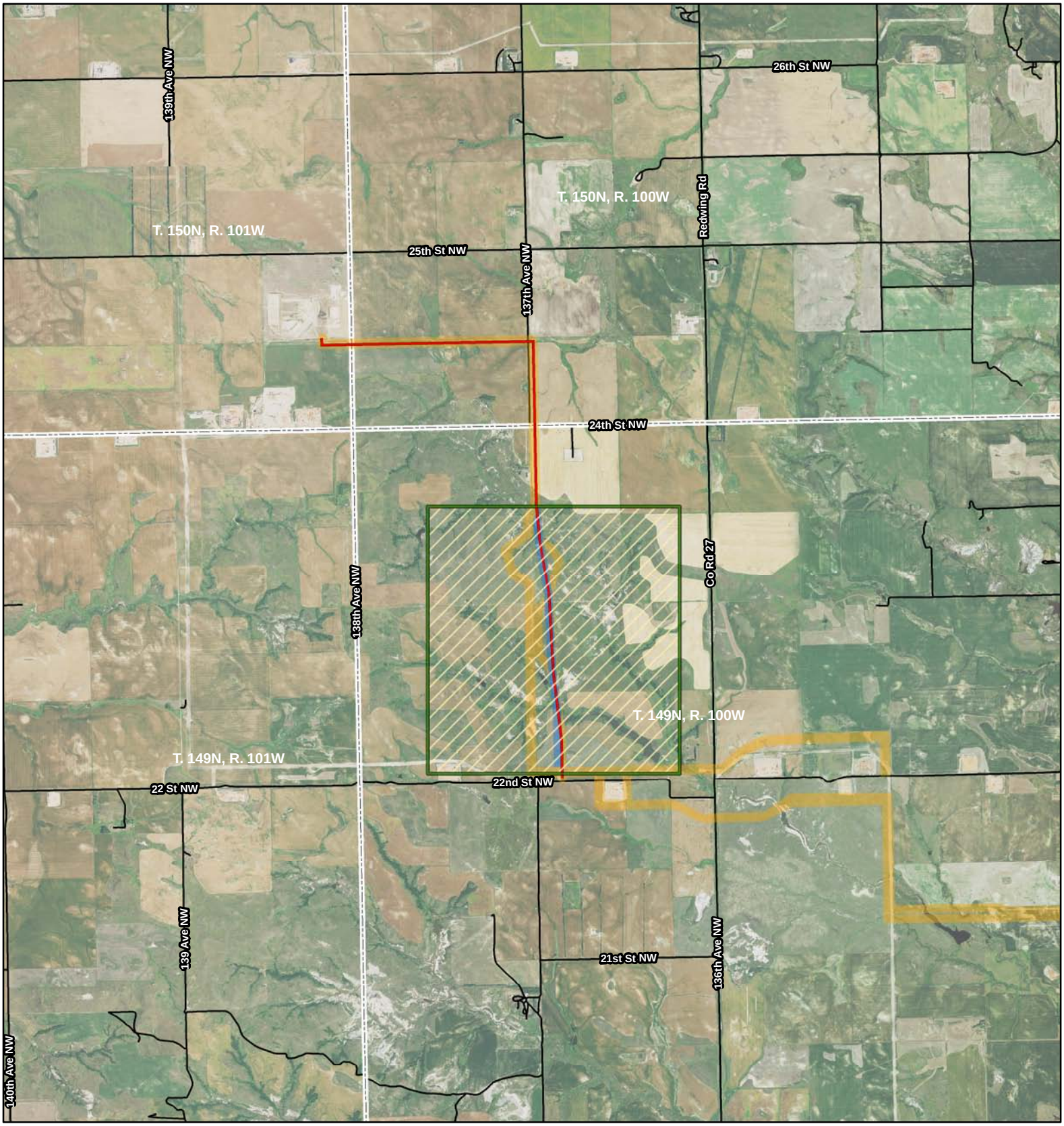
Summary

SWCA inventoried an additional 48.83 acres on April 13 and May 18, 2015, for the Lonesome Creek NGL Dwyer reroutes. SWCA recorded an additional four PEM wetlands and eleven wood vegetation features. As a result of the reroute, approximately 0.43 acres of wetlands would fall within the proposed construction corridor and approximately 136 trees/shrubs may be removed during construction. In addition, SWCA did not observe any threatened or endangered species during reroute surveys. SWCA does not anticipate any additional impact to aforementioned natural resources.

If you have any questions or require further analysis, please contact me at (701) 258-6622, or via email at jbivens@swca.com.

Sincerely,

Jason Bivens
Environmental Specialist/Project Manager



Lonesome Creek NGL (Dwyer Reroute)

- Proposed Pipeline
- Existing Road
- Survey Area
- Previously Inventoried Area
- Township/Range Boundary

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Kilometers
0 1 2

Miles
0 1 2

Base Map: 2014 Aerial Imagery
Source: USDA/FSA - Aerial Photography Field Office
Quadrangle: Rawson (1972), Bear Butte (1995)
Township/Range: T. 149N, R. 100W
McKenzie County, North Dakota

Projection: NAD 1983 UTM Zone 13N

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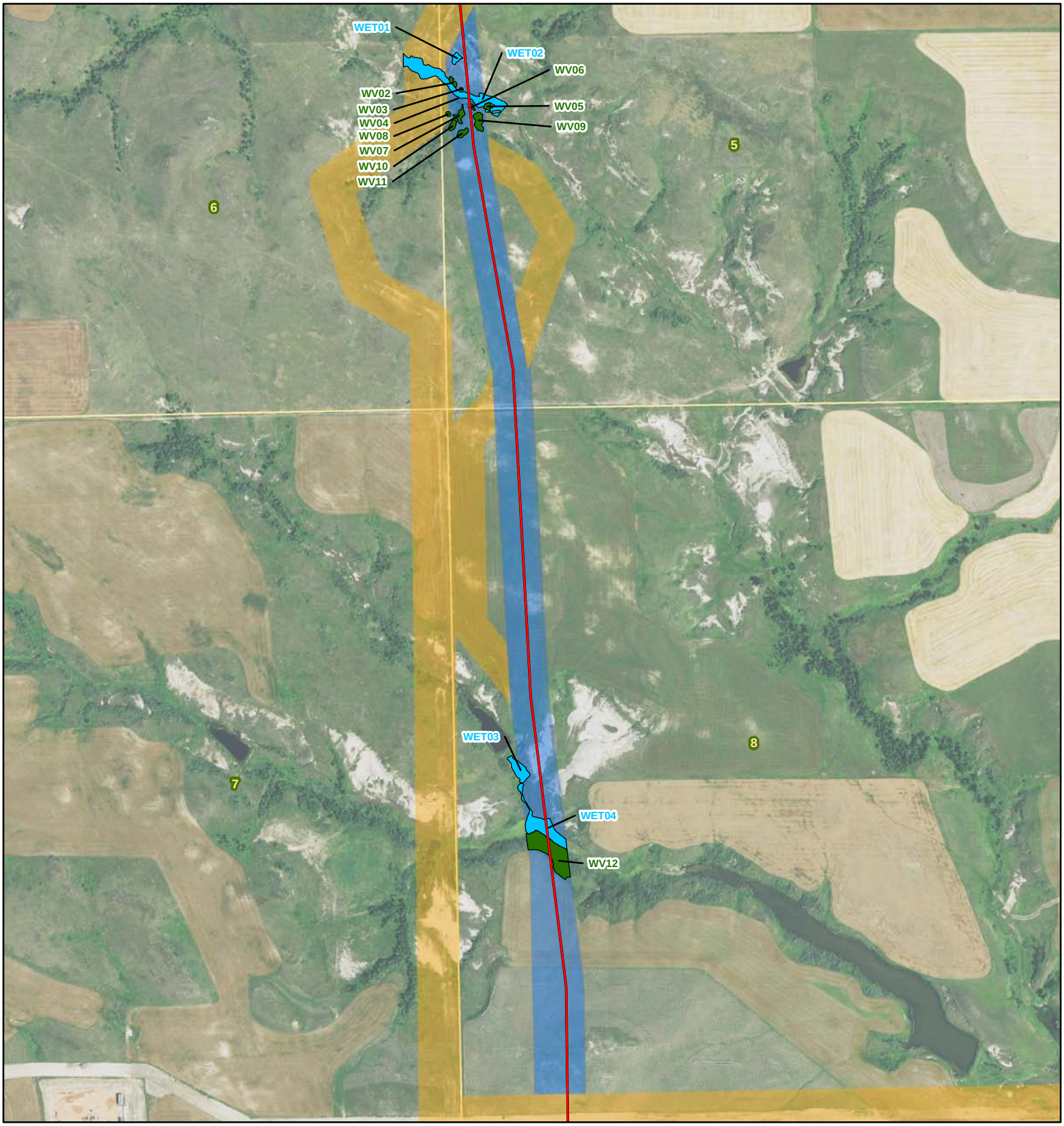

Lonesome Creek NGL (Dwyer Reroute)

- Proposed Pipeline
- Wetland
- Woody Vegetation
- Section Boundary
- Survey Area
- Previously Inventoried Area

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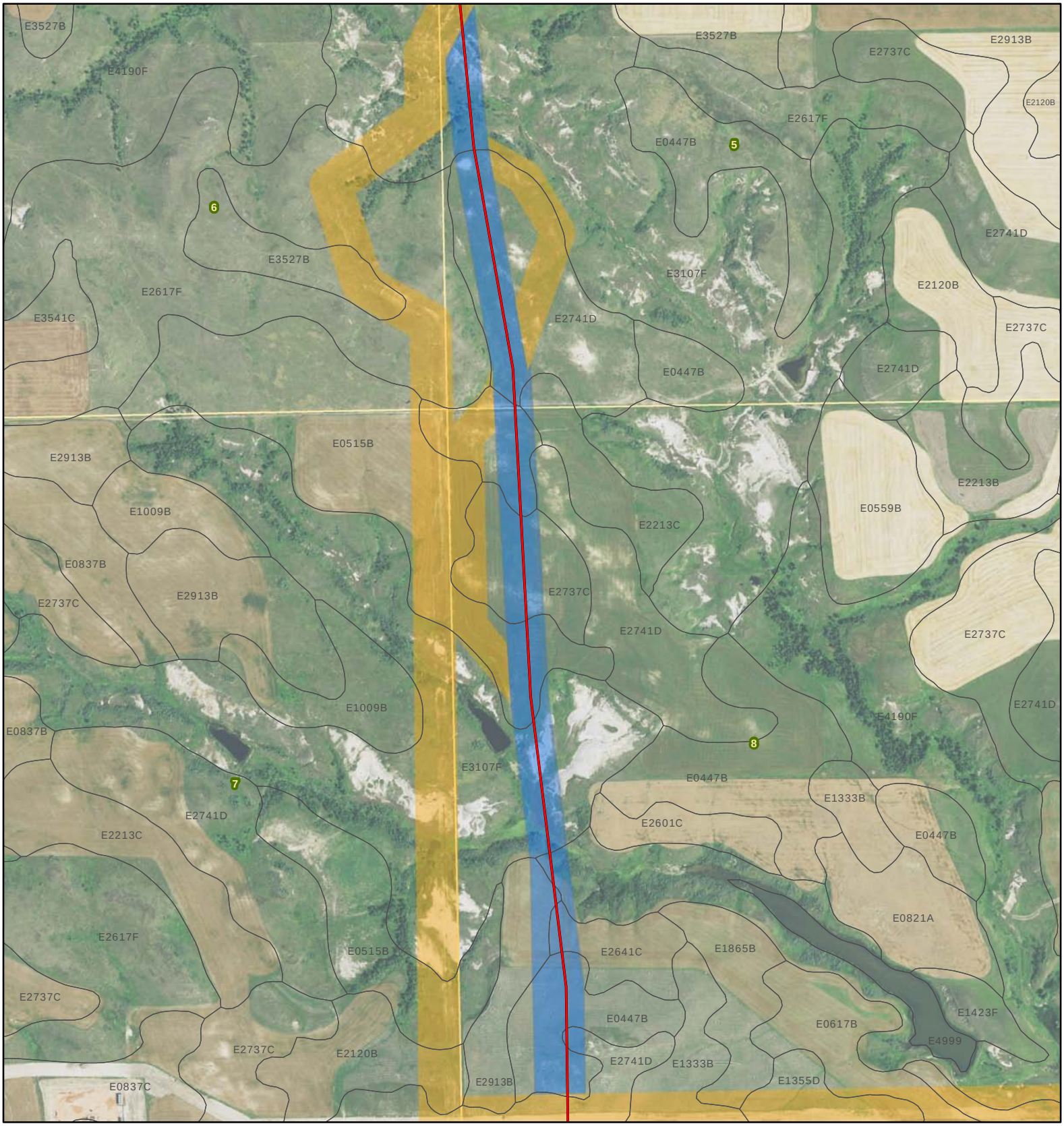

Lonesome Creek NGL (Dwyer Reroute)

- Proposed Pipeline
- Soil Unit Boundary
- Section Boundary
- Survey Area
- Previously Inventoried Area

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Appendix E

Cultural Resources Survey Report Abstract

SWCA
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Addendum to A Class I and Class III Cultural Resource Inventory of the Lonesome Creek NGL Pipeline, McKenzie County, North Dakota, to Allow for a Pipeline Alignment Reroute

By Jolene Schleicher, SWCA Environmental Consultants
Submitted to the State Historical Society of North Dakota
Report Date: May 21, 2015

On May 18, 2015, SWCA Environmental Consultants (SWCA) conducted a Class III cultural resource inventory on behalf of E3 Environmental, LLC (E3) of a proposed reroute to the ONEOK Rockies Midstream Lonesome Creek NGL pipeline project in McKenzie County, North Dakota. The survey is located in the SW¼ SW¼ of Section 5, E½ W½ NW¼ and E½ W½ SW¼ of Section 8, and NE¼ NW¼ NW¼ of Section 17, Township 149 North, Range 100 West, and covers additional survey necessary to allow for a reroute to the original pipeline. The initial survey for the Lonesome Creek NGL is detailed in Schleicher (2015), and a portion of the rerouted pipeline was surveyed at a later date and detailed in Riordan and Schleicher (2015). The additional survey was completed to ensure that all pipeline disturbance is contained within inventoried areas (Figures 1a and 1b). All project disturbances will be located fully within areas surveyed during the current and previous inventories (Schleicher 2015; Riordan and Schleicher 2015).

Refer to Schleicher (2015) for details on the overall proposed project undertaking, as well as the Class I file search and results of the previous Class III inventory, during which no cultural resources were identified. Riordan and Schleicher (2015) detail the results of an additional Class I file search and Class III inventory covering a portion of the newly proposed alignment, during which one isolated find (32MZX1487), a Knife River flint tested cobble and Knife River flint flake, was recorded. The isolated find is recommended not eligible for inclusion in the National Register of Historic Places, and will not be affected by the reroute. An updated Class I search was conducted on May 18, 2015, and no additional cultural resource inventories have been conducted within the 1-mile study area (0.5 mile surrounding the proposed pipeline reroute). Aside from 32MZX1487, no additional cultural resources have been recorded within the 1-mile study area.

Under the direction of William Harding, Principal Investigator, Aidan McCarty, SWCA archaeologist, conducted the Class III inventory of the proposed pipeline reroutes. The survey area included two irregularly shaped survey parcels. One was approximately 0.97 mile long and ranged in width from 25 to 125 feet, totaling 5.47 acres. The second parcel was a 250-foot-wide survey corridor centered on approximately 77.70 feet of pipeline, totaling 0.83 acre. In total, 6.29 acres of inventory were surveyed for the current project. Inventory was conducted by means of pedestrian transects spaced at no more than 15 meters. The majority of

the survey area is located in rolling mixed grass prairie, with portions of the northern parcel occurring in cut agricultural fields. Vegetation in the project area consisted of smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), crested wheatgrass (*Agropyron cristatum*), western snowberry (*Symphoricarpos occidentalis*), and silver buffaloberry (*Shepherdia argentea*) in the draws, allowing for 30 to 50 percent bare ground surface visibility (Figures 2 and 3). In areas of disturbance and the cut agricultural fields, bare ground visibility approached 100 percent. Surface sediments in the project area consist of dark brown silty loams formed through residual and colluvial processes. Previous disturbances to the project area include nearby oil and gas development, including an existing pipeline and compressor station, agricultural activity, and livestock grazing. No subsurface testing was conducted.

No cultural resources were observed during the course of the inventory. It is recommended that the project be granted a determination of *No Historic Properties Affected* and clearance to proceed as planned.

Appendix F

10-Year Plan

Refer to Consolidated Application filed with ND PSC on April 7, 2015

Appendix G

Landowner Waivers

Refer to Consolidated Application filed with ND PSC on April 7, 2015