North Dakota Public Service Commission

Consolidated Application for
Certificate of Corridor Compatibility and Route Permit
Keene Oil Gathering System Conversion Project
January 2018

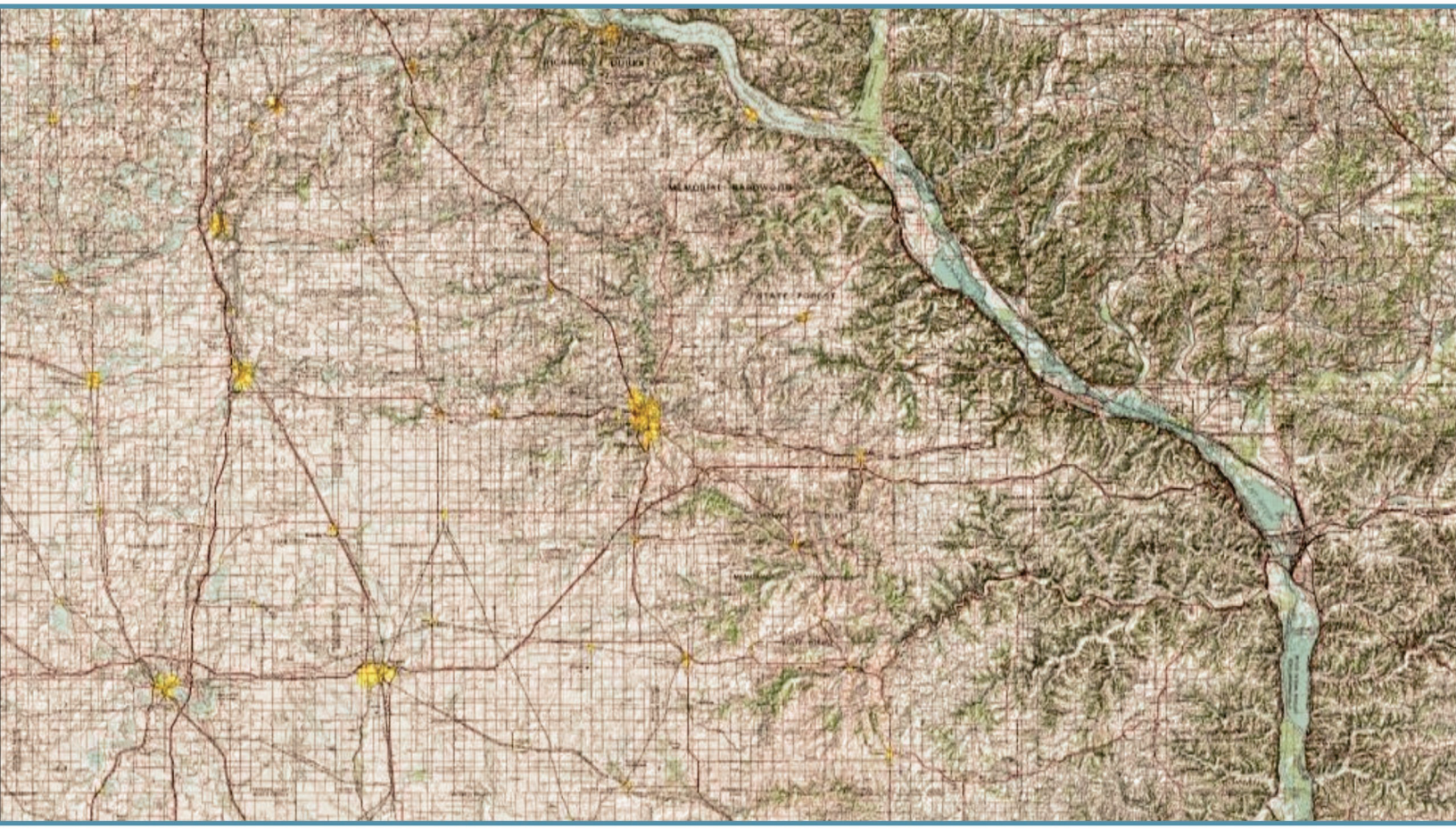

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TABLE OF CONTENTS

Introduction 1
Section 1: Transmission Facility Description 2
1.1 Type of Transmission Facility 2
1.2 Purpose and Need for Project 2
1.2.1 Location of Facility 2
1.3 Technology to be Deployed 2
1.4 Type, Source and Final Destination of Product 3
1.5 Width of Right-of-Way 3
1.6 Length of Facility 3
1.7 Pipe Specifications 3
1.8 Designed Operating Specifications 3
1.9 Aboveground Facilities 3
1.10 Project Schedule 4
1.10.1 Certificate of Corridor Compatibility 4
1.10.2 Route Permit 5
1.10.3 Completing Right-of-Way Acquisition 5
1.10.4 Construction Commencement 5
1.10.5 Additional Project Permits or Authorizations 5
Section 2: Corridor, Survey Corridor and Route 6
2.1 Corridor 6
2.2 Survey Corridor 6
2.3 Route 6
Section 3: Environmental Studies 7
3.1 Agency Consultations 7
3.1.1 U.S. Fish and Wildlife Service 7
3.1.2 North Dakota Game and Fish Department 9
3.1.3 North Dakota Department of Trust Lands 9
3.1.4 North Dakota parks and Recreation Department 9
3.1.5 North Dakota State Historic Preservation Office 10
3.1.6 North Dakota Department of Health 10

3.1.7 North Dakota State Water Commission....10
3.1.8 Western Area Water Supply Authority....11
3.1.9 McKenzie County Water Resource District....11
3.1.10 McKenzie County Weed Control board....11
3.2 Wildlife Inventory....11
3.2.1 Corridor....11
3.2.2 Survey Corridor....14
3.3 Wetland/Waterbodies....15
3.3.1 Corridor....15
3.3.2 Survey Corridor....16
3.4 Trees and Shrubs....16
3.4.1 Corridor....16
3.4.2 Survey Corridor....16
3.5 Noxious Weeds....16
3.5.1 Corridor....16
3.5.2 Survey Corridor....16
3.6 Cultural Resources....17
3.6.1 Corridor....17
3.6.2 Survey Corridor....17
Section 4: Siting Criteria Analysis....20
4.1 Policies and Commitments to Limit Environmental Impact....20
4.2 Factors Addressed in North Dakota Century Code Section 49-22.1-09....20
4.2.1 Feasible Alternatives to the Proposed Corridor or Route....20
4.2.2 Effects of the Location, Construction and Operation of Transmission Facility on Public Health and Welfare, Natural Resources and the Environment....21
4.2.3 Effect of New Transmission Technologies and Systems Designed to Minimize Adverse Environmental Effects....21
4.2.4 Adverse Direct and Indirect Environmental Effects that Cannot Be Avoided....22
4.2.5 Irreversible and Irretrievable Commitments of Natural Resources should the Proposed Corridor be Designated....22
4.2.6 Direct and Indirect Economic Impacts....22

4.2.7 Existing Plans of the State, Local Government and Private Entities for Other Developments at or in the Vicinity of the Proposed Corridor or Route 22
4.2.8 Effect of Route on Existing Scenic Areas, Historic Sites and Structures, and Paleontological or Archaeological Sites 22
4.2.9 Effect of the Proposed Route on Areas that are Unique Due to Biological Wealth or Because the Route is Habitat for Rare or Endangered Species 22
4.2.10 Problems Raised by Federal, State or Local Agencies or Entities 23
4.3 Exclusion Areas (NDAC 69-06-08-02.1) 23
4.3.1 Federal Exclusion Areas 24
4.3.2 State Exclusion Areas 24
4.3.3 County Exclusion Areas 24
4.3.4 Other Exclusion Areas 24
4.4 Avoidance Areas (NDAC 69-06-08-02.2) 25
4.4.1 Federal Avoidance Areas 26
4.4.2 State Avoidance Areas 26
4.4.3 Other Avoidance Areas 26
4.5 Selection Criteria (NDAC 69-06-08-02.3) 28
4.5.1 Agricultural Impact 28
4.5.2 The Impacts Upon Other Resources 28
4.6 Policy Criteria (NDAC 69-06-08-02.4) 29
4.6.1 Location and Design 30
4.6.2 Training and Utilization of Available Labor in this State for the General and Specialized Skills Required 30
4.6.3 Economies of Construction and Operation 30
4.6.4 Use of Citizen Coordinating Committees 30
4.6.5 Commitment of a Portion of the Transmitted Product for Use in this State 30
4.6.6 Labor Relations 31
4.6.7 The Coordination of Facilities 31
4.6.8 Monitoring of Impacts 31
4.6.9 Utilization of Existing and Proposed Rights-of-Way and Corridors 31

4.6.10 Other Existing or Proposed Transmission Facilities 31
Section 5: Mitigative Measures.....32
5.1 Location.....32
5.2 Construction.....32
5.3 Operation 32
Section 6: Description of Right-of-Way Preparation, Construction and Reclamation Procedures 33
Section 7: Easement Acquisition, Landowner Notification and Easement Compensation Plan 34
Section 8: List of Preparers 35

APPENDICES

Appendix A: Engineering Documents

Appendix B: Project Maps

Appendix C: Agency Consultations

Appendix D: Natural Resource Report

Appendix E: Cultural Resource Report

Appendix F: 10-Year Plan

Appendix G: Landowner Waivers

INTRODUCTION

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics LLC, referred to jointly as Hess, are planning the Keene Oil Gathering System Conversion Project (Project). The Project will result in the conversion of 19 miles of existing crude oil gathering pipeline and its associated facilities. The Project will be entirely located within McKenzie County, North Dakota. The mainline would originate at Hess' existing Hawkeye Oil Facility (HOF) and extend in a southerly direction with connections to the existing Crestwood Arrow (Arrow) Facility and Dakota Access Pipeline (DAPL) Terminal. Refer to the maps in Appendix B for an overview of the Project.

Hess submits to the North Dakota Public Service Commission (PSC) a single consolidated application for a Certificate of Corridor Compatibility and Route Permit for the Project.

The application provides the requisite information as stipulated by:

- North Dakota Century Code, Energy Conversion and Transmission Facility Siting Act, Chapter 49-22.1; and,
- North Dakota Administrative Code, Chapter 69-06-05, Transmission Facility Permit.

SECTION 1: TRANSMISSION FACILITY DESCRIPTION

1.1 TYPE OF TRANSMISSION FACILITY

The proposed Project would result in the conversion of an existing crude oil gathering system to a transmission pipeline system. The steel pipeline would meet U.S. Department of Transportation (DOT) regulations.

1.2 PURPOSE AND NEED FOR PROJECT

The Keene Oil Gathering System will transport crude oil from the HOF where tanks store crude oil from field production to the DAPL Terminal. The Project will also transport crude oil from the Arrow Facility.

The original Keene gathering line was constructed to move crude oil from Hess production sites to the HOF where the oil would be stored and further transported via pipeline to the Hess Mid-stream production facilities including the Ramberg Truck Facility and the Tioga Rail Terminal. The transport of crude oil from the HOF to these facilities would require that the crude oil be transported via pipeline under Lake Sakakawea. Due to unforeseen difficulties in obtaining the necessary permanent permits for the existing pipelines under Lake Sakakawea, Hess now proposes to have the optionality to move the crude oil from the HOF south to the DAPL Terminal via the proposed Project.

Currently the gathering system includes the Keene Oil Gathering pipelines and the pipeline system connecting the Arrow Facility and the DAPL Terminal. These pipelines have been installed and commissioned. The Keene Oil Gathering pipeline also have additional gathering pipeline laterals that feed into the system. The addition of booster pumps along this system and the inclusion of crude oil from the tanks at the HOF and Arrow Facility, by definition, converts this gathering system to a transmission facility as defined by the PSC.

1.2.1 LOCATION OF FACILITY

The Project would be located in McKenzie County, North Dakota. Crude oil would be transported from Hess' existing HOF southward to the existing DAPL Terminal where crude oil would enter into the DAPL Terminal. Along the route, the pipeline would accept crude oil from the Arrow Facility as well as from other gathering pipelines. Project maps are provided in Appendix B.

1.3 TECHNOLOGY TO BE DEPLOYED

The proposed Project is a conversion project; as such, there will be minimal construction and associated ground-disturbance activities. Booster pumps will be added to the existing pipeline system at three different locations. Aboveground facilities associated with the Project are detailed in Section 1.9 below and their locations are depicted on the maps in Appendix B.

1.4 TYPE, SOURCE AND FINAL DESTINATION OF PRODUCT

The Project would transport gathered and stored crude oil from the HOF southward to the DAPL Terminal. The Project would connect to the Arrow Facility allowing the transmission line to accept crude oil from Arrow gathering and storage facilities and transport it to the DAPL Terminal where it would enter the DAPL Terminal. The DAPL terminates in Patoka, Illinois.

1.5 WIDTH OF RIGHT-OF-WAY

Hess maintains permanent easements along the existing gathering pipeline that vary from 25- 50 feet in width.

A typical construction right-of-way (ROW) of 100-feet was utilized during gathering line construction.

1.6 LENGTH OF FACILITY

The proposed Project is approximately 19 miles in length.

1.7 PIPE SPECIFICATIONS

The Project pipeline specifications are as follows:

- Header Pipeline (extends between the Arrow Facility and DAPL Terminal)
  - 16-inch outside diameter steel pipe
  - 0.250-inch wall thickness (mainline pipe)
  - 0.500-inch wall thickness (bore pipe)
- Oil Gathering Pipeline (extends between the HOF and the Arrow Facility)
  - 10-inch outside diameter steel pipe
  - 0.365-inch wall thickness

1.8 DESIGNED OPERATING SPECIFICATIONS

- Normal Operating Pressure: 270 pounds per square inch gauge (psig)
- Maximum Operating Pressure: 1,480 psig
- Normal Throughput: approximately 100,000 barrels per day (bpd)
- Maximum Throughput: approximately 160,000 bpd
- Maximum Operating Temperature: 100 degrees Fahrenheit

1.9 ABOVEGROUND FACILITIES

The Project would utilize both existing and new aboveground facilities. The table below outlines the type, location and indicates the new or existing status of each of these facilities. Refer to Appendix A for typical engineering schematics of these facilities and Appendix B for maps providing the location of the aboveground facilities.

Type	Approximate Location	New or Existing	Other Comment
HOF Riser	MP 0.0	Existing	Located within facility boundary.
HOF Receiver	MP 0.0	Existing	Located within facility boundary.
HOF Booster Pumps	MP 0.0	New (2019)	To be added to the system in 2019 if capacity is needed.
Hawkeye Madison Central Facility Riser	MP 0.7	Existing	Located at existing facility.
HA Mogan/Dahl 152-95-0805/0706 H3 Riser	MP 1.1	Existing	Existing valve set.
Midway Launcher	MP 7.2	Existing	Existing pig launcher.
Midway Receiver	MP 7.2	Existing	Existing pig receiver.
Midway Booster Pumps	MP 7.2	New (2018)	To be constructed in 2018.
BB Ole Anderson/BB Eide Valve Set Riser	MP 11.8	Existing	Existing valve set.
BB Olson Receiver	MP 13.2	Existing	Existing pig receiver.
BB Olson Launcher	MP 13.2	Existing	Existing pig launcher.
BB Olson Booster Pump	MP 13.2	New (2018)	Valve set to be located near existing pad.
Levang Valve Set Receiver	MP 15.2	Existing	Comingle point between Hess and Arrow.
Arrow Facility Launcher	Arrow Facility	Existing	Located at Arrow Facility.
DAPL Terminal Receiver	MP 18.1	Existing	Located at DAPL Terminal.

1.10 PROJECT SCHEDULE

1.10.1 CERTIFICATE OF CORRIDOR COMPATIBILITY

Hess seeks a Certificate of Corridor Compatibility by or before April 2018.

1.10.2 ROUTE PERMIT

Hess seeks a Route Permit by or before April 2018.

1.10.3 COMPLETING RIGHT-OF-WAY ACQUISITION

The Project would result in the conversion of an existing crude oil gathering system to a transmission facility, as such all right-of-way (ROW) acquisition is complete.

1.10.4 CONSTRUCTION COMMENCEMENT

Hess has scheduled construction activities to commence during the second quarter of 2018; and would take approximately four months to complete. Commissioning and restoration activities would commence immediately after construction is complete.

1.10.5 ADDITIONAL PROJECT PERMITS OR AUTHORIZATIONS

The Project will be constructed in compliance with applicable federal, state and local laws, regulations or plans. Hess will obtain necessary permits or approvals for the construction and operation of the Project.

SECTION 2: CORRIDOR, SURVEY CORRIDOR AND ROUTE

2.1 CORRIDOR

The proposed corridor is a one-mile-wide area centered upon a proposed alignment (*i.e.*, one-half mile on either side of the proposed alignment) (Corridor), this alignment was selected utilizing the existing gathering system centerline and the location of existing facilities. The Corridor is illustrated on the maps in Appendix B.

2.2 SURVEY CORRIDOR

Field studies were conducted of the Survey Corridor; the Survey Corridor was typically a 250-foot corridor centered upon the existing gathering pipelines. The maps in Appendix B depict the Survey Corridor for the Project.

2.3 ROUTE

For the purpose of this application, the Route is the centerline of the existing gathering pipeline system.

SECTION 3: ENVIRONMENTAL STUDIES

To assess the potential Project impacts to sensitive environmental resources E3 completed desktop studies of the Corridor, and augmented these efforts with field survey of the Survey Corridor. The results of these efforts are discussed in more detail in the subsequent sections.

3.1 AGENCY CONSULTATIONS

A comprehensive desktop analysis of the Corridor included consultations with the federal and state agencies identified below. These consultations were conducted for the purpose of environmental resource assessment as stipulated by the PSC's siting requirements for a Transmission Facility. Consultation letters were distributed on November 2, 2017. The results of the desktop environmental analysis are summarized below. Records of the agency consultations are provided in Appendix C.

- U.S. Fish and Wildlife Service (USFWS)
- North Dakota Game and Fish Department (NDGFD)
- North Dakota Parks and Recreation (NDPRD)
- North Dakota Department of Trust Lands (NDDTL)
- North Dakota State Preservation Office (SHPO)
- North Dakota State Water Commission (NDSWC)
- McKenzie County Weed Control Board (WCB)
- McKenzie County Water Resource District (MCWRD)
- Western Area Water Supply Authority (WAWSA)

3.1.1 U.S. FISH AND WILDLIFE SERVICE

The USFWS administers several programs designed to identify and protect special status plant and animal species, critical habitats and lands managed by the agency including the Endangered Species Act, (ESA), the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Act (BGEA). Additionally the USFWS administers National Wildlife Refuges and Waterfowl Production Areas (WPAs) as well as wetland and grassland easements throughout North Dakota.

E3 on behalf of Hess sent a Project consultation letter to the USFWS on November 2, 2017. A response from the USFWS is pending. Refer to Appendix C for a record of this consultation.

3.1.1.1 FEDERALLY PROTECTED SPECIES REVIEW

The USFWS identifies and maintains a list of species and critical habitats that have been afforded protection by the ESA. The ESA provides a program for the conservation of threatened and endangered plants and animals and their critical habitats. E3 reviewed USFWS published data and identified the following listed species with the potential to occur within the Corridor.

- Whooping crane (*Grus americana*) – Endangered
- Least tern (*Sternula antillarum*) – Endangered
- Pallid sturgeon (*Scaphirhynchus albus*) – Endangered
- Gray wolf (*Canis lupus*) – Endangered
- Red knot (*Calidris canutus rufa*) - Threatened
- Piping plover (*Charadrius melodus*) – Threatened, and final designated critical habitat
- Dakota skipper (*Hesperia dacotae*) – Threatened, and proposed critical habitat
- Northern long-eared bat (*Myoyis septenrionnalis*) - Threatened

E3 reviewed available information describing these species' life history, critical habitats, and conservation measures associated with each species to assess the potential effects of the Project on these resources. The results of the assessment are discussed in Section 3.2 of this application.

3.1.1.2 MIGRATORY BIRD TREATY ACT

The management of MBTA concerns correspond with the regional timing associated with annual phenology of migratory species. In North Dakota, species protected under the MBTA are present throughout the year. However, it is generally acknowledged that the majority of protected species are seasonally present in North Dakota and nest from February 1st through July 15th annually. During this nesting period, birds are more vulnerable to human activities. The proposed Project is scheduled to commence in the second quarter of 2018 and would take approximately four months to reach completion. As the Project is a conversion project, ground-disturbing activities will be minimal and occur in proximity to existing aboveground facilities. Project disturbance to nesting or breeding birds is not anticipated; however, if nesting or breeding birds are encountered Hess would implement appropriate avoidance measures.

3.1.1.3 BALD AND GOLDEN EAGLE PROTECTION ACT

The BGEA prohibits anyone without a permit from taking a bald or golden eagle including their parts, nests or eggs. The BGEA defines "take" as to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. The BGEA also addresses impacts resulting from human-induced alterations occurring around previously used nesting sites.

3.1.1.4 U.S. FISH AND WILDLIFE SERVICE MANAGED LANDS

The USFWS administers National Wildlife Refuges and WPAs as well as wetland and grassland easements throughout North Dakota. A desktop review of information available in the public domain, including U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps, USGS PAD-US dataset, and the USFWS Information for

Planning and Consultation (IPaC) system has been completed for the Corridor. Desktop analysis indicates no USFWS managed lands are located within the Corridor.

3.1.2 NORTH DAKOTA GAME AND FISH DEPARTMENT

The NDGFD has oversight of the State's game species. E3, on behalf of Hess, sent a Project consultation letter on November 2, 2017 requesting information regarding the presence or absence of State Conservation Priority Species within the Corridor. A response was received on November 30, 2017 stating that the NDGFD does not believe that the Project will have significant adverse effects on wildlife or wildlife habitat. Refer to Appendix C for a copy of the correspondence.

3.1.3 NORTH DAKOTA DEPARTMENT OF TRUST LANDS

The NDSLD is in charge of managing surface acres and mineral interests held in trust for various schools and institutions. On November 2, 2017, E3 initiated consultations with the NDSLD requesting comments regarding the presence of school trust lands within the Corridor; the NDSLD responded on November 15, 2017 confirming the presence of school trust lands within the Corridor and agreeing that the Project does not intersect this parcel. See Appendix C for a copy of this correspondence.

On November 2, 2017, E3 initiated consultations with the NDSLD requesting comments regarding the presence or absence of state mineral trust lands within the Corridor. The NDSLD responded on November 13, 2017 confirming that the Route crosses a mineral tract that the mineral estate management office has an undivided interest, refer to the Project Maps in Appendix B and a record of this correspondence in Appendix C. No other comments or concerns were raised.

3.1.4 NORTH DAKOTA PARKS AND RECREATION DEPARTMENT

The NDPRD Natural Resource Division's scope of authority and expertise covers recreation and biological resources (in particular, rare species and ecological communities). The NDPRD also maintains a database comprised of the location and recorded occurrences of plant and animal species of special concern. The NDPRD authority includes management of state park lands and Land and Water Conservation funded recreation projects.

E3, on behalf of Hess, sent a Project consultation letter on November 2, 2017 to the NDPRD seeking confirmation regarding the presence or absence of managed lands, ecological resources, rare species or their critical habitats within the Corridor. A response from the agency is pending. Refer to Appendix C for a copy of the correspondence.

3.1.5 NORTH DAKOTA STATE HISTORIC PRESERVATION OFFICE

The SHPO is responsible for managing the historic and archaeological resources of the state; as such, the SHPO maintains records of all previously recorded cultural inventories and resources within the state.

Class I, and Class III field investigation have been completed of the Survey Corridor. Reports were prepared and submitted to the SHPO, concurrence for survey reports and conclusions were received on September 30, 2016 and November 9, 2017. Appendix C contains a record of this communication and Appendix E contains the Cultural Resource Reports.

3.1.6 NORTH DAKOTA DEPARTMENT OF HEALTH

The North Dakota Department of Health (NDDoH) administers regulatory programs that monitor and enforce compliance with state and Federal laws related to air and water quality.

3.1.6.1 NDDOH POLLUTION DISCHARGE ELIMINATION SYSTEM

The North Dakota Pollution Discharge Elimination System (NDPDES) is the regulatory program that regulates water discharges such as construction stormwater, site dewatering, and hydrostatic discharge permits.

Construction Stormwater: Since this is a conversion project, ground-disturbing activities will not meet the threshold for a construction stormwater permit. Hess would implement industry standard best management practices (BMPs), which would be designed to manage run-off and trench dewatering discharges in a manner that would minimize exposure to chemicals, waste and petroleum products where ground-disturbing activities occur.

Hydrostatic test water discharges: Hess would seek coverage under NDG07-0000 *Authorization to Discharge Under the North Dakota Pollutant Discharge Elimination* general permit if hydrostatic test water discharges will occur in conjunction with the Project.

3.1.7 NORTH DAKOTA STATE WATER COMMISSION

The NDSWC administers water appropriation, drainage and sovereign lands permit programs and may have relevant information regarding rural water supply systems.

On November 2, 2017, E3 on behalf of Hess initiated consultations with the NDSWC requesting comments regarding the presence or absence of sovereign lands and/or rural water systems with in the Corridor. The agency responded on December 4, 2017 and provided the comments below. A full record of this correspondence is contained in Appendix C.

- A water permit will be required if surface or groundwater will be diverted for construction. No water will be diverted for this Project.
- No permits required relative to the National Flood Insurance Program.

3.1.8 WESTERN AREA WATER SUPPLY AUTHORITY

The WAWSA has jurisdiction over a five county region, which includes Burke, Divide, McKenzie, Mountrail and Williams. WAWSA utilizes a combination of the Missouri River water that is treated at the Williston Regional Water Treatment and ground water treated by the R&T Water Supply Commerce Authority's Water Treatment Plant in Ray to supply and meet the needs of municipal, rural and industrial water users in the five county area. On November 2, 2017, E3 on behalf of Hess initiated consultation with the WAWSA requesting comments regarding the presence of reservoirs or municipal water supplies within the Study Area. A response was received on November 7, 2017; the Route will not intersect any assets operated by the WAWSA.

3.1.9 MCKENZIE COUNTY WATER RESOURCE DISTRICT

The MCWRD is responsible for managing drains, ditches and or other water and or drainage systems regulated by the county. On November 2, 2017, E3 on behalf of Hess initiated consultations with the MCWRD requesting comments regarding the presence or absence or MCWRD assets within the Corridor. Agency response is pending.

3.1.10 MCKENZIE COUNTY WEED CONTROL BOARD

The MCWCB maintains records for the location and species of noxious weeds within the county. On November 2, 2017, E3 on behalf of Hess initiated consultations with the MCWCB. Agency response is pending. Refer to Appendix C for a record of this correspondence.

3.2 WILDLIFE INVENTORY

3.2.1 CORRIDOR

3.2.1.1 FEDERALLY PROTECTED SPECIES REVIEW

The USFWS identifies and maintains a list of species and critical habitats that have been afforded protection by the ESA. The ESA provides a program for the conservation of threatened and endangered plants and animals and their critical habitats. E3 reviewed the USFWS IPaC system published data and identified the following listed species and assessed the potential for the species or their habitat to occur within the Corridor.

Common Name	Scientific Name	Federal Status
Interior least tern	Sterna antillarum athalassos	Endangered
Piping plover	Charadrius melodus	Threatened

Common Name	Scientific Name	Federal Status
Rufa red knot	Calidris canutus rufa	Threatened
Whooping crane	Grus americana	Endangered
Pallid sturgeon	Scaphirhynchus albus	Endangered
Dakota skipper	Hesperia decotae	Threatened
Gray wolf	Canis lupus	Endangered
Northern long-eared bat	Myotis septentrionalis	Threatened

Interior Least tern: Regionally, the Missouri River, which is located approximately nine miles to the east of the Project, is known to provide suitable breeding habitat for interior least terns. Field studies confirmed the absence of suitable breeding habitat (e.g.; sandbars, riverbanks or broad beaches) within the Corridor. Because this is a conversion of existing pipeline systems, construction activities will be small in scale and limited to tie-in locations at existing facilities, any impacts to this species are not anticipated.

Piping plover: In North Dakota, the Piping plover is seasonal resident that can be found nesting along alkali wetlands as well as along the shores and sand flats of both Lake Sakakawea and the Missouri River. The Project is located approximately nine miles to the west of Lake Sakakawea and the Missouri River, and therefore, due to this distance, the Project will not affect nesting activities; impacts to this species are not anticipated.

Rufa red knot: The rufa red knot is a seasonally transient species that passes through North Dakota when migrating between its breeding and wintering grounds. Preferred migratory habitat is closely associated with foraging and has been characterized as wetlands with mudflats and/or sandbars associated with larger waterbody features. Desktop review identified potential foraging habitat within the Corridor.

Whooping crane: The Aransas Wood Buffalo Population of Whooping Cranes engages in semi-annual migration through North Dakota. This flock breeds in the Wood Buffalo National Park in Alberta and Northwest Territories, Canada, and winters in the Aransas National Wildlife Refuge in Texas. North Dakota provides migratory habitat for the species, providing roosting and feeding opportunities during migration. During migration, the species is most closely associated with larger wetland complexes for roosting habitat, typically using adjacent uplands to forage. Desktop screening identified that the Project is located within the migratory corridor for the whopping crane and potential foraging habitat exists within the Corridor.

Pallid sturgeon: The pallid sturgeon is an aquatic fish that is federally endangered. The pallid sturgeon is identified by its flat, shovel-shaped snout, with a long, slender

and fully plated caudal peduncle. The pallid sturgeon is a large river obligate, primarily in Missouri and Mississippi River Systems, in areas with diverse habitat options. The Missouri River is located approximately nine miles to the east of the Project. Suitable habitat for the pallid sturgeon is not found within the Corridor, as such the Project will not affect this species.

Gray wolf: The gray wolf is a large canine species that is federally listed as endangered. The gray wolf is identifiable by its canine body shape, long bushy tail with a black tip, and a mix of gray and brown coat colors. The average size of a gray wolf is 3-5 feet in length, weighing approximately 60-145 pounds. This species prefers a wide range of habitat, including forests, plains, prairies, agricultural areas, swamps, and barren lands, but has been extirpated from most of its historic range. Dens are located near water and dug into well-drained soil on a south-facing slope, under boulders, among tree roots, or in cut banks, hollow logs, or other natural structures. This species is a roaming animal, therefore are wide-ranging and rare to encounter. Desktop studies identified potential habitat for the gray wolf in the Corridor.

Dakota skipper: The Dakota skipper is a butterfly species listed as federally threatened due to habitat conversion from native prairie to agricultural. The Dakota skipper is identified by its one-inch wingspan and thick body, with an orange-brown color and brown characteristic wing markings. The Dakota skipper is a low mobility species, therefore has short dispersal ranges. Suitable Dakota skipper habitat is described as native prairie grasslands with minimal degradation due to anthropogenic disturbance or encroachment by invasive species. Desktop studies identified potential suitable habitat within the Corridor.

Northern long-eared bat: The northern long-eared bat (NLEB) is a federally threatened species primarily due to the onset of white-nose syndrome (WNS), which affects multiple bat species in the United States. NLEBs are medium sized bats with a body length of 3-4 inches and a wingspan of 9-10 inches. Their fur color ranges medium to dark brown on the back and light brown on the underside. This bat is distinguished by its long ears. During the summer months, this small mammal roosts individually or in colonies underneath exfoliating bark of standing trees or in any indentations on both live and dead trees (typically 3 inches or greater in diameter). Signs of roost presence include fallen loose bark and fecal matter in concentrated areas near tree bases in older stands. Breeding begins in late summer or early fall. Currently, the NLEB is managed as threatened species under the Final 4(d) rule. Desktop studies identified potential habitat with in the Corridor, however since the Corridor is located outside of the white-nose-syndrome zone, per the Final 4(d) rule there are no tree-removal or other Project restrictions.

3.2.1.2 MIGRATORY TREATY CONSULTATION

The management of MBTA concerns correspond with the regional timing associated with annual phenology of migratory species. In North Dakota, species protected under the MBTA are present throughout the year. However, it is generally acknowledged that the majority of protected species seasonally present in North Dakota nest from February 1st through July 15th annually. During this nesting period, birds are more vulnerable to human activities. The proposed Project construction is scheduled to commence the second quarter of 2018 and take approximately four months to reach completion. Due to the Project schedule and phenology of resident birds, MBTA mitigation may be required. Should mitigation be required, Hess would continue to consult with agencies as necessary and would develop MBTA mitigation as appropriate.

3.2.1.3 BALD AND GOLDEN EAGLE PROTECTION ACT CONSULTATION

The BGEA prohibits anyone without a permit from taking a bald or golden eagle including their parts, nests or eggs. The BGEA defines "take" as to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. The BGEA also addresses impacts resulting from human-induced alterations occurring around previously used nesting sites. No bald or golden eagles or nests were identified during survey.

3.2.1.4 U.S. FISH AND WILDLIFE SERVICE MANAGED LANDS

The USFWS administers National Wildlife Refuges and WPAs as well as wetland and grassland easements throughout North Dakota. A desktop review of information available in the public domain, including U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps, USGS PAD-US dataset, and the USFWS IPaC has been completed for the Corridor. Desktop analysis indicates no USFWS managed lands are located within the Corridor.

The USFWS identifies and maintains a list of species and critical habitats that have been afforded protection by the ESA. The ESA provides a program for the conservation of threatened and endangered plants and animals and their critical habitats.

3.2.2 SURVEY CORRIDOR

Natural Resource field studies of the Survey Corridor included survey for threatened or endangered species or their critical habitat. No occurrences of threatened or endangered species or their critical habitat was found with in the Survey Corridor. Project potential impacts to federally listed species are discussed below.

Interior least tern: No suitable habitat is present within the Survey Corridor; as such, the Project impacts to this species are not anticipated.

Piping plover: Field studies confirmed the absence of alkali wetlands with suitable plover breeding habitat within the Project. Because this is a conversion of existing

pipeline system, construction activities will be small in scale and limited to tie-in locations at existing facilities; impacts to this species are not anticipated.

Rufa red knot: Field surveys have confirmed the absence of suitable foraging habitat within the Project. Because this is a conversion of existing pipeline system, construction activities will be small in scale and limited to tie-in locations at existing facilities; impacts to this species are not anticipated.

Whooping crane: Potentially suitable migratory habitat for the whooping crane is located within the Survey Corridor (wet fields and croplands). Because this is a conversion of existing pipeline systems, construction activities will be small in scale and limited to tie-in locations at existing facilities, any impacts to this species are not anticipated.

Pallid sturgeon: The Project does not cross waterbodies classified as suitable habitat for the pallid sturgeon. Therefore, the Project will have no impacts to this listed species.

Dakota skipper: To date, no Dakota skippers have been identified within the Survey Corridor and closest USFWS designated critical habitat is located six miles northeast of the northern end of the Project. Field studies confirmed the absence of preferred skipper habitat. Because this is a conversion of existing pipeline systems, construction activities will be small in scale and limited to tie-in locations at existing facilities, any impacts to this species are not anticipated.

Gray wolf: The Survey Corridor intersects potentially suitable habitat for the gray wolf, however because this is a conversion of existing pipeline systems, construction activities will be small in scale and limited to tie-in locations at existing facilities, impacts to this species are not anticipated.

Northern long eared bat: Potentially suitable habitat in the form green ash coulees and small riparian galleries occur within the Survey Corridor. The Project occurs outside of the USFWS designated White-Nose Syndrome Zone, and therefore per the Final 4(d) Rule the USFWS places no restrictions to tree-removing activities.

3.3 WETLAND/WATERBODIES

3.3.1 CORRIDOR

To evaluate the location and extent of mapped wetlands and waterbodies within the Corridor a desktop analysis of aerial photography, National Hydrography Data set (NHD) and National Wetland Inventory (NWI) maps was completed. Desktop analysis identified 125 mapped waterbodies/waterways and approximately 173 mapped wetland features within the Corridor.

3.3.2 SURVEY CORRIDOR

Field survey identified 16 wetland features in total. Five of these wetlands are associated with a waterway, these waterways are listed below. All wetland features are mapped on the maps in Appendix B and discussed in detail in the Natural Resource Survey Report contained in Appendix D.

- Unnamed Tributary to Sand Creek (Map Id: WB-04)
- Clear Creek (Map Id: WB-06)
- Handy Water Creek (Map Id: WB-09)
- Unnamed Tributary to Dry Creek (Map Id: WB-15)
- Dry Creek (Map Id: WB-16)

3.4 TREES AND SHRUBS

3.4.1 CORRIDOR

The density of the woody cover in this region is generally sparse, and typically associated with significant topographic relief such as defined banks or incised drainage channels or agricultural windrows.

3.4.2 SURVEY CORRIDOR

Hess commissioned field studies to inventory the Survey Corridor for woody vegetation. In total 65 woody vegetation patches were inventoried, they are mapped on the maps contained in Appendix B. The detailed results of the field studies are documented in Appendix D.

3.5 NOXIOUS WEEDS

3.5.1 CORRIDOR

Noxious weeds are defined by the Federal Noxious Weed Act of 1974 as “a plant which is of foreign origin, is new to, or is not widely prevalent in the United States, and can directly or indirectly injure crops or other useful plants, livestock or the fish and wildlife resources of the United States, or public health”. The State of North Dakota defines noxious weeds as “weeds that are difficult to control, easily spread, and injurious to public health, crops, livestock, land, or other property”. North Dakota has County Weed Boards in all 53 counties, each of which has the opportunity to add noxious weeds to the state list for regulation only within their jurisdiction. E3 on behalf of Hess provided a consultation letter to the McKenzie County Weed Control Board, a response is pending. Refer to Appendix C for a complete record of this communication.

3.5.2 SURVEY CORRIDOR

Field surveys recorded 46 noxious weed occurrences, totaling 3.7 acres (Appendix D). Four species listed by McKenzie County (Absinthe Wormwood, Canada Thistle, and Common Burdock, Field Bindweed) and two species (Canada Thistle and Absinthe

Wormwood) listed by the State of North Dakota were observed. The most common weed recorded was Canada thistle. Common burdock was observed intermittently during the survey, typically associated with woodland margins or rights-of-way. Single occurrences of both absinthe wormwood and field bindweed were observed and recorded. Refer to the Project maps in Appendix B for the locations of these features.

3.6 CULTURAL RESOURCES

3.6.1 CORRIDOR

In May of 2016 and on October 30, 2017, a Class I cultural resources inventory (literature review) was conducted of records from the State Historical Society of North Dakota to identify previously completed cultural resource investigations and recorded cultural resources within the Corridor. The Class I cultural resources inventory identified 55 previously completed investigations and documented 47 previously recorded cultural resources within the Corridor. Of these 47 previously recorded resources, 29 were either unevaluated or potentially eligible for inclusion into the National Register of Historic Places (NRHP). Refer to the Cultural Resource Report in Appendix E for a detailed accounting of these previously recorded resources.

3.6.2 SURVEY CORRIDOR

Class I efforts were augmented with Class III Pedestrian Surveys of the Survey Corridor. Survey was conducted in May, June and August of 2016 and in November of 2017. Survey efforts visited six previously recorded resources and identified ten new resources within the Survey Corridor. The table below details the results of this effort. Refer to Appendix E for the complete Cultural Resource Survey Report.

Site Number	Type	NRHP Recommendation	Recommendation for ground disturbance
32MZ2038	Previously recorded, unable to relocate during Project Survey	Remain unevaluated	Avoidance
32MZ2039	Previously recorded, unable to relocate during Project Survey	Remain unevaluated	Avoidance
32MZ2774	Previously recorded, unable to relocate during Project Survey	Remain unevaluated	Avoidance
32MZ2864	Previously recorded, unable to relocate during Project Survey	Remain unevaluated	Avoidance
32MZX111	Previously recorded, unable to relocate during Project Survey	Remain Not Eligible	No further work.
32MZX887	Previously recorded, unable to relocate during Project Survey	Remain Not Eligible	No further work.
32MZ3082	Previously unrecorded.	Unevaluated	Avoidance
32MZ3083	Previously unrecorded.	Unevaluated	Avoidance
32MZX1627	Newly recorded isolate	Not Eligible	No further work.
32MZX1628	Newly recorded isolate	Not Eligible	No further work.
32MZX1629	Newly recorded isolate	Not Eligible	No further work.
32MZX1630	Newly recorded isolate	Not Eligible	No further work.
32MZX1631	Newly recorded isolate	Not Eligible	No further work.
32MZX1632	Newly recorded isolate	Not Eligible	No further work.
32MZX1633	Newly recorded isolate	Not Eligible	No further work.
32MZX1634	Newly recorded isolate	Not Eligible	No further work.

Of the 16 sites that were investigated or found within the Survey Corridor five are crossed by the existing gathering pipeline or Route, they are listed below. The addition of the booster pumps to the system will not affect these previously recorded resources.

Site Number	Type	NRHP Recommendation	Recommendation for ground disturbance
32MZX111	Previously recorded site that was not re-located within the Survey Corridor	Not Eligible	Avoidance
32MZX1627	Newly recorded isolate.	Not Eligible	No further work or restrictions.
32MZX1633	Newly recorded isolate.	Not Eligible	No further work or restrictions.
32MZX1629	Newly recorded isolate.	Not Eligible	No further work or restrictions.
32MZ2864	Previously recorded site that was not re-located within the Survey Corridor	Unevaluated	Avoidance

SECTION 4: SITING CRITERIA ANALYSIS

4.1 POLICIES AND COMMITMENTS TO LIMIT ENVIRONMENTAL IMPACT

Hess is committed to conducting its business in compliance with all applicable environmental laws and regulations. These laws, regulations and standards are designed to safeguard the environment, human health, wildlife and natural resources. Hess would conduct its activities with the objectives of providing a healthful and safe workplace for its employees and preventing accidents and environmental incidents. All persons and firms providing service to Hess are required to conduct their work in compliance with environmental conditions, permit authorizations, and applicable regulations, and would be held accountable for their actions in that regard.

4.2 FACTORS ADDRESSED IN NORTH DAKOTA CENTURY CODE SECTION 49-22.1-09

4.2.1 FEASIBLE ALTERNATIVES TO THE PROPOSED CORRIDOR OR ROUTE

Implementation of the proposed Project would result in firm, reliable service for 100,000 barrels of crude oil per day from the gathering pipelines, HOF and the Arrow Facility to the DAPL Terminal. From here, the product would continue through interconnecting pipelines and become available for transport to refineries across the United States. Hess identified and evaluated several project alternatives; however, none of these alternatives effectively satisfied the Project objective. These alternatives included:

- No Action Alternative;
- Trucking Alternative; and
- Rail Alternative

4.2.1.1 NO ACTION ALTERNATIVE

This alternative would leave the region constrained by limited transport capacity for safe and reliable transmission of crude oil products to markets. A no action alternative could result in the curtailment of crude oil production. For these reasons, Hess rejected a *No Action Alternative*.

4.2.1.2 TRUCKING ALTERNATIVE

This alternative was reviewed and eliminated due to the volume of crude oil to be transported. The normal daily throughput of the proposed Project would be approximately 100,000 barrels or 4,200,000 gallons of crude oil. The average load for a truck carrying crude oil is approximately 178 barrels (approximately 7,500 gallons) per truck. Thus, it would require 560 trucks per day, an average of 23.2 trucks every hour for 24 hours a day to transport the volume of product. This level of truck activity is not logistically feasible as it would cause significant amounts of heavy vehicle traffic for area residents, as well as additional wear and tear on the infrastructure. Disruption in the

trucking capacity due to seasonal load restrictions on roads, inclement weather or road repairs would cause a delay in delivering this valuable resource to market. This alternative is not desirable; therefore, Hess rejected a *Trucking Alternative*.

4.2.1.3 RAIL ALTERNATIVE

A Rail Alternative was also evaluated as a surface transportation alternative. However, this alternative was determined not feasible because of the associated environmental impacts and financial, logistic and time constraints necessary to acquire land and construct the requisite rail infrastructure. This alternative would also require a third party rail operator. For these reasons, Hess rejected a *Rail Alternative*.

4.2.2 EFFECTS OF THE LOCATION, CONSTRUCTION AND OPERATION OF TRANSMISSION FACILITY ON PUBLIC HEALTH AND WELFARE, NATURAL RESOURCES AND THE ENVIRONMENT

The Project is designed to provide delivery throughput from the HOF and Arrow Facility to the DAPL Terminal for distribution to market hubs/centers and markets nationwide. Hess and its affiliates own and operate the HOF as such; all routing was anchored from this location to potential destinations. The DAPL Terminal was chosen due to the capacity of product being transported and to provide greater access to markets.

Route planning between the HOF and the DAPL Terminal did not identify and evaluate several options for routing as this is a conversion project utilizing existing gathering pipeline infrastructure. Converting the existing gathering pipeline system is technologically and economically responsible and minimizes impacts to landowners and the environment.

Field studies were conducted to identify environmental, biological and cultural resources along the Route; the results of this effort are discussed in Section 3 of this document. The Natural Resources report is provided in Appendix D. Refer to Appendix E for the Cultural Resources Report. The sections below discuss possible effects on the public health and welfare.

4.2.3 EFFECT OF NEW TRANSMISSION TECHNOLOGIES AND SYSTEMS DESIGNED TO MINIMIZE ADVERSE ENVIRONMENTAL EFFECTS

The Project does not include energy conversion or transmission technologies/systems specifically designed to minimize adverse environmental impacts.

The Project would result in the conversion of an existing gathering pipeline system to a transmission pipeline as defined by the PSC. As the gathering pipeline is currently in operation, conversion activities will require minimal ground disturbance thus will have minimal adverse environmental effects. Refer to Section 5 of this document for a description of the mitigation measures to be employed.

4.2.4 ADVERSE DIRECT AND INDIRECT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED

Should the proposed Project be designated in the manner described herein, there will be no direct or indirect adverse environmental effects.

4.2.5 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF NATURAL RESOURCES SHOULD THE PROPOSED CORRIDOR BE DESIGNATED

Hess is not aware of any irreversible or irretrievable commitments of natural resources that would result from the requested approvals.

4.2.6 DIRECT AND INDIRECT ECONOMIC IMPACTS

Construction of this Project will provide firm, reliable service for 100,000 bpd of crude oil and provide a transportation link between the HOF and the DAPL Terminal for delivery to market.

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

Hess is not aware of any other future development plans within or in close proximity to the Route.

4.2.8 EFFECT OF ROUTE ON EXISTING SCENIC AREAS, HISTORIC SITES AND STRUCTURES, AND PALEONTOLOGICAL OR ARCHAEOLOGICAL SITES

Hess has commissioned Class I and Class III Cultural Resource Surveys of the Route, the survey report can be found in Appendix E. As this is a conversion project, ground disturbance will be minimal and will not impact known cultural resources.

Project-specific consultation with various federal, state and local agencies did not identify any scenic areas within the Route. All related correspondence can be found in Appendix C.

4.2.9 EFFECT OF THE PROPOSED ROUTE ON AREAS THAT ARE UNIQUE DUE TO BIOLOGICAL WEALTH OR BECAUSE THE ROUTE IS HABITAT FOR RARE OR ENDANGERED SPECIES

The proposed Route is not anticipated to result in permanent adverse impacts to the environment. No federally- or state-listed species or their critical habitats were identified during field surveys. Please see Section 3 for a comprehensive discussion of Hess' efforts to identify sensitive environmental resources along the proposed Route. As there would be minimal ground-disturbing activities taking place outside existing facilities, the Project will not result in impacts to listed or sensitive species or their habitats. See Appendix C for a complete record of federal and state agency consultations. Detailed survey results can be found in Appendix D.

4.2.10 PROBLEMS RAISED BY FEDERAL, STATE OR LOCAL AGENCIES OR ENTITIES

Hess has consulted with federal and state agencies to identify possible environmental resources within the Corridor and to provide them with an opportunity to raise any related agency concerns. No problems have been raised by agencies. A complete record of these consultations are provided in Appendix C.

4.3 EXCLUSION AREAS (NDAC 69-06-08-02.1)

Exclusion areas are geographical areas that must be excluded in the consideration of a route for a transmission facility. A buffer zone of a reasonable width to protect the integrity of the area must be included. Additionally natural screening may be considered in determining the width of the buffer zone.

Exclusion Area	Within Corridor	Within Survey Corridor	Crossed by Route
Federal			
National Parks or Memorial Parks	No	No	No
Historic Sites, or Landmarks	No	No	No
Natural Landmarks or Monuments	No	No	No
Wilderness Areas	No	No	No
State			
Historic Sites, Monuments, or Historical Markers	No	No	No
Archaeological Sites	Yes	Yes	Yes
Parks	No	No	No
Nature Preserves	No	No	No
County			
Parks	No	No	No
Recreation Areas	No	No	No
Municipal Parks	No	No	No
Parks Owned/Operated by other Governmental Subdivisions	No	No	No
Other			
Areas Critical to the Life Stages of Threatened and Endangered Animal or Plant Species	No	No	No
Areas where Animal or Plant Species that are Unique or Rare to this State would be Irreversibly Damaged	No	No	No
Areas within 1,200 feet of a geographic center of an intercontinental ballistic missile (ICBM) launch or launch control facility.	No	No	No

Exclusion Area	Within Corridor	Within Survey Corridor	Crossed by Route
Areas within 30 feet on either side of a direct line between (ICBM) launch or launch control facilities to avoid microwave interference.	No	No	No

4.3.1 FEDERAL EXCLUSION AREAS

Hess has initiated consultations with appropriate federal agencies and conducted a comprehensive review of published information. Hess concluded no national or memorial parks, natural landmarks, historic sites listed on the NRHP, monuments or wilderness areas would be crossed or affected by the Project. Class I and III inventories did identify archeological sites within the Corridor, Survey Corridor and Route. Refer to Section 3.6 of this application and Appendix E for a complete discussion of these resources. As this is a conversion project, ground disturbance will be minimal and will avoid these archaeological resources.

4.3.2 STATE EXCLUSION AREAS

Hess has initiated consultations with appropriate state agencies and conducted a comprehensive review of published information. Hess confirmed the absence of state parks, monuments, historical markers, or nature preserves within the proposed Corridor.

4.3.3 COUNTY EXCLUSION AREAS

Hess has confirmed through a combination of agency consultations and review of publicly available information the absence of county parks or recreation areas, municipal parks, or parks owned by other subdivisions of government bodies within the proposed Corridor. Refer to Section 3 of this document for a comprehensive discussion of Hess consultations, and Appendix C for documentation of agency consultations.

4.3.4 OTHER EXCLUSION AREAS

Areas Critical to the Life Stages of Threatened and Endangered Animal or Plant Species: Hess conducted a comprehensive desktop review of the Corridor; these efforts were augmented with agency consultations and additional field surveys to confirm the absence of critical habitat.

Areas where Animal or Plant Species That are Unique or Rare to this State would be Irreversibly Damaged: Hess conducted a comprehensive desktop review of the Corridor; these efforts were augmented with agency consultations and additional field surveys of the Survey Corridor to confirm the absence of critical habitat.

Refer to Appendix C for documentation of the agency consultations, and Section 3 of this Application for details of desktop and field studies.

Areas where Animal or Plant Species That are Unique or Rare to this State would be Irreversibly Damaged: Hess has engaged in federal and state agency consultations, reviewed published information and conducted a desktop analysis of the Corridor and commissioned subsequent field studies of the Survey Corridor to determine if areas of critical animal or plant habitat may occur. Based on these studies, Hess has confirmed the absence of protected species and/or their critical habitats. Refer to Appendix C for supporting documentation of agency consultations and Appendix D for the Natural Resource Survey report.

Areas Within 1,200 Feet of the Geographic Center of an ICBM Launch or Launch Control Facility: Upon review of tabular location data and aerial imagery compiled by the University of Wyoming, there are no areas of the Project within 1,200 feet of the geographic center of an Intercontinental Ballistic Missile (ICBM) launch or launch control facility.

Areas Within 30 Feet on Either Side of a Direct Line Between ICBM Launch or Launch Control Facilities to Avoid Microwave Interference: Upon review of tabular location data and aerial imagery compiled by the University of Wyoming it was confirmed that the Route is not within thirty (30) feet on either side of a direct line between ICBM launch or launch control facilities within the Survey Corridor or crossed by the Route.

4.4 AVOIDANCE AREAS (NDAC 69-06-08-02.2)

Avoidance areas are geographical areas that may not be considered in the routing of a transmission facility unless the applicant shows that under the circumstances there is no reasonable alternative.

Avoidance Area	Within Corridor	Within Survey Corridor	Crossed by Route
Federal			
Historic Districts	No	No	No
Wildlife Areas	No	No	No
Wild, Scenic or Recreational Rivers	No	No	No
Wildlife Refuges	No	No	No
Grasslands	Yes	No	No
State			
Wild, Scenic, or Recreational Rivers	No	No	No
Game Refuges or Game Management Areas	No	No	No
Forests or Forest Management Areas	No	No	No
Grasslands	No	No	No

Avoidance Area	Within Corridor	Within Survey Corridor	Crossed by Route
Other			
Other Historic Resources not meeting Exclusion or Avoidance Areas Criterion	No	No	No
Areas of Geologic Instability	Yes	No	No
Areas within 500 Feet of a Residence, School, or Place of Business	Yes	Yes	Yes*
Reservoirs and Municipal Water Supplies	No	No	No
Water Sources for Organized Rural Water Districts	No	No	No
Irrigated Land (not applicable to underground facilities)	NA	NA	NA
Areas of Recreational Significance which are not designated as Exclusion Areas	No	No	No

*Structures located within 500-feet of Route but not intersected by the Route.

4.4.1 FEDERAL AVOIDANCE AREAS

Hess conducted agency consultations and a comprehensive review of publicly available information. This review indicated the absence of designated or registered historic districts, refuges, and wild, scenic or recreational rivers within the Corridor. Grasslands are located within the Corridor however, they are not present within the Survey Corridor nor are they traversed by the Route. Refer to Appendix C for documentation of agency consultations.

4.4.2 STATE AVOIDANCE AREAS

Hess conducted a review of publicly available information and initiated project specific agency consultations and through these efforts has concluded there are no designated or registered management areas, forests, forest management lands, grasslands or wild, scenic, or recreational rivers within the Corridor. Refer to Appendix C for documentation of agency consultations.

4.4.3 OTHER AVOIDANCE AREAS

Historical Resources not Meeting Exclusion Area Criteria: Hess conducted a review of publicly available information, initiated project specific agency consultations and augmented agency review with field studies. Through these efforts, Hess has concluded there are no historic resources not meeting exclusion area criteria within the Corridor. Refer to Appendix C for documentation of agency consultations and Appendix E for additional Cultural Resource information.

Areas of Known Geologic Instability: Geologic instability generally refers to surface geology and areas where landslides have occurred. The North Dakota Geological Survey (NDGS) landslide mapping data was consulted for information regarding areas of landslides near the Project Area. Review of landslide deposit data from the NDGS indicated the presence of 20 landslide deposits within the Corridor. These areas consist of a variable mixture of strata and deposits that have slid to the base of steep slopes. Most of the landslides in this area are hundreds, if not thousands of years old. According to a review the U.S. Geological Survey abandoned mine data, no mining activities are located in the Corridor.

No landslide deposits or abandoned mines occur within the Survey Corridor and thus are not crossed by the Route.

Refer to the maps in Appendix B for the location of landslide deposits within the Corridor.

Areas Within 500 Feet of a Residence, School or Place of Business: Aerial photography was utilized to identify structures located within the Corridor. Approximately 51 potentially occupied structures were identified within the Corridor. Of these potentially occupied structures, seven are within the Survey Corridor and six fall within 500-feet of the centerline of the Route. Hess is in the process of obtaining landowner waivers for these six locations. Appendix G contains executed landowner waivers.

Reservoirs and Municipal Water Supplies: Hess has confirmed the absence of reservoirs and municipal water supplies within the Corridor.

Water Sources for Organized Rural Water Districts: Eight wells were identified by the North Dakota Well Data set that were located within the Corridor; these wells are used for domestic, stock or observation purposes. None of these wells occurs within the Survey Corridor nor are the crossed by the Route. Refer to the maps in Appendix B for the location of the wells.

No known water sources for organized rural water districts were identified during the agency consultation process.

Irrigated Land: This criterion does not apply to underground transmission facilities; as such, it is not applicable to this Project.

Areas of Recreational Significance that are not Designated as Exclusion Areas: Hess confirmed the Corridor does not contain any other areas of recreational significance.

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

The selection criteria require assessment of the environmental impacts and alterations to land use that may result from the siting of the proposed project. Through this process, Hess believes the Project would successfully avoid or minimize these effects to the maximum extent practicable.

4.5.1 AGRICULTURAL IMPACT

Agricultural Production: Approximately half (54.36%) of the land located within the project area can be characterized as agricultural. The Project will not have measurable impact to agricultural land as it is a conversion project and ground-disturbance will be minimal and occur primarily within existing facilities.

Family Farms and Ranches: As there will be minimal ground-disturbing activities associated with the Project, impacts to family farms and ranches is not anticipated.

Buried pipelines will not impact typical farm or ranch operations, and those areas directly impacted by construction will be restored to their pre-construction condition.

The location of pipeline markers is defined under 49 CFR 195 for pipelines. Hess works with local landowners and county officials to ensure that pipeline markers are located where required but also in an acceptable location for these parties. These markers are to be placed in full view so that they are not accidentally damaged by nor cause damage to landowner or county equipment.

Lands Suitable for Irrigation: The Project will not result in temporary or permanent impacts to areas suitable for irrigation to the best of Hess' knowledge.

Surface Drainage: As there will be minimal ground-disturbing activities occurring outside of existing facilities, there will be little to no change in surface drainage. Care would be taken throughout the construction/conversion process to minimize environmental impacts, including modification of drainage patterns.

Ground Water: As this is a conversion project there will be minimal ground disturbance associated with the Project outside of existing facilities'; as such, construction impacts on groundwater resources are not expected. No concerns were raised by agencies during the consultation process regarding Project impacts to ground water.

4.5.2 THE IMPACTS UPON OTHER RESOURCES

Sound-Sensitive Land Uses: The Project is located in a rural setting, effectively isolating it from the majority of sensitive receptors. As there would be minimal construction activities associated with the Project outside of existing facilities, the Project would have no permanent impact on noise-sensitive resources.

Visual Effect on Adjacent Areas: The proposed Project includes four existing valve sets/risers, and three launchers and five receivers. Booster pumps will be installed at three locations; these locations are associated with existing aboveground facilities. The location of each would be clearly marked with a small placard that details ownership and contact information. These features are common throughout the landscape and are not obtrusive. No other permanent aboveground features are to be installed as a part of the Project.

Extractive and Storage Resources: This Project would not affect any extractive or storage resources.

Wetlands, Woodlands and Wooded Areas: A comprehensive desktop review of published data, including aerial photography and NWI data, was conducted to assess the presence or absence of wetlands, woodlands and wooded areas. The review of the proposed Corridor confirmed the presence of these resources. Hess commissioned field surveys to identify and record the locations of these resources within the Survey Corridor. Refer to Section 3 in this document for a comprehensive discussion of the field study results, as well as Appendix C for copies of agency consultations.

Radio and Television Reception, and other Communication or Electronic Control Facilities: Hess does not anticipate the Project would affect radio, television, or other electronic control facilities.

Human Health and Safety: Hess' Health and Safety Policy meets or exceeds federal and state laws, rules and regulations, and is enforced equally with respect to both Hess and contractor employees. The implementation of this policy promotes a safe and healthy workplace during construction and operation of all Hess assets. In addition, the operation of the pipeline would be monitored in accordance with DOT regulations.

Animal Health and Safety: The wildlife currently inhabiting the Corridor is common and is generally mobile. The local wildlife inhabitants would not be displaced by the Project and no measurable impact to the viability of these populations would occur. Hess does not anticipate species of special concern to experience direct impacts due to construction or operation of the proposed Project.

Plant Life: There would be minimal impacts to plant life associated with the construction or operation of the pipeline. No species of special concern would be impacted by the Project.

4.6 POLICY CRITERIA (NDAC 69-06-08-02.4)

Hess selects pipeline corridors and routes to minimize impact as required by the statutes, rules and regulations of the Commission. As appropriate, Hess may employ local environmental consultants and archaeologists to assist with planning. Local farmers may also be employed for restoring cropland to tillable condition following

construction. Hess is proud of its safety record in the operation of facilities in North Dakota and is prepared to meet any emergency that should arise in order to minimize the impact of any pipeline failure.

The operation of the pipeline conforms to DOT standards; as such, Hess maintains a rigid pipeline integrity program and periodically runs internal line inspection tools to find anomalies, and perform repairs as required.

4.6.1 LOCATION AND DESIGN

The Project would be located in McKenzie County, North Dakota and result in a mainline transmission pipeline originating at the Hess HOF terminating at the DAPL Terminal. Project maps are provided in Appendix B.

The Project will be designed to the minimum specifications outlined in Section 1 of this application.

The proposed pipeline would meet US Department of Transportation regulations.

4.6.2 TRAINING AND UTILIZATION OF AVAILABLE LABOR IN THIS STATE FOR THE GENERAL AND SPECIALIZED SKILLS REQUIRED

Project construction would require a specialized niche construction market and the labor force needed to complete the Project would be primarily comprised of a specialized workforce. The primary labor force would be contracted, supplying specialized skilled labor. The workforce is anticipated to reach a peak of approximately 25 personnel.

4.6.3 ECONOMIES OF CONSTRUCTION AND OPERATION

Hess would invest approximately $107 million total to finish developing this Project. The continued costs of maintenance and operation of the pipeline are minimal.

4.6.4 USE OF CITIZEN COORDINATING COMMITTEES

Hess has established and maintains a good relationship with the local community officials and the local population. These relationships provide multiple grass roots communication channels to inform local residents regarding the developments associated with the Project.

4.6.5 COMMITMENT OF A PORTION OF THE TRANSMITTED PRODUCT FOR USE IN THIS STATE

The proposed Project would interconnect with existing facilities. The products currently handled, transferred, and shipped are currently delivered to markets located primarily out of the state.

4.6.6 LABOR RELATIONS

Hess maintains positive labor relations with its staff and contract work force and does not anticipate encountering any adverse labor relations on this Project. The labor market in the region is generally supportive of the oil and gas industry.

4.6.7 THE COORDINATION OF FACILITIES

Hess owns and operates all of the HOF and the Project would provide transport of crude from the Arrow Facility and the HOF to the DAPL Terminal and is thus a benefit to Arrow and DAPL. As such, coordination is expected to be seamless.

4.6.8 MONITORING OF IMPACTS

Hess has established and maintained positive landowner and community relationships throughout the region through its open communication and commitment to corporate citizenship standards that are based on integrity. Hess would monitor landowner concerns through its right-of-way (ROW) department and would respond to all reasonable requests. In a similar manner, Hess would monitor community concerns and would respond to all reasonable concerns brought to its attention by local community leaders.

4.6.9 UTILIZATION OF EXISTING AND PROPOSED RIGHTS-OF-WAY AND CORRIDORS

Hess chose the preferred Project alignment as it is an existing gathering pipeline system which would be converted to a transmission pipeline as defined by the PSC. Several utilities are collocated throughout the alignment.

4.6.10 OTHER EXISTING OR PROPOSED TRANSMISSION FACILITIES

Appendix F contains Hess' 10-Year Plan, which contains details regarding existing and planned Hess assets.

SECTION 5: MITIGATIVE MEASURES

5.1 LOCATION

The location of the proposed Route is a function of the locations of the existing HOF, Arrow Facility and DAPL Terminal and the existing gathering pipeline infrastructure. Hess commissioned field surveys to address specific agency concerns expressed during consultations, inventory the resources present throughout the Survey Corridor, and define the location and boundaries of resources that intersect the proposed Route.

Trees and shrubs: Hess shall comply with the Commission's tree and shrub mitigation specifications. Field surveys included a pre-construction tree and shrub inventory. As there will be minimal ground-disturbing construction activities outside of existing facilities, clearing or removal of trees or shrubs is not anticipated.

Wetlands and Waterbodies: There will be no ground-disturbing construction activities within wetlands or waterbodies, as such; no wetlands and waterbodies will be impacted.

Migratory Bird Treaty Act: Hess, in the interest of maintaining full compliance with the MBTA consulted with the USFWS on November 2, 2017. Agency response is pending. However, given that there will be minimal construction-related activities associated with the Project, impacts to breeding birds is not anticipated.

5.2 CONSTRUCTION

Minimal ground-disturbing activities will take place outside of the confines of existing facilities. Conversion of the gathering lines to a fully functioning transmission line is estimated to require approximately four (4) months.

5.3 OPERATION

Once constructed and put into service, the proposed Project will operate continuously delivering crude oil from the HOF, existing gathering pipelines and Arrow Facility to the DAPL Terminal. Normal pipeline operations are imperceptible to the public, as they are silent, buried and therefore not visible, and require only minimal aboveground activity. Standard operating procedures for the regulated portions of the system will conform to DOT standards and requirements and as such, periodic inspection and maintenance of the right-of-way will be required.

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

A minimal amount of construction activities will occur outside of footprint of existing facilities including the construction of the booster pumps. Construction of the booster pumps would require surveying, staking, clearing and grading. Disturbed areas will be restored to pre-construction conditions as appropriate.

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

The Project is the conversion of existing gathering lines into a crude oil transmission line as defined by the PSC. As such, no new easements and no additional acquisition of property or rights-of-way will be required. There will be minimal ground-disturbance associated with the Project.

Hess' practice for determining landowner compensation for easements is based upon research of comparable fair market pricing and prior experience negotiating easement locally. The Project would not require the acquisition of any additional easements as it is a conversion project and all easements have been obtained for the existing gathering system.

SECTION 8: LIST OF PREPARERS

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 20 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 consultations, mitigation and avoidance plans.

Katie Schmidt, EIT
Environmental Engineer and Senior Consultant
E3 Environmental, LLC, 871 West Jefferson Avenue, St. Paul, MN 55102

B.S. Civil Engineering with an emphasis in Environmental Engineering-Iowa State University. Ms. Schmidt is a Senior Environmental Consultant with twelve years of experience working with various energy assets and regulatory agencies. As a consultant, she has managed multiple pipeline projects supporting clients through the construction permitting and siting processes, which included coordination with various federal, state and local agencies.

Benjie Foss, PE
Hess Corporation
Team Lead, Project Engineering, Bakken - Infrastructure Projects Engineering
10384 68th Street NW, Tioga ND 58852

B.S. Civil Engineering from the North Dakota State University. Mr. Foss is currently the Project Engineering Team Lead for the Hess Bakken Asset with seventeen years of industry experience. He has worked in various functions during his career with Hess including Infrastructure Projects Engineering.

Vicky Sund
Hess Corporation
Manager, Bakken-Regulatory Evaluation and Standards
3015 16th St SW, Suite 20, Minot, ND 58701

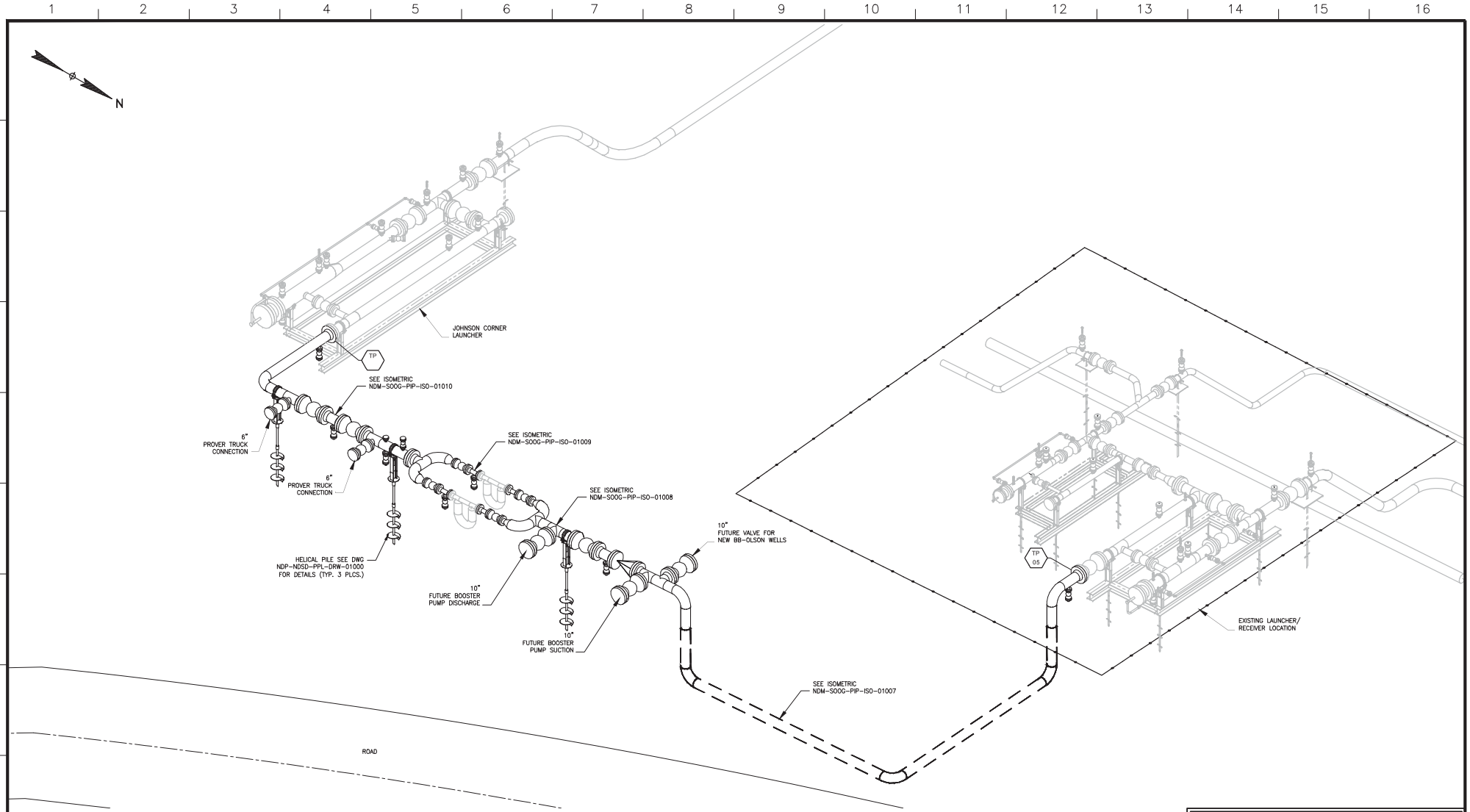
B.S. in Geology from Millsaps College. M.S. in Geology from University of North Dakota. Mrs. Sund is currently the Regulatory Manager for the Hess Bakken Asset with twenty-two years of experience within the oil and gas industry. She has worked in various functions during her 22 year career with Hess including Engineering, Field Supervision, and Regulatory. Through Mrs. Sund's versatile career, she has coordinated with various federal, state and local agencies to ensure regulatory compliance.

Seth Nolte
Hess Corporation
Senior Regulatory Specialist, Bakken-Regulatory Evaluation and Standards
3015 16th St SW, Suite 20, Minot, ND 58701

B.S. in Petroleum Engineering from Montana Tech of the University of Montana. Mr. Nolte is currently a Senior Regulatory Specialist with ten years of experience working with various energy assets. Mr. Nolte has managed multiple oil and gas fields as well as planned and executed a variety of oil and gas development projects. Throughout Mr. Nolte's career, he has coordinated with various federal, state and local agencies to ensure regulatory compliance.

Appendix A

Engineering Documents



ISSUED FOR CONSTRUCTION

NOTES:

1. FOR DIMENSIONS AND B.O.M. SEE DRAWINGS NDM-SOOG-PIP-ISO-01007, NDM-SOOG-PIP-ISO-01008, NDM-SOOG-PIP-ISO-01009 AND NDM-SOOG-PIP-ISO-01010.

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A	6/22/17	ISSUED FOR APPROVAL	BFT	GRO	GJS

REVISIONS

ch2m:

HESS CORPORATION
EXPLORATION & PRODUCTION

NORTH DAKOTA MIDSTREAM
SOUTH OIL GATHERING
NDM-SOOG-PPL-WOP-01003

JOHNSON'S CORNER
PIPING ISO-VIEW
BB-OLSON BOOSTER SITE

DRAWN BY:	DESGN BY:	CHECKED BY:	APPRVD BY:	DATE:	SCALE:
BFT	BFT	GRO	GJS	6/20	NONE

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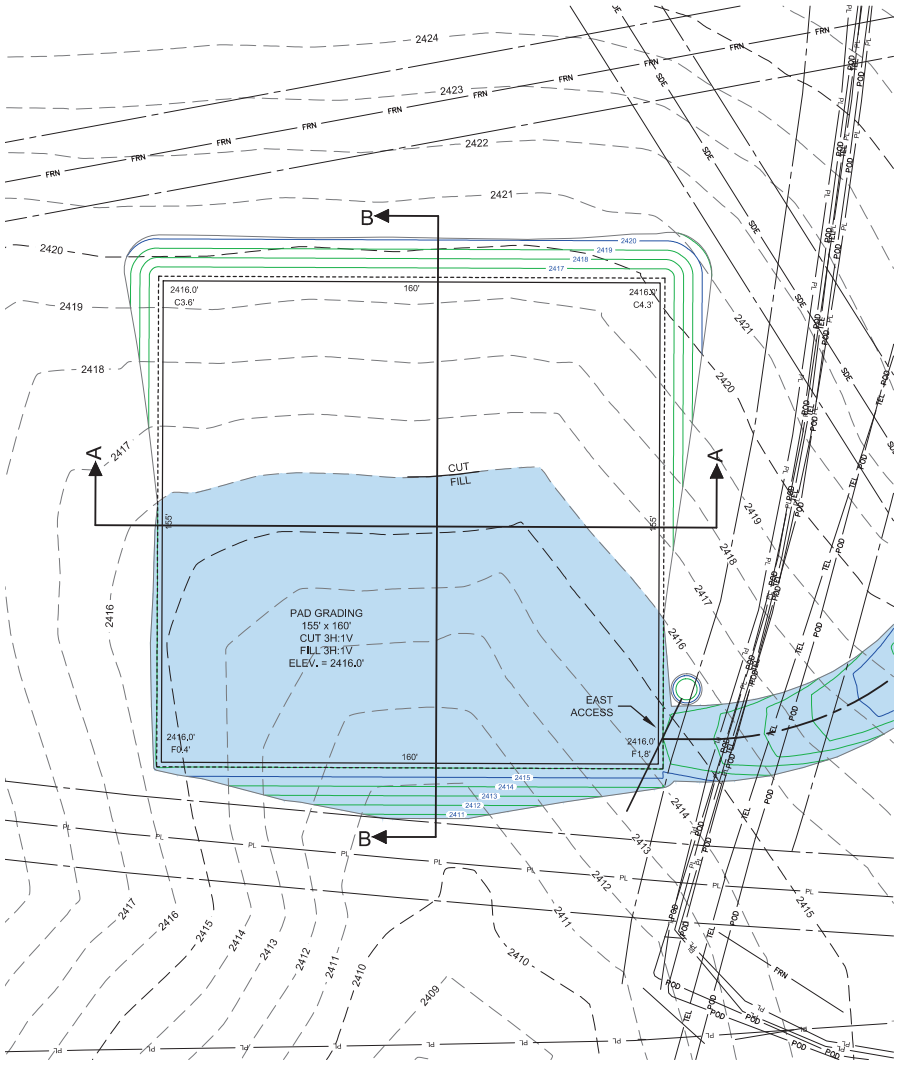
MIDWAY VALVE SET BOOSTER PUMP
GRADING PLAN
SEC. 7, T151N, R95W, 5TH P.M.
McKENZIE COUNTY, NORTH DAKOTA



TOTAL ESTIMATED QUANTITIES FOR CONSTRUCTION

A. PERIMETER DITCH RETROFIT

EXCAVATION & EMBANKMENT:	614	CY (INCLUDES 15% FOR SHRINKAGE)
BORROW:	3,169	CY
TOPSOIL REMOVAL AND RESPREAD:	1,567	CY (10" DEPTH ASSUMED)
SURFACING:	477	CY (ASSUMING 6")
12" CORRUGATED METAL PIPE:	40	LF
12" CORRUGATED END SECTION:	2	EA



AERIAL MAP

PAD GRADING SLOPES:
- CUT = 3H:1V
- FILL = 3H:1V

TOPO LEGEND

EXISTING	ITEM	PROPOSED/ FUTURE
	1' INTERMEDIATE CONTOUR	
	5' INDEX CONTOUR	
N/A	DRAINAGE DIRECTION	
	WELLHEAD	
ANCHOR	RIG ANCHOR	N/A
	SECTION LINE WITH RIGHT-OF-WAY	N/A
	1/4 & 1/16 LINES	N/A
	ACCESS ROAD	
	CULVERT	
N/A	TOTAL SITE DISTURBANCE	
N/A	SEDIMENT CONTROL	
	TREE ROWS, BUSHES	N/A
PL	PIPELINE	(PL)
E	UNDERGROUND POWER LINE	N/A
E(O)	OVERHEAD POWER LINE	N/A
	POWER POLE	N/A
E	ELECTRICAL JUNCTION BOX	N/A

GIS LINEWORK LEGEND

HESS GIS DATABASE APPROXIMATE LOCATIONS

TEL	COMMUNICATION LINES
ELE	ELECTRICAL LINES
FRN	FOREIGN LINES
POD	POD PIPELINES
SDE	SDE PIPELINES

N

20 0 20 40
scale feet

AERIAL MAP LEGEND

SYMBOL	ITEM
	SECTION LINES
	PROPOSED WELL PAD
	PROPOSED ACCESS ROAD
	EXISTING ACCESS ROAD

N

500 0 500 1000
scale feet

SHEET INDEX

1. PAD GRADING & ESTIMATED QUANTITIES
2. PAD PROFILES
3. EAST ACCESS PLAN, PROFILE & CROSS SECTIONS

NOT FOR CONSTRUCTION

NO	DATE	DESCRIPTION	DRAWN BY	CH'D BY	APPV'D BY
A	05/10/17	ISSUED FOR CLIENT REVIEW.	MWB	DMS	PF

REVISIONS

DRAWING NUMBER | TITLE

REFERENCE DRAWINGS

KLJ
Professional Consulting Engineers and Surveyors
Registered in North Dakota, South Dakota, Montana, Wyoming & Minnesota
Tele-Fax No. 855-288-8055
Bus. Phone No. 701-483-1284
1463 I-94 Business Loop East
Dickinson, North Dakota 58602-0290
Certificate of Authorization #C-061

HESS BAKKEN INVESTMENTS II, LLC NORTH DAKOTA PRODUCTION
EXPLORATION & PRODUCTION
BAKKEN
NDP-___-MUD-WOP-010__

MIDWAY VALVE SET BOOSETR PUMP
ENGINEERED PAD
DESIGN AND CIVIL LAYOUT

DRAWN BY:	DESGN BY:	CHECKED BY:	APPRVD BY:	DATE:	SCALE:
MWB	MWB	DMS	PF	05/17	AS SHOWN

SIZE	DRAWING No.	HESS DRAWING No.	SHEET	REV
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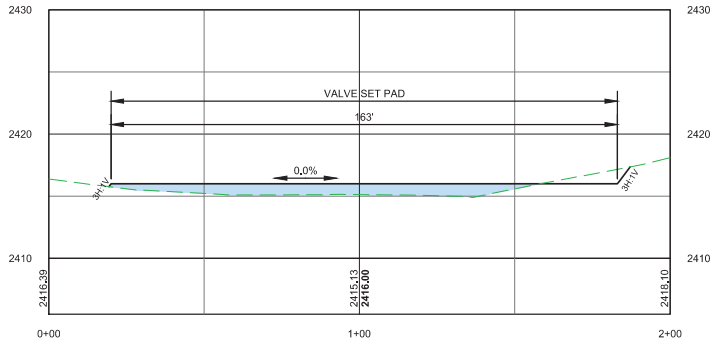
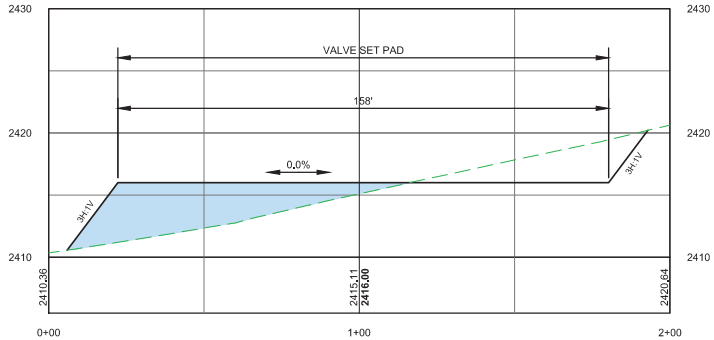
WELL/FACILITIES PAD PROFILES



SECTION A-A



SECTION B-B

20 0 20 40 scale HORIZONTAL SCALE feet

5 0 5 10 scale VERTICAL SCALE feet

PROFILE LEGEND	
SYMBOL	ITEM
	ORIGINAL GROUND
	SUBGRADE
	FINISHED GRADE

DRAWING NUMBER	TITLE
REFERENCE DRAWINGS	

NOT FOR CONSTRUCTION

NO	DATE	DESCRIPTION	DRAWN BY	CHK'D BY	APPV'D BY
A	05/10/17	ISSUED FOR CLIENT REVIEW.	MWB	DMS	PF

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HESS BAKKEN INVESTMENTS II, LLC NORTH DAKOTA PRODUCTION
EXPLORATION & PRODUCTION
BAKKEN
NDP-___-MUD-WOP-010__

MIDWAY VALVE SET BOOSETR PUMP
ENGINEERED PAD DESIGN AND CIVIL LAYOUT

DRAWN BY:	DESGN BY:	CHECKED BY:	APPRVD BY:	DATE:	SCALE:
MWB	MWB	DMS	PF	05/17	AS SHOWN

SIZE	DRAWING No.	HESS DRAWING No.	SHEET	REV
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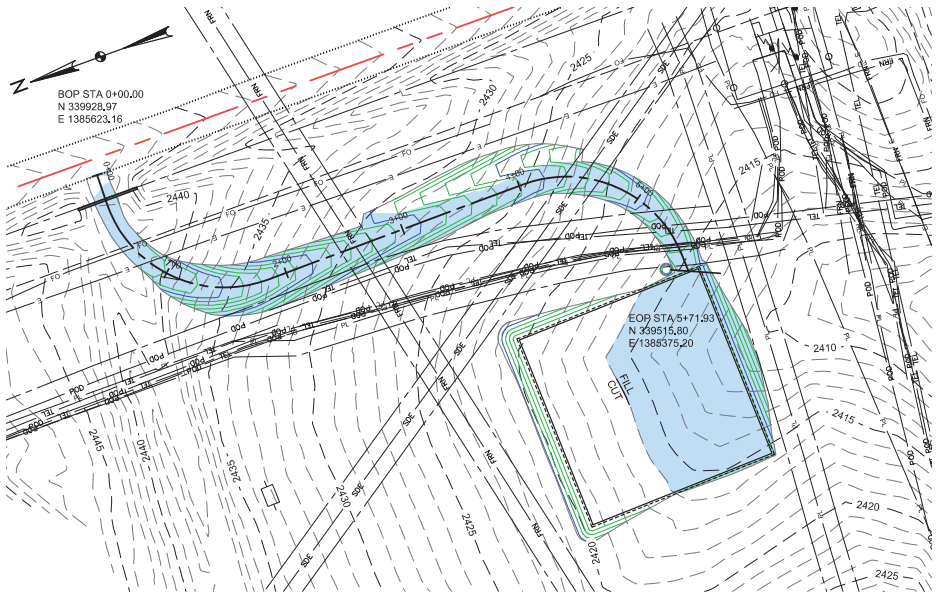
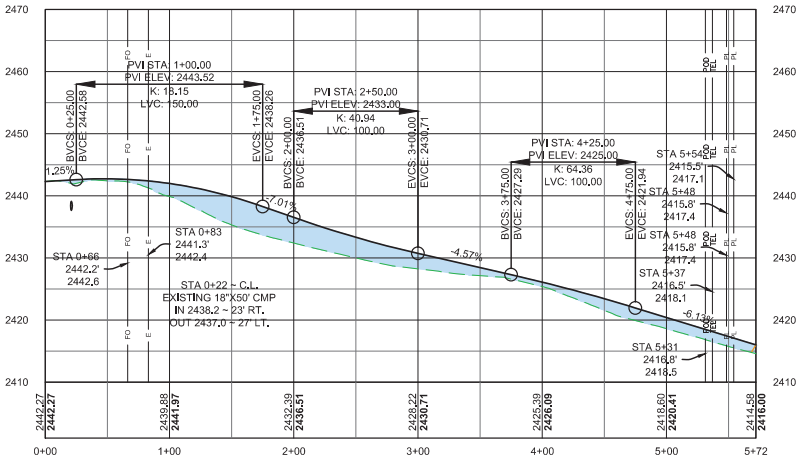


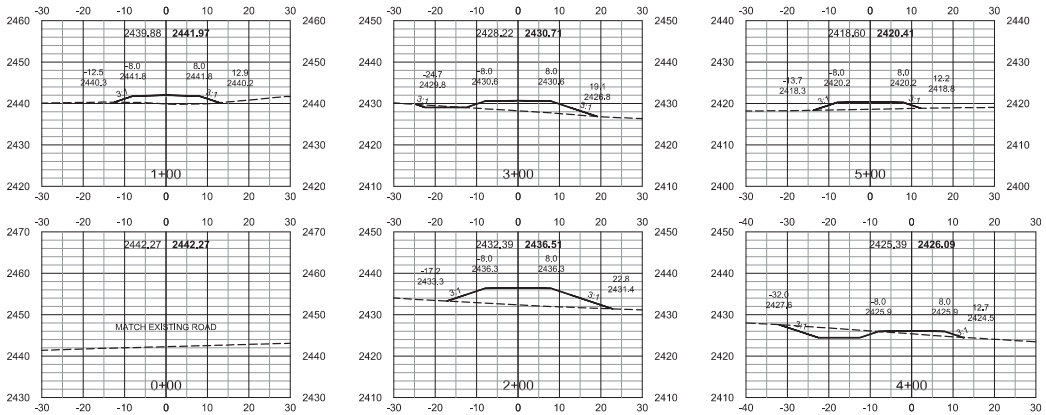
PROFILE LEGEND

SYMBOL	ITEM
	ORIGINAL GROUND
	FINISHED SUBGRADE

10 0 10 20
scale VERTICAL SCALE feet



PAD GRADING SLOPES:
CUT = 3H:1V
FILL = 3H:1V



CROSS SECTION LEGEND

SYMBOL	ITEM
	ORIGINAL GROUND
	SUBGRADE

15 0 15 30
scale VERTICAL SCALE feet

TOPO LEGEND

EXISTING	ITEM	PROPOSED/ FUTURE
	1' INTERMEDIATE CONTOUR	
	5' INDEX CONTOUR	
N/A	DRAINAGE DIRECTION	
	WELLHEAD	
ANCHOR	RIG ANCHOR	N/A
	SECTION LINE WITH RIGHT-OF-WAY	N/A
	1/4 & 1/16 LINES	N/A
	ACCESS ROAD	
	CULVERT	
N/A	TOTAL SITE DISTURBANCE	
N/A	SEDIMENT CONTROL	
	TREE ROWS, BUSHES	N/A
PL	PIPELINE	[PL]
E	UNDERGROUND POWER LINE	N/A
E(O)	OVERHEAD POWER LINE	N/A
	POWER POLE	N/A
E	ELECTRICAL JUNCTION BOX	N/A

GIS LINEWORK LEGEND

HESS GIS DATABASE APPROXIMATE LOCATIONS

TEL	COMMUNICATION LINES
ELE	ELECTRICAL LINES
FRN	FOREIGN LINES
POD	POD PIPELINES
SDE	SDE PIPELINES

50 0 50 100
scale feet

ROAD AND PAD GRADING PLAN

DRAWING NUMBER	TITLE
REFERENCE DRAWINGS	

NOT FOR CONSTRUCTION

NO	DATE	DESCRIPTION	DRAWN BY	CHK'D BY	APPV'D BY
A	05/10/17	ISSUED FOR CLIENT REVIEW.	MWB	DMS	PF

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EXPLORATION & PRODUCTION
BAKKEN
NDP-___-MUD-WOP-010__

MIDWAY VALVE SET BOOSETR PUMP
ENGINEERED PAD DESIGN AND CIVIL LAYOUT

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MWB	MWB	DMS	PF	05/17	AS SHOWN

SIZE	DRAWING No.	HESS DRAWING No.	SHEET	REV
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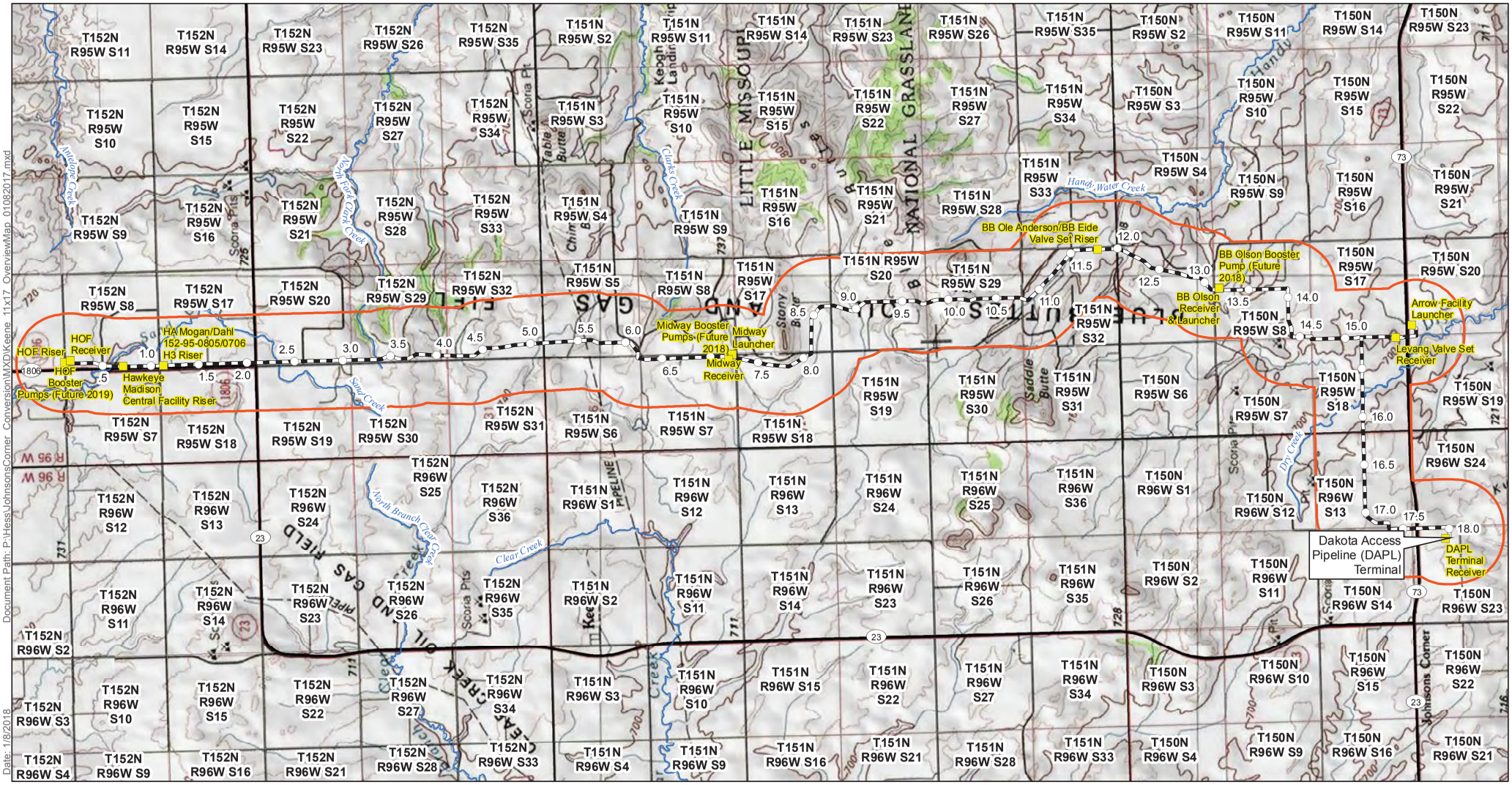
Appendix B

Project Maps





Above Ground Facility
Milepost
Proposed Alignment
Corridor (1 mile Study Area)
NHD Flowline
NHD Waterbody

Map not to scale, for environmental review purposes only.

N

E3 Environmental
Enhancing Execution with Experience

0 1 2 4 Miles

1:60,000

Hess

Keene Oil Gathering Conversion

Overview Map

McKenzie County, North Dakota



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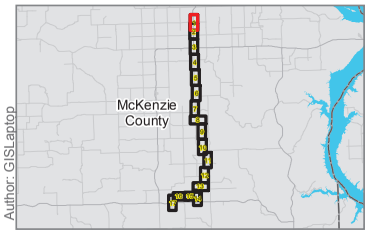
Date: 1/8/2018

Author: GISLaptop



- Above Ground Facility
- Milepost
- Centerline
- ND Well Data
- Potentially Occupied Structure (w/in 500ft)
- Environmental Survey Corridor

Natural Resource Survey Data

- Noxious Weeds
- Noxious Weeds
- Woody Vegetation - Shrub
- Woody Vegetation - Tree
- Woody Vegetation - Shrubs
- Woody Vegetation - Trees
- Wetland/Waterbody
- Nest

E3 Environmental
Enhancing Execution with Experience

N

0 200 400 800 Feet

1:4,800

Map not to scale, for environmental review purposes only.

Hess

Keene Oil Gathering Conversion
Siting Criteria
Natural Resource - Aerial Map
Page 1 of 17
McKenzie County, North Dakota



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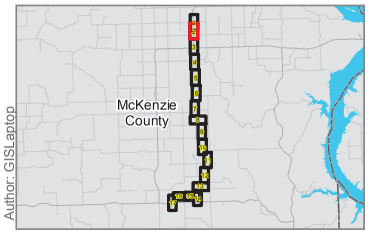
Date: 1/8/2018

Author: GISLaptop



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Natural Resource Survey Data

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E3 Environmental
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N

0 200 400 800 Feet

1:4,800

Map not to scale, for environmental review purposes only.

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Keene Oil Gathering Conversion
Siting Criteria
Natural Resource - Aerial Map
Page 2 of 17
McKenzie County, North Dakota



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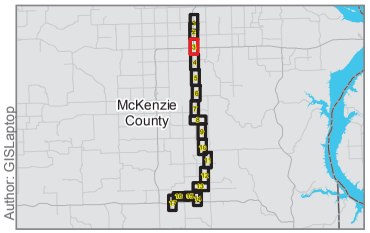

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E3 Environmental
Enhancing Execution with Experience

N

0 200 400 800 Feet

1:4,800

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Hess

Keene Oil Gathering Conversion
Siting Criteria
Natural Resource - Aerial Map
Page 3 of 17
McKenzie County, North Dakota



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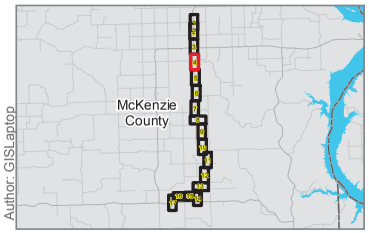
Author: GISLaptop



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E3 Environmental
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N

0 200 400 800 Feet

1:4,800

Map not to scale, for environmental review purposes only.

Hess

Keene Oil Gathering Conversion
Siting Criteria
Natural Resource - Aerial Map
Page 4 of 17
McKenzie County, North Dakota



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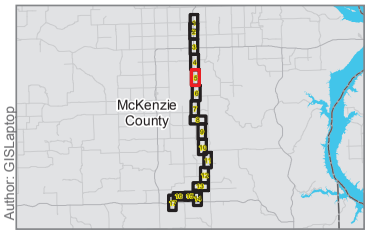

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E3 Environmental
Enhancing Execution with Experience

N

0 200 400 800 Feet

1:4,800

Map not to scale, for environmental review purposes only.

Hess

Keene Oil Gathering Conversion
Siting Criteria
Natural Resource - Aerial Map
Page 5 of 17
McKenzie County, North Dakota



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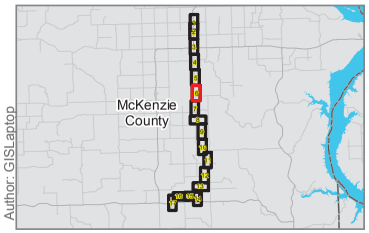

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E3 Environmental
Enhancing Execution with Experience

N

0 200 400 800 Feet

1:4,800

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Hess

Keene Oil Gathering Conversion
Siting Criteria
Natural Resource - Aerial Map

McKenzie County, North Dakota



Document Path: P:\Hess\JohnsonsCorner_ConversionMXD\Keene_11x17_NaturalResource_aerial_01082018.mxd

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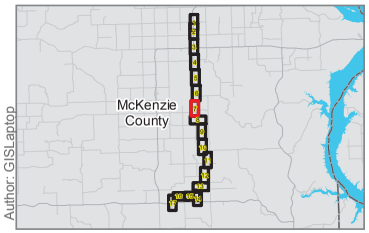

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Enhancing Execution with Experience

N

0 200 400 800 Feet

1:4,800

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Hess

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Siting Criteria
Natural Resource - Aerial Map
Page 7 of 17
McKenzie County, North Dakota



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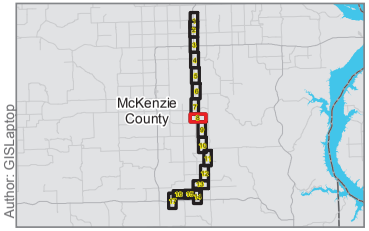
Date: 1/8/2018

Author: GISLaptop



- Above Ground Facility
- Milepost
- Centerline
- ND Well Data
- Potentially Occupied Structure (w/in 500ft)
- Environmental Survey Corridor

Natural Resource Survey Data

- Noxious Weeds
- Noxious Weeds
- Woody Vegetation - Shrub
- Woody Vegetation - Tree
- Woody Vegetation - Shrubs
- Woody Vegetation - Trees
- Wetland/Waterbody
- Nest

E3 Environmental
Enhancing Execution with Experience

N

0 200 400 800 Feet

1:4,800

Map not to scale, for environmental review purposes only.

Hess

Keene Oil Gathering Conversion
Siting Criteria
Natural Resource - Aerial Map

McKenzie County, North Dakota



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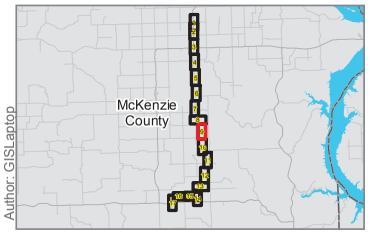

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Natural Resource - Aerial Map
Page 9 of 17
McKenzie County, North Dakota



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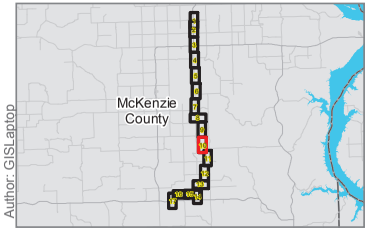

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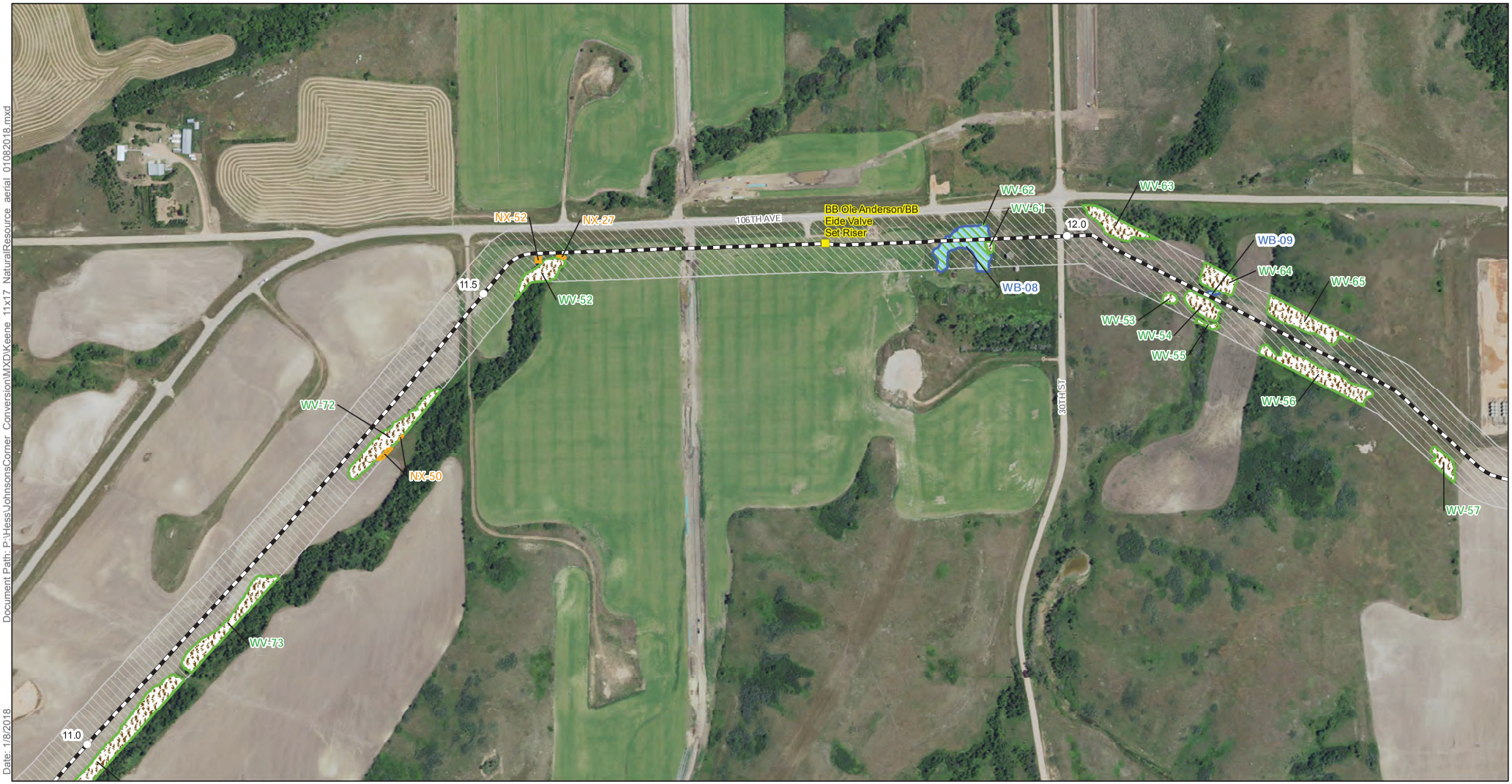
Siting Criteria
Natural Resource - Aerial Map
Page 10 of 17
McKenzie County, North Dakota



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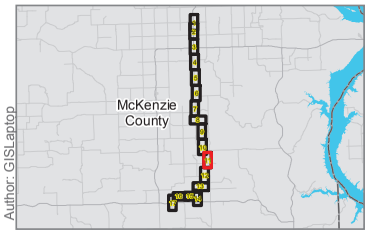

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Keene Oil Gathering Conversion
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Natural Resource - Aerial Map
Page 11 of 17
McKenzie County, North Dakota



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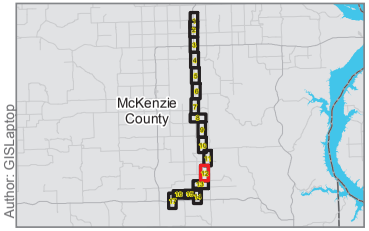

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Siting Criteria
Natural Resource - Aerial Map
Page 12 of 17
McKenzie County, North Dakota



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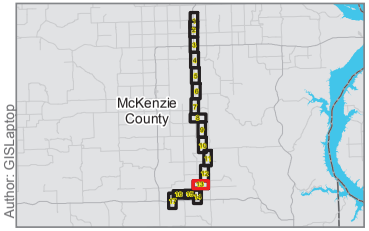

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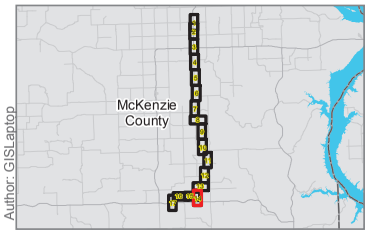

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Page 14 of 17
McKenzie County, North Dakota



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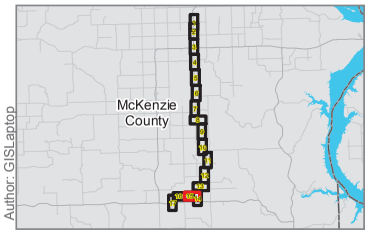

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Page 15 of 17
McKenzie County, North Dakota



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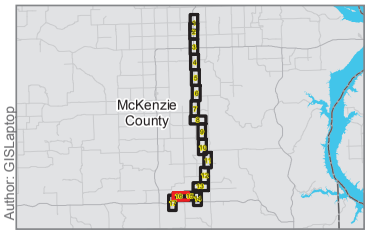

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Siting Criteria
Natural Resource - Aerial Map
Page 16 of 17
McKenzie County, North Dakota



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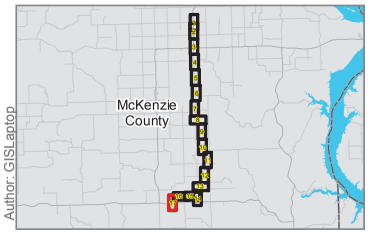

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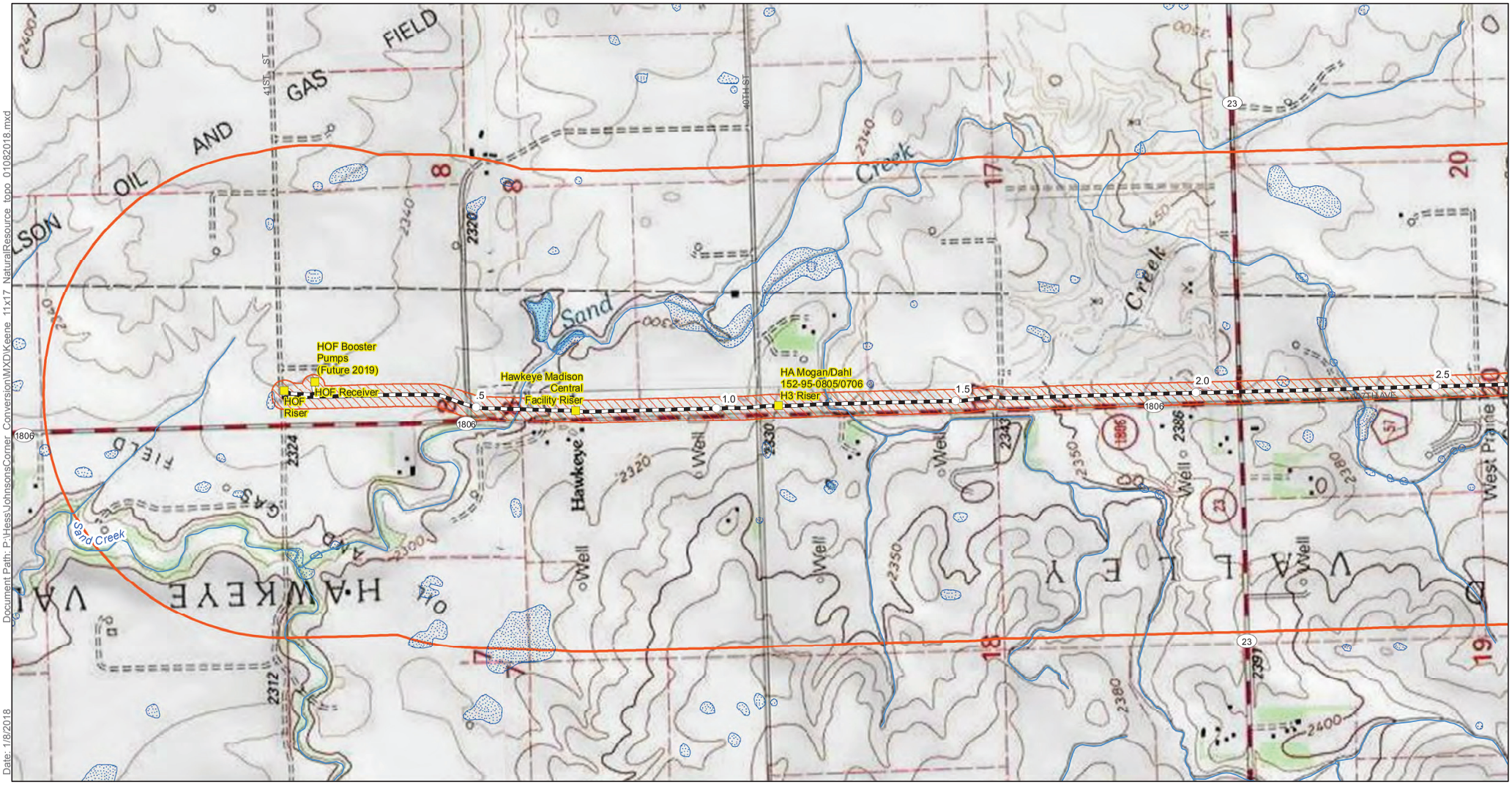
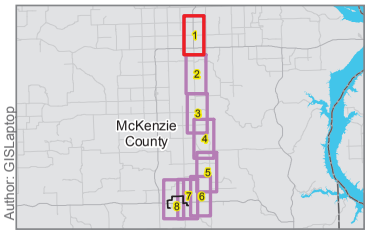
Natural Resource - Aerial Map
Page 17 of 17
McKenzie County, North Dakota





- Above Ground Facility
- Centerline
- Milepost
- Corridor (1 mile)
- NHD Waterway
- NHD Waterbody
- NWI Wetland

Land Ownership
- Federal Land
- State Land
- Native American Land
- ICBM Facility
- ICBM Direct Line to Control Facility

- Abandoned Mine
- NDGS Landslide Deposits
- North Dakota Mineral Trust Lands
- PLOTS Land

E3 Environmental
Enhancing Execution with Experience

N

0 500 1,000 2,000 Feet

1:12,000

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Keene Oil Gathering Conversion
Siting Criteria
Natural Resource - Topo Map
Page 1 of 8
McKenzie County, North Dakota

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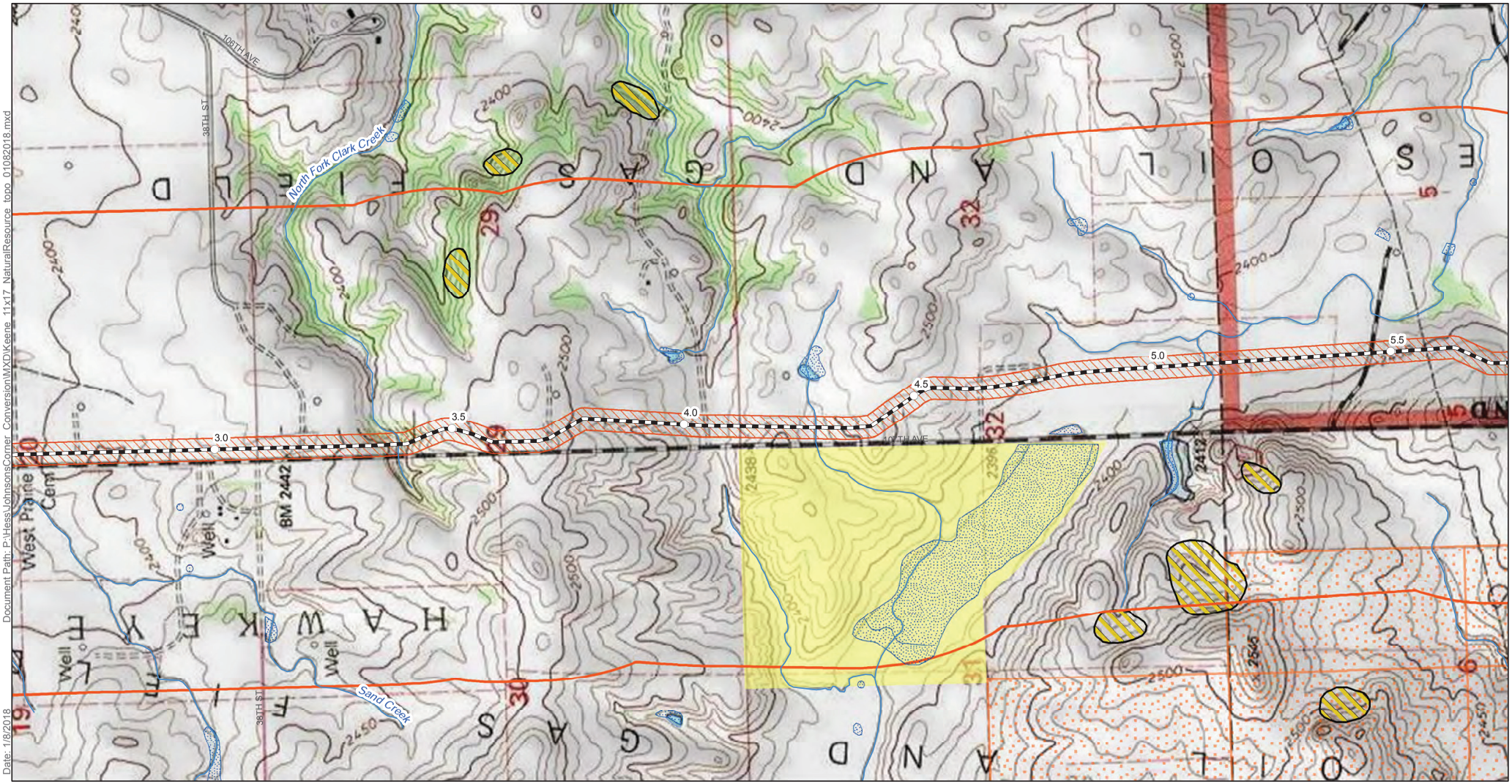

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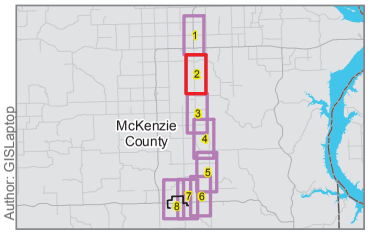

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N

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Keene Oil Gathering Conversion
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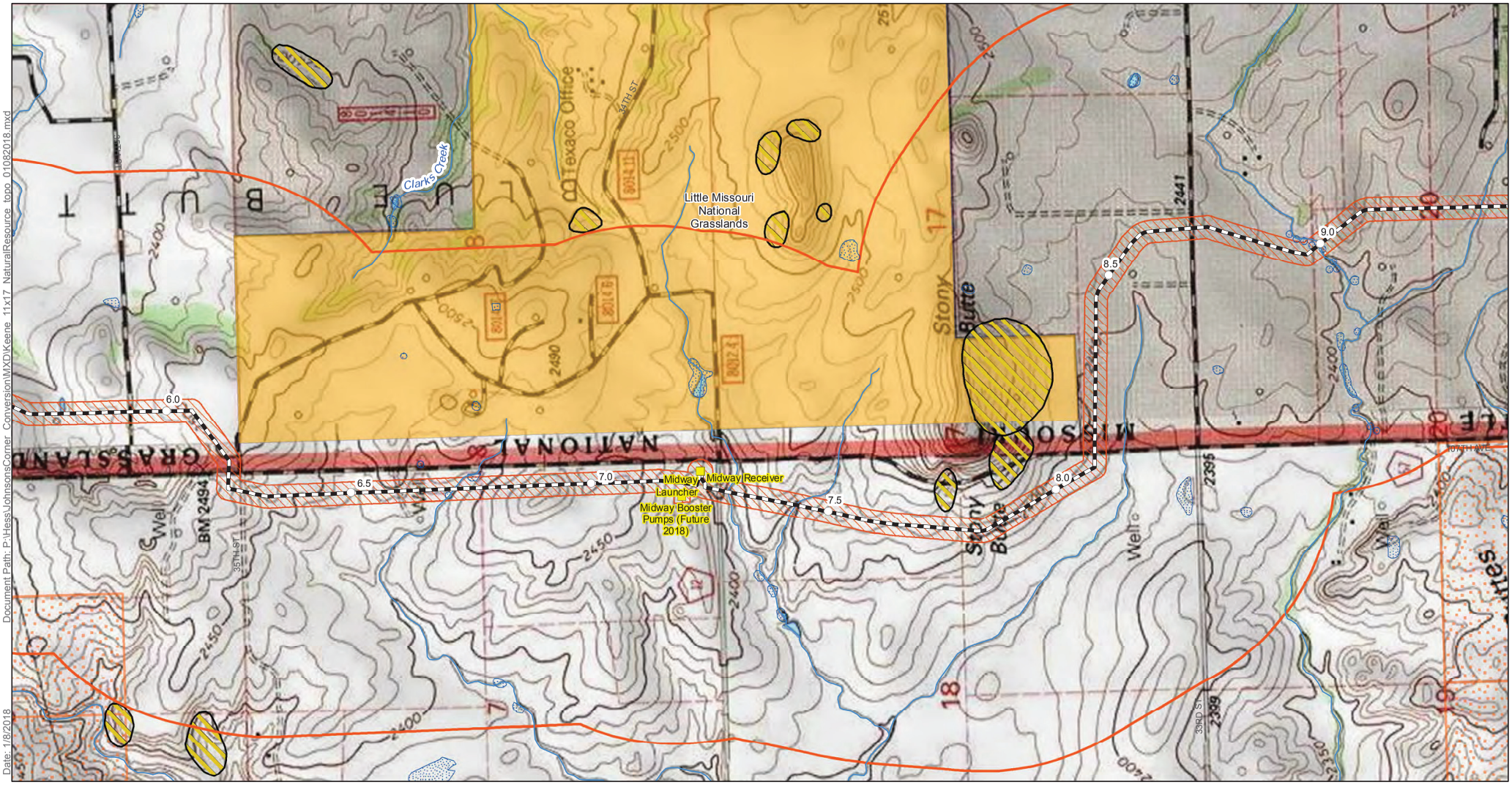
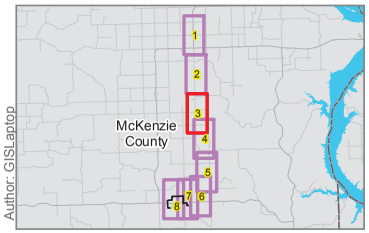
Natural Resource - Topo Map
Page 2 of 8
McKenzie County, North Dakota





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E3 Environmental — Enhancing Execution with Experience

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Page 3 of 8
McKenzie County, North Dakota

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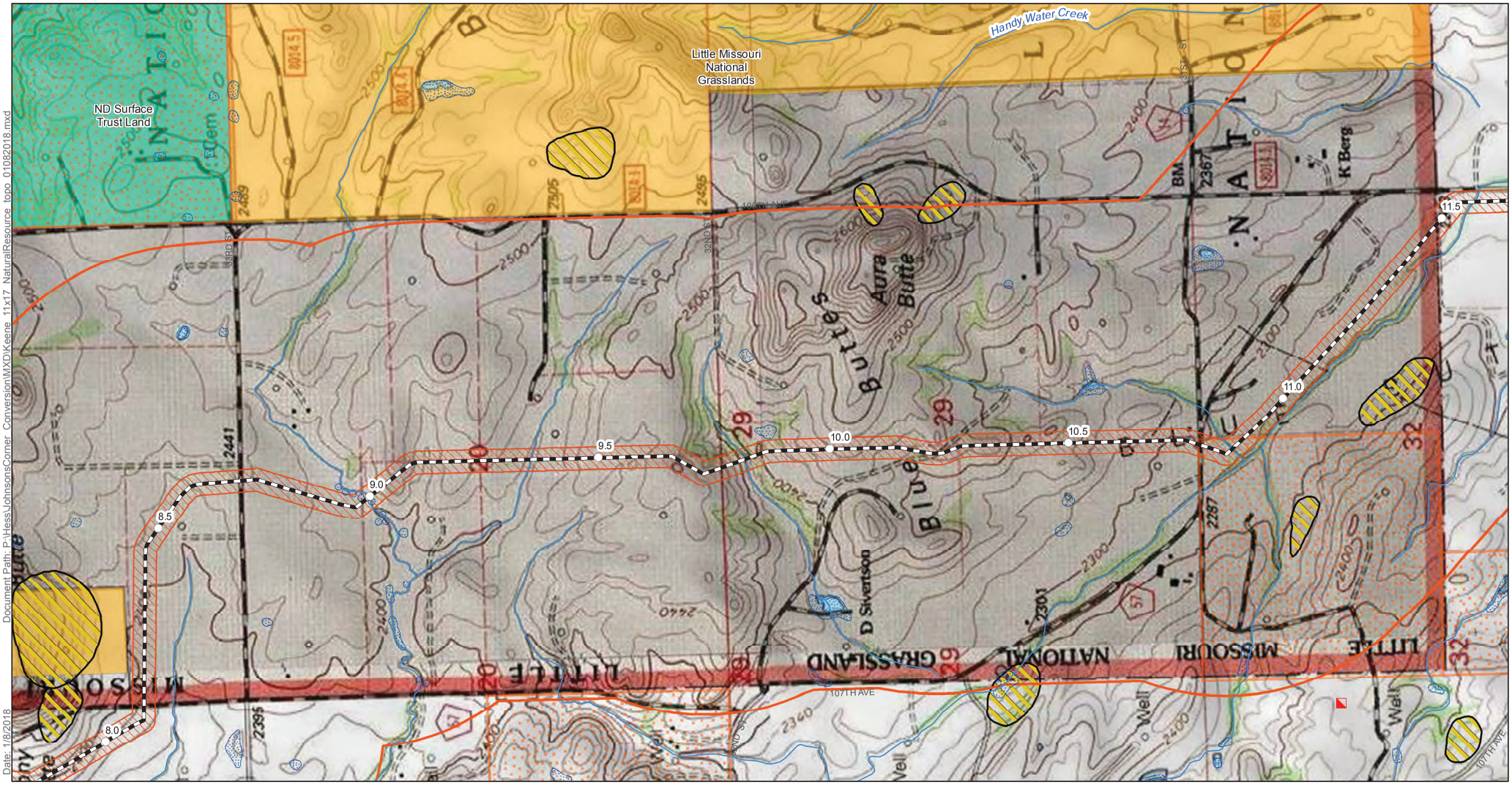

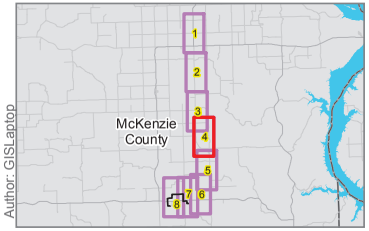

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Page 4 of 8
McKenzie County, North Dakota

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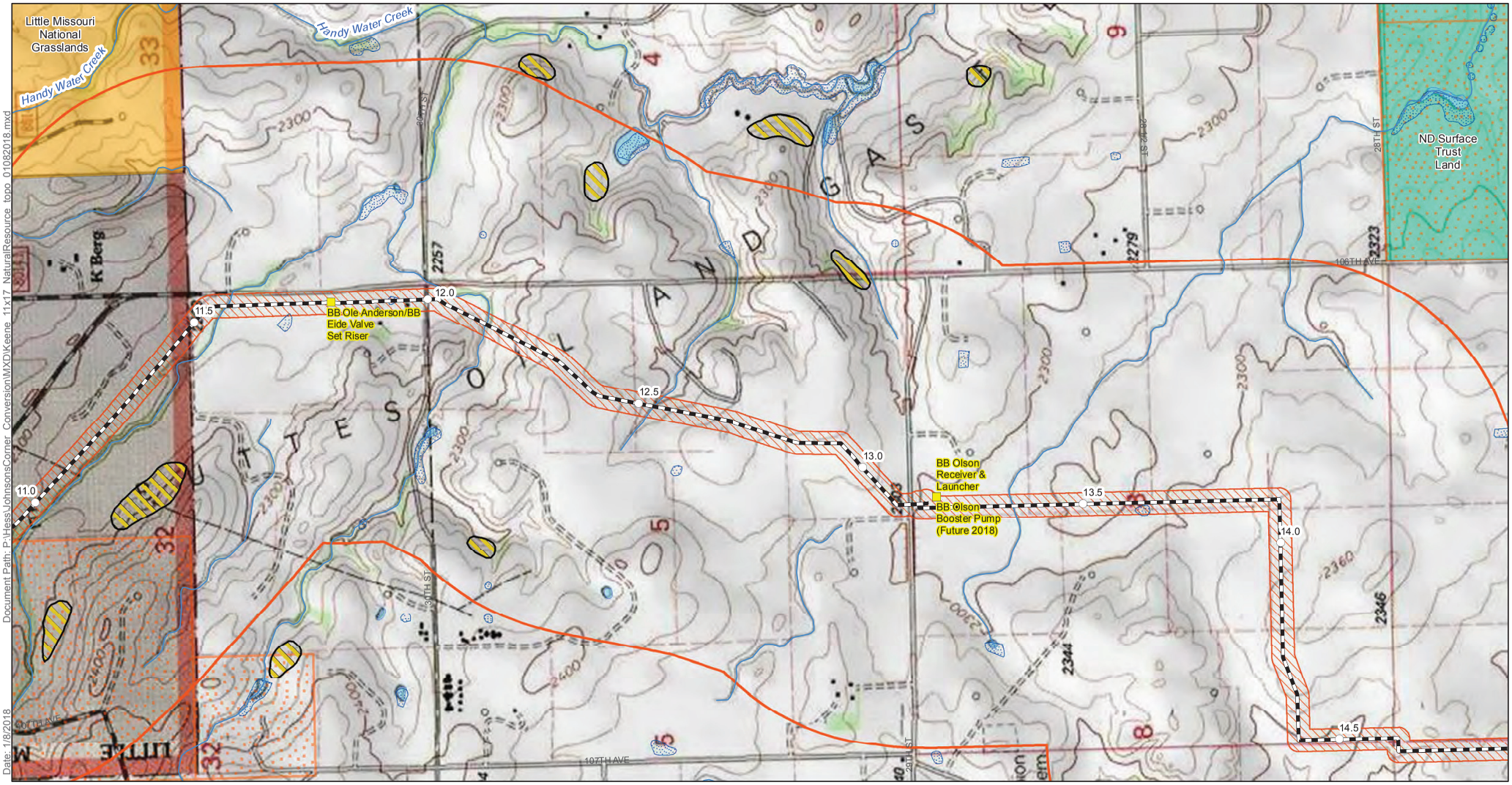

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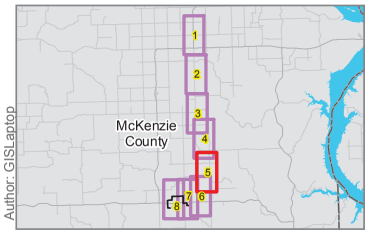

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Page 5 of 8
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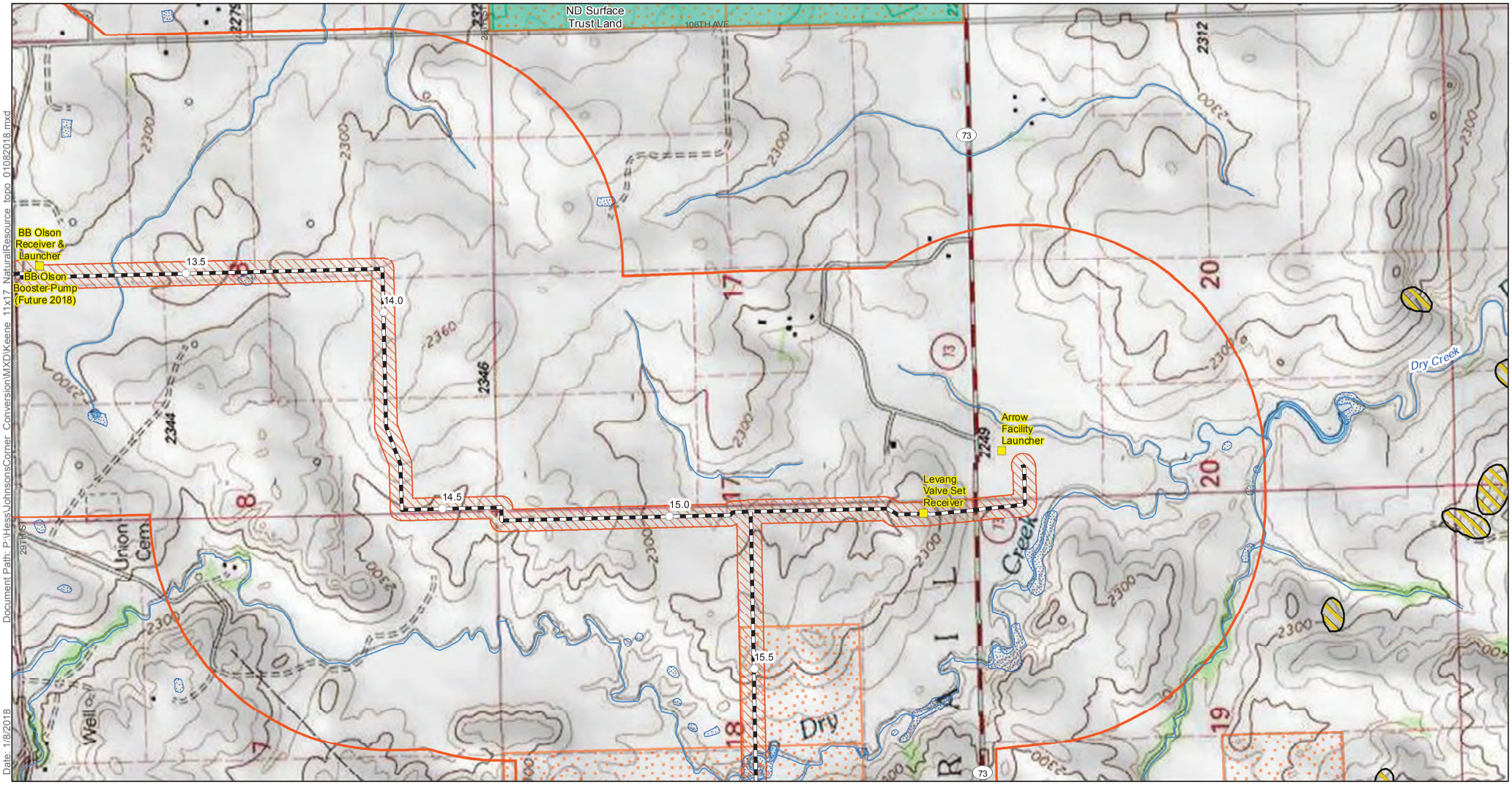

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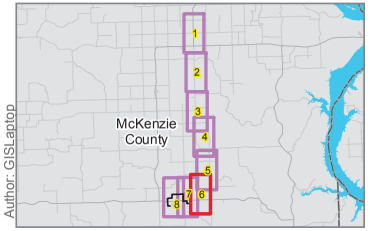

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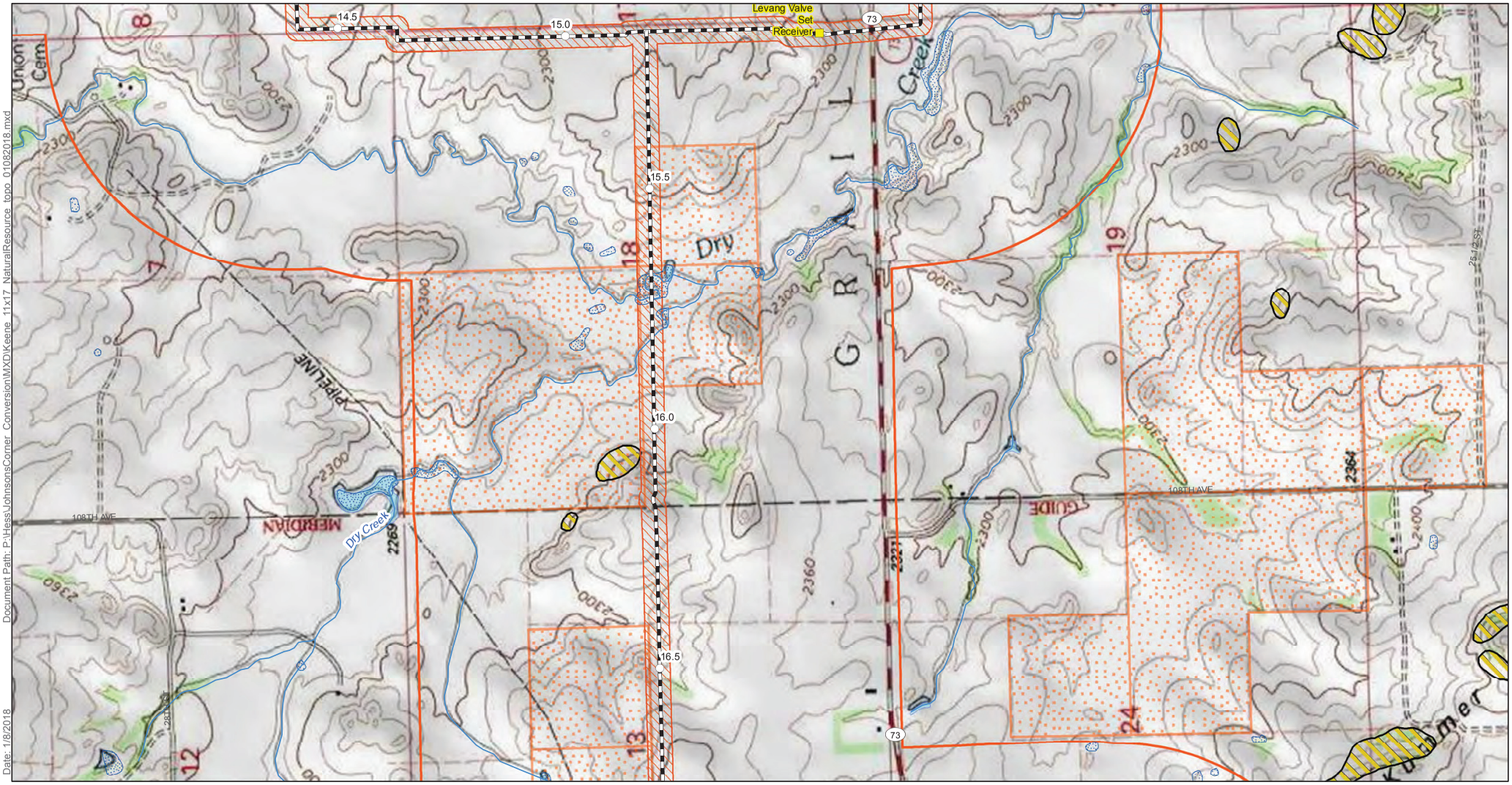
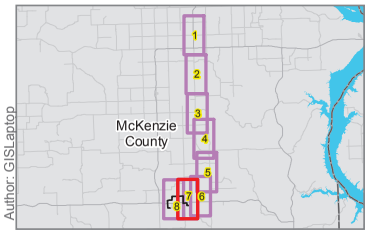
Page 6 of 8
McKenzie County, North Dakota





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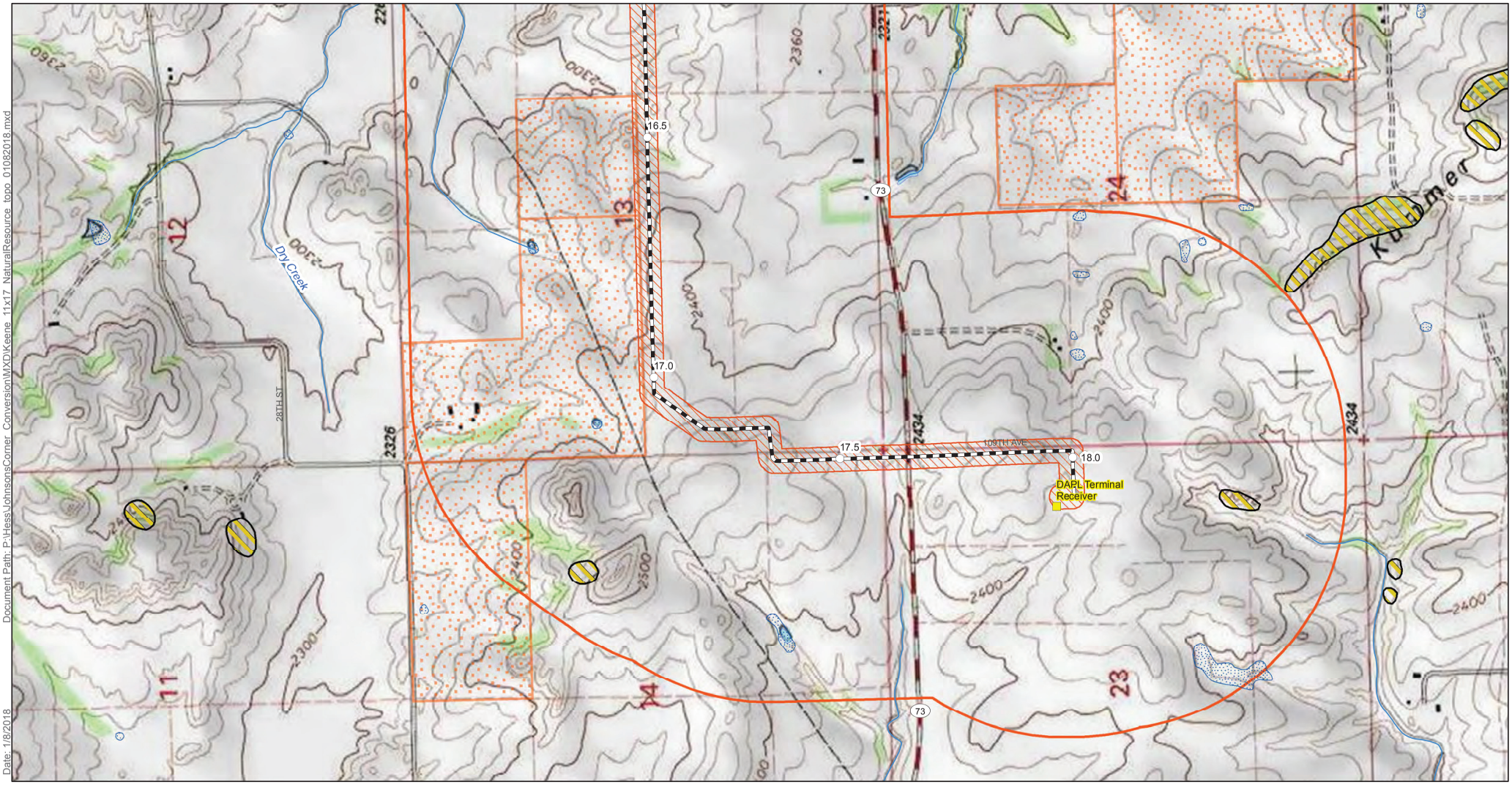

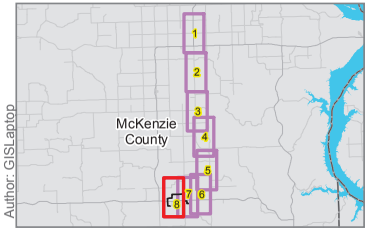

Above Ground Facility
Centerline
Milepost
Corridor (1 mile)
NHD Waterway
NHD Waterbody
NWI Wetland

Land Ownership
Federal Land
State Land
Native American Land
ICBM Facility
ICBM Direct Line to Control Facility

Abandoned Mine
NDGS Landslide Deposits
North Dakota Mineral Trust Lands
PLOTS Land

E3 Environmental
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N

0 500 1,000 2,000 Feet

1:12,000

Map not to scale, for environmental review purposes only.

Hess

Keene Oil Gathering Conversion
Siting Criteria
Natural Resource - Topo Map
Page 8 of 8
McKenzie County, North Dakota

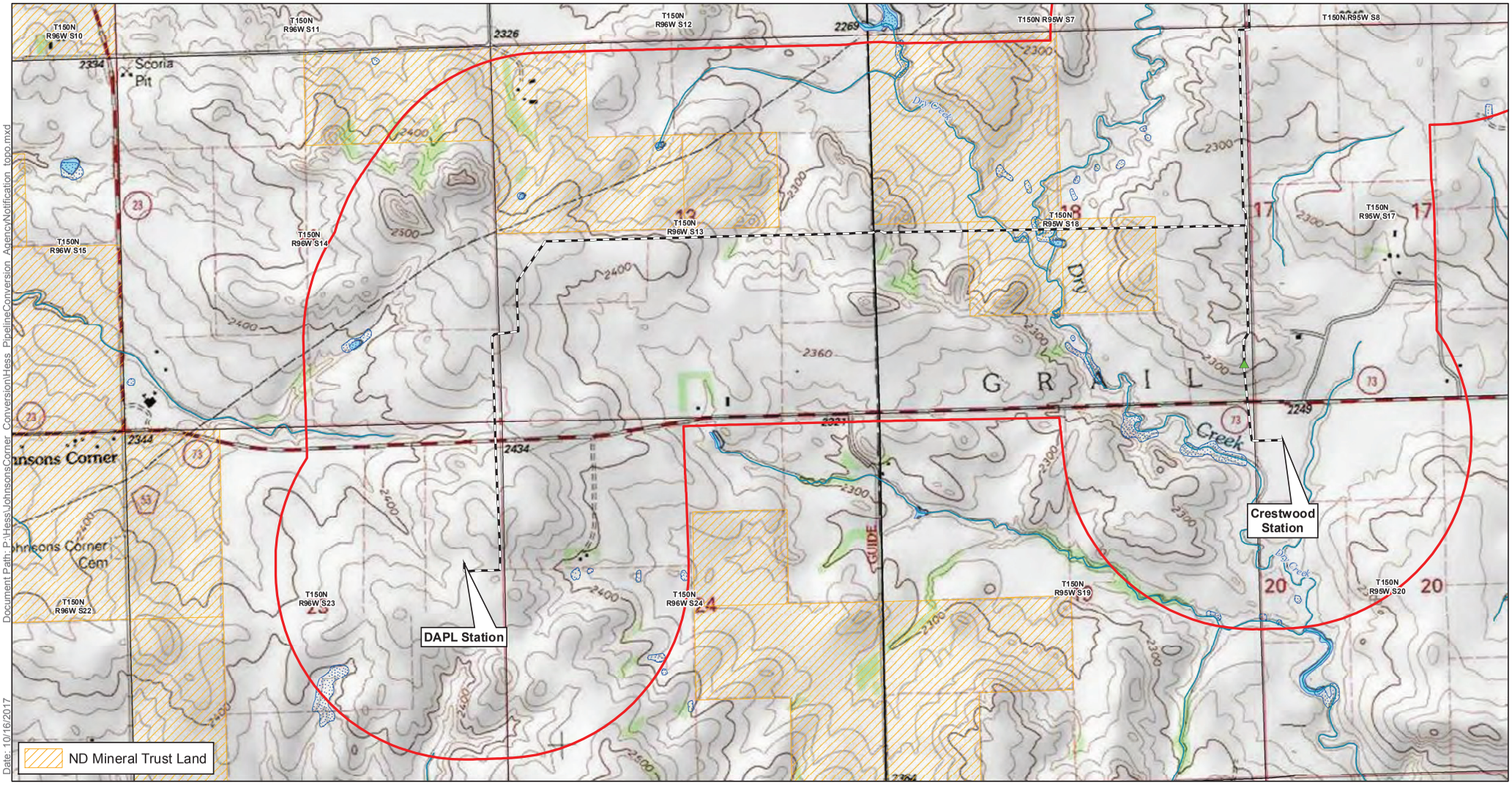
Document Path: P:\Hess\JohnsonsCorner_Conversion\MXD\Keene_11x17_NaturalResource_topo_01082018.mxd
Date: 1/8/2018
Author: GISLaptop

Appendix C

Agency Consultations

Consultation Maps

Maps utilized for all Agency consultations.





Centerline
Corridor
Valve Site
Milepost
NHD Waterway
NWI Wetland
NHD Waterbody

N

E3 Environmental
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0 0.5 1 2 Miles

1:53,183

Map not to scale, for environmental review purposes only.

Hess Corporation

Keene Oil Pipeline Project

Consultation Map - Topo

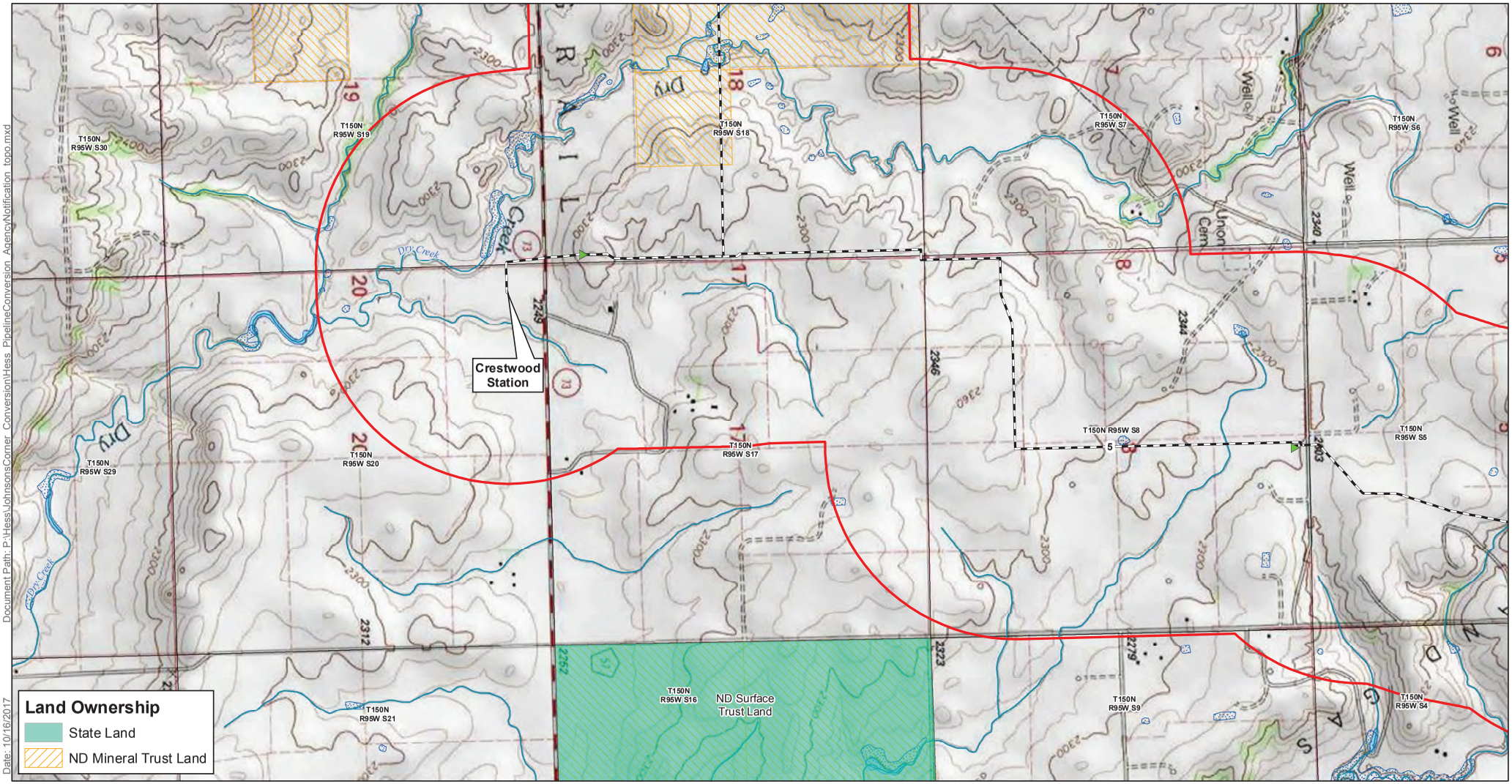
Page 1 of 7

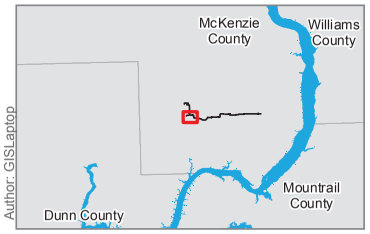
McKenzie County, ND

Author: GISLaptop

Date: 10/16/2017

Document Path: P:\Hess\JohnsonsCorner_ConversionHess_PipelineConversion_AgencyNotification_topo.mxd





Centerline
Corridor
Valve Site
Milepost
NHD Waterway
NWI Wetland
NHD Waterbody

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0 0.175 0.35 0.7 Miles

1:15,140

Map not to scale, for environmental review purposes only.

Hess Corporation

Keene Oil Pipeline Project

Consultation Map - Topo

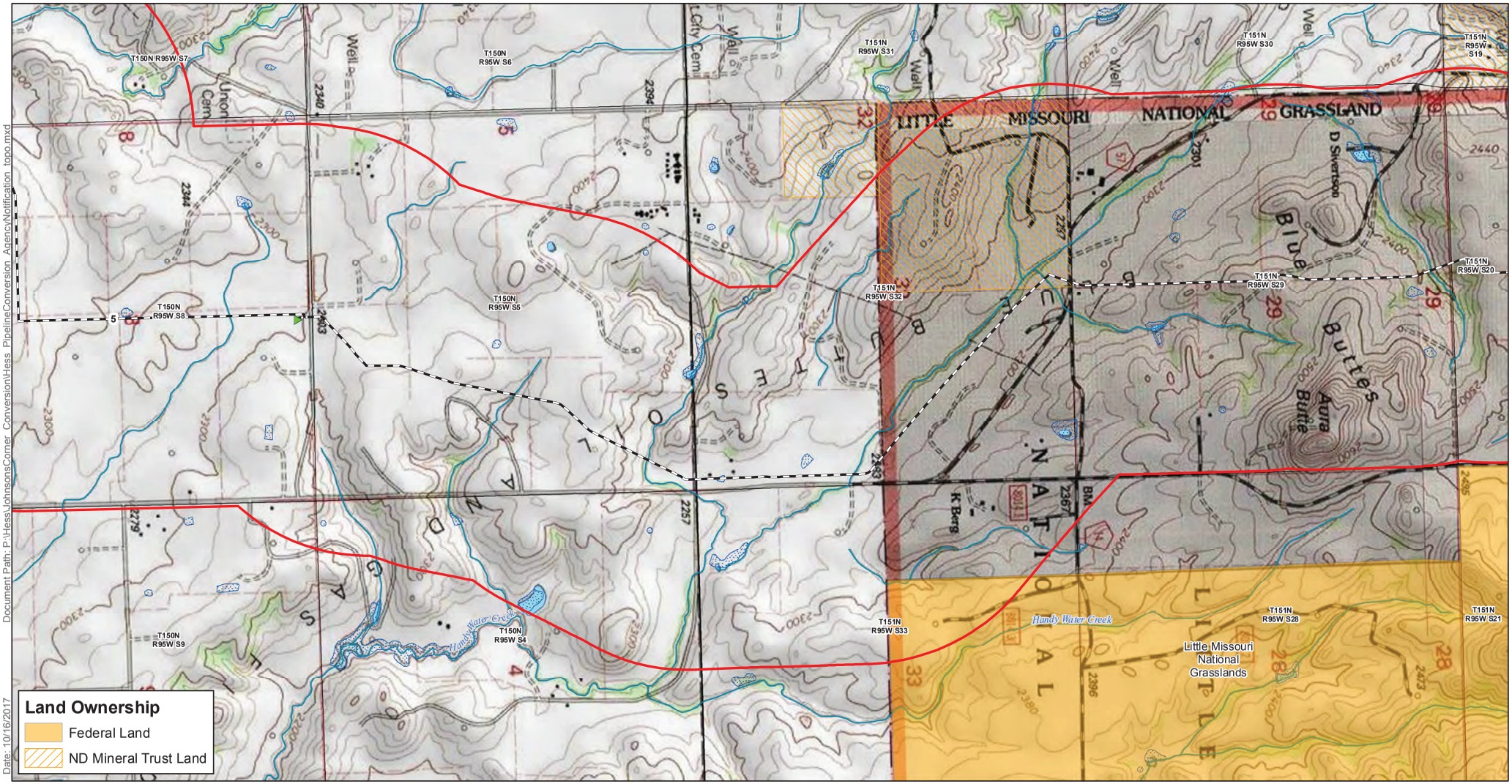
Page 2 of 7

McKenzie County, ND

Author: GISLaptop

Date: 10/16/2017

Document Path: P:\Hess\JohnsonsCornet_ConversionHess_PipelineConversion_AgencyNotification_topo.mxd



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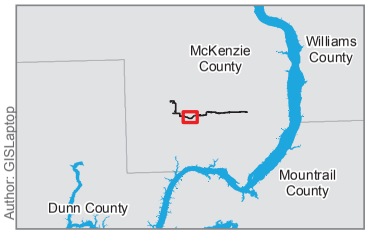
Date: 10/16/2017

Author: GISLaptop



Centerline
Corridor
Valve Site
Milepost
NHD Waterway
NWI Wetland
NHD Waterbody

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E3 Environmental
Enhancing Execution with Experience

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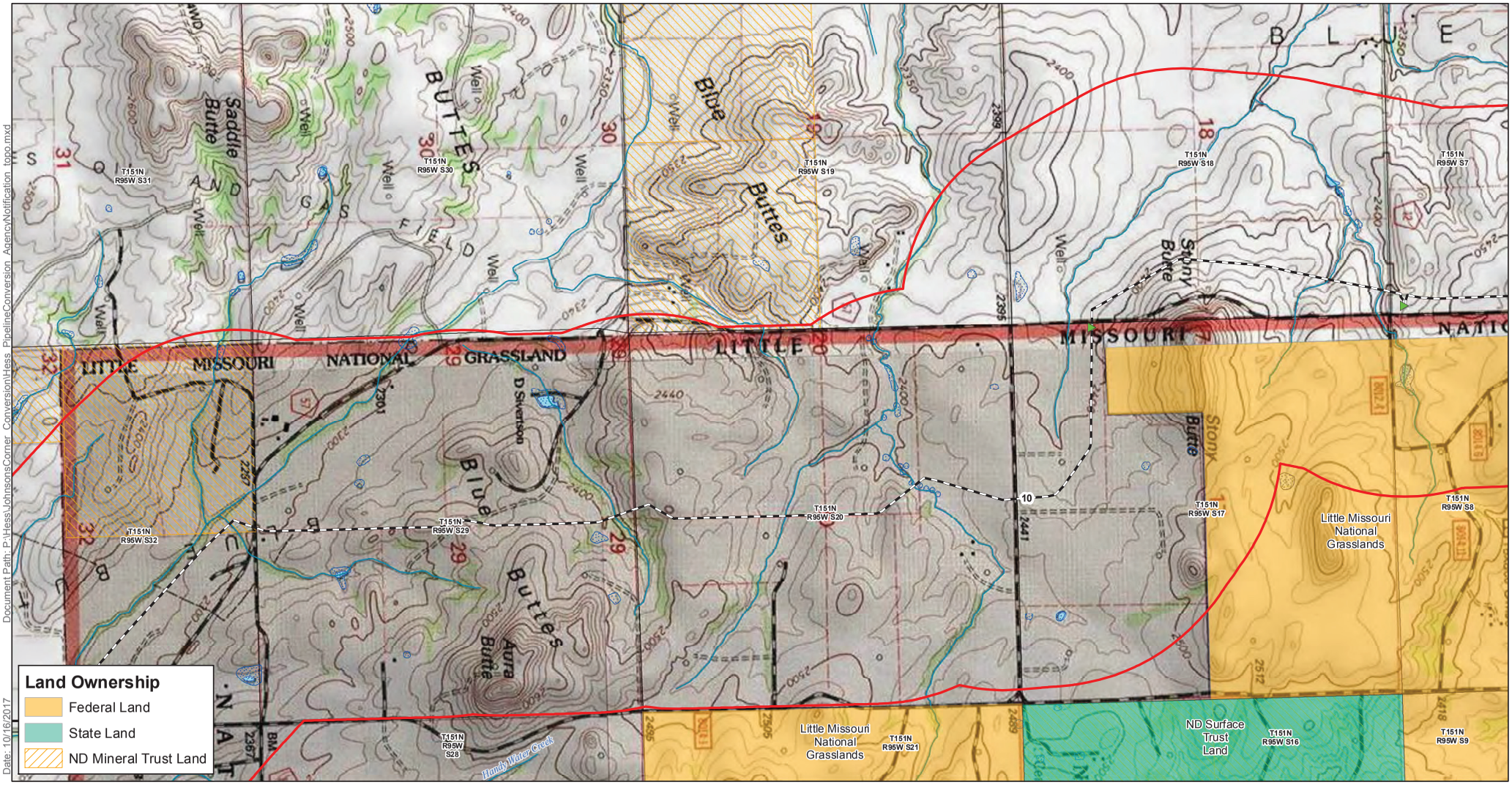
Map not to scale, for environmental review purposes only.

Hess Corporation

Keene Oil Pipeline Project

Consultation Map - Topo

McKenzie County, ND





Centerline
Corridor
Valve Site
Milepost
NHD Waterway
NWI Wetland
NHD Waterbody

E3 Environmental
Enhancing Execution with Experience

0 0.175 0.35 0.7 Miles

1:15,140

Map not to scale, for environmental review purposes only.

Hess Corporation

Keene Oil Pipeline Project

Consultation Map - Topo

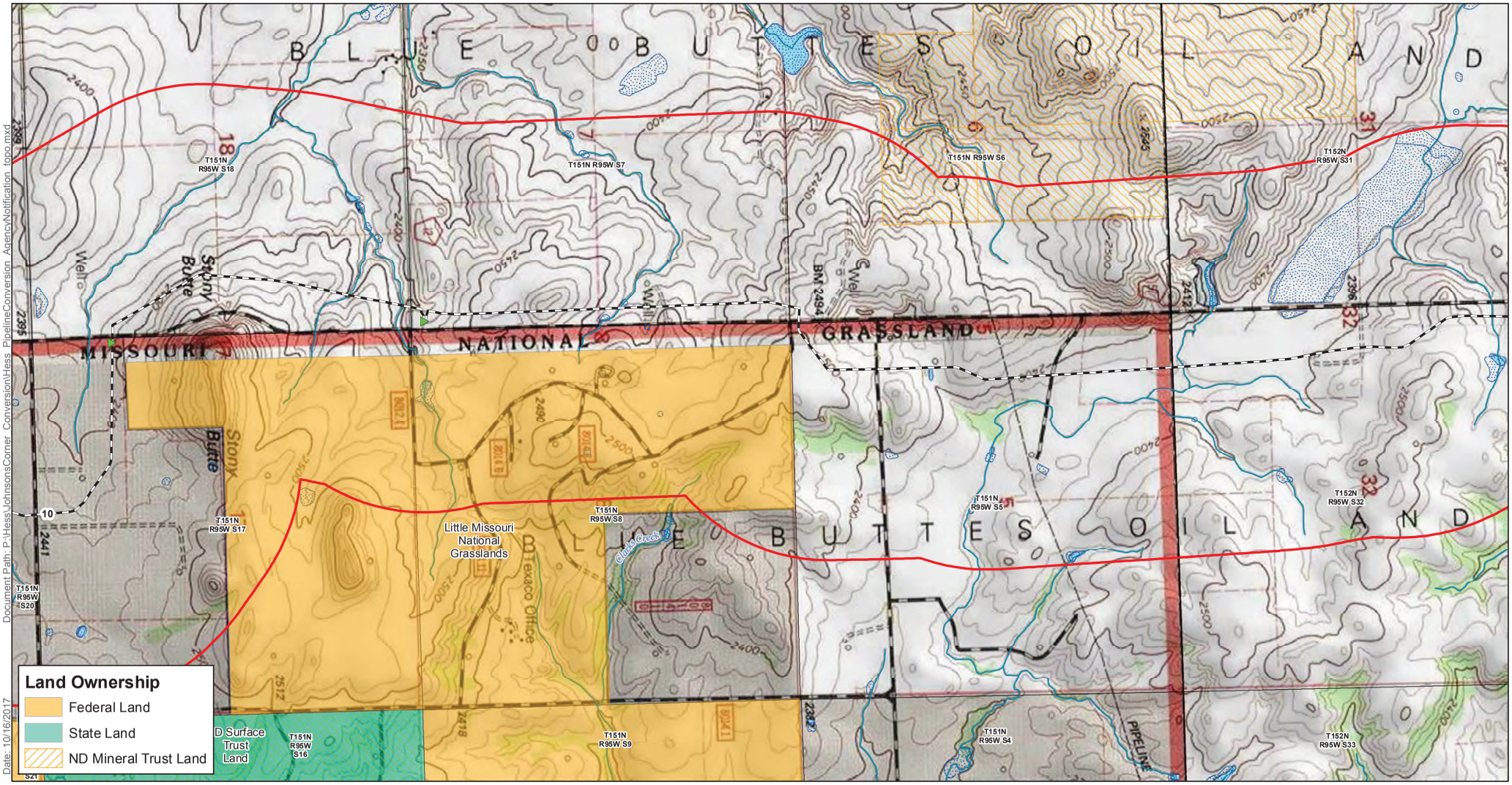
Page 4 of 7

McKenzie County, ND

Document Path: P:\Hess\JohnsonsCorner_ConversionHess_PipelineConversion_AgencyNotification_topo.mxd

Date: 10/16/2017

Author: GISLaptop



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Date: 10/16/2017

Author: GISLaptop



Centerline
Corridor
Valve Site
Milepost
NHD Waterway
NWI Wetland
NHD Waterbody

N

E3 Environmental
Enhancing Execution with Experience

0 0.175 0.35 0.7 Miles

1:15,140

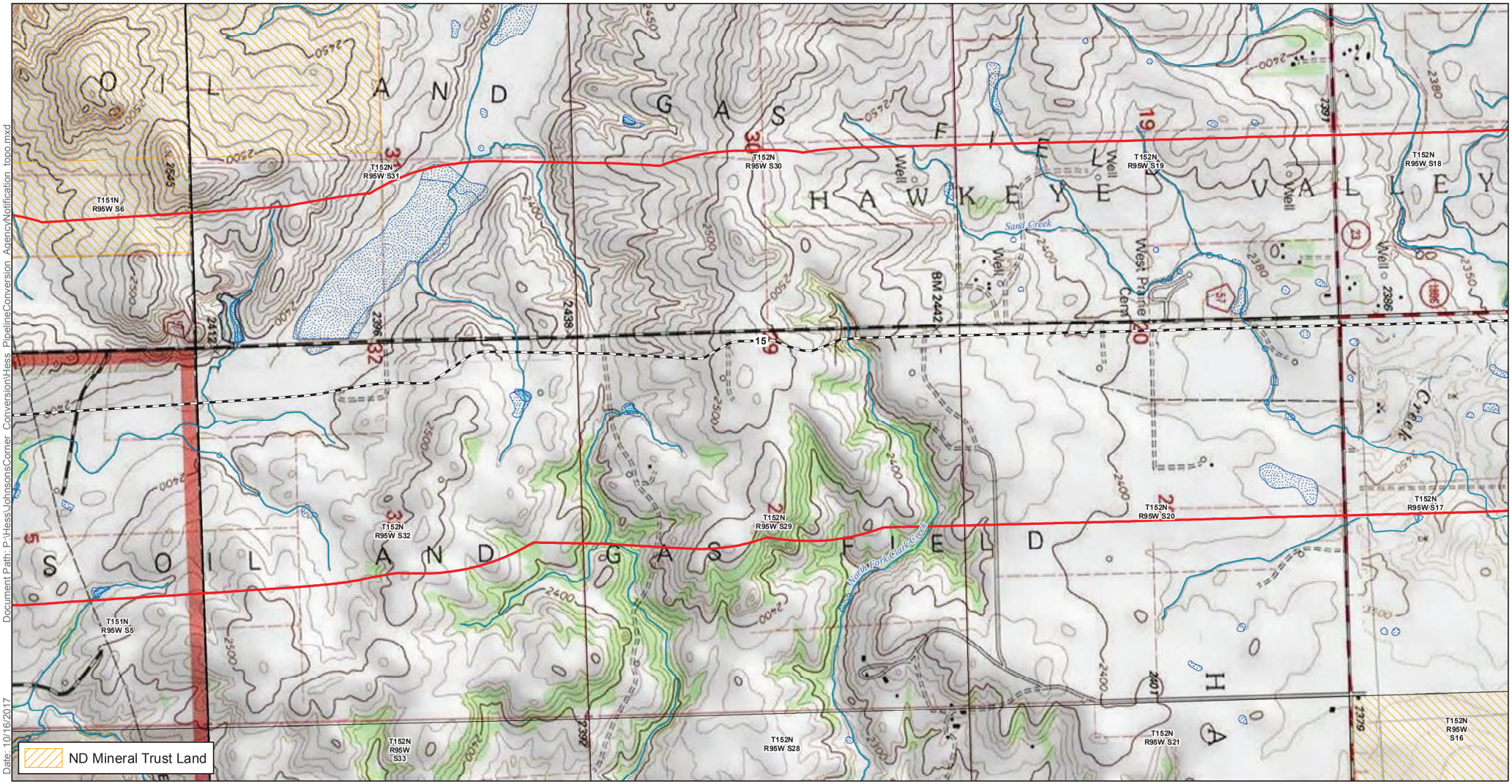
Map not to scale, for environmental review purposes only.

Hess Corporation

Keene Oil Pipeline Project

Consultation Map - Topo

McKenzie County, ND



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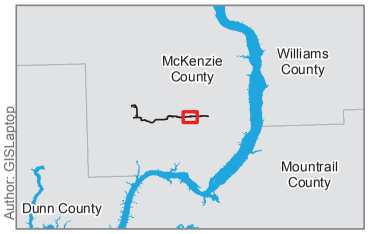
Date: 10/16/2017

Author: GISLaptop



Centerline
Corridor
Valve Site
Milepost
NHD Waterway
NWI Wetland
NHD Waterbody

N

E3 Environmental
Enhancing Execution with Experience

0 0.175 0.35 0.7 Miles

1:15,140

Map not to scale, for environmental review purposes only.

Hess Corporation

Keene Oil Pipeline Project

Consultation Map - Topo

Page 6 of 7

McKenzie County, ND





Centerline
Corridor
Valve Site
Milepost
NHD Waterway
NWI Wetland
NHD Waterbody

N

E3 Environmental
Enhancing Execution with Experience

0 0.175 0.35 0.7 Miles

1:15,140

Map not to scale, for environmental review purposes only.

Hess Corporation

Keene Oil Pipeline Project

Consultation Map - Topo

Page 7 of 7

McKenzie County, ND

Author: GISLaptop

Date: 10/16/2017

Document Path: P:\Hess\JohnsonsCorner_ConversionHess_PipelineConversion_AgencyNotification_topo.mxd

U.S. Fish and Wildlife Service

Consultation

November 2, 2017

Mr. Scott Larson, Field Supervisor
U.S. Fish and Wildlife Service
North Dakota Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics – Keene Oil Gathering System Conversion Project
Federally Listed Species, USFWS Managed Lands, and Migratory Bird Consultation

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics, referred to jointly as Hess, are planning the Keene Oil Gathering System Conversion Project (Project). The Project will result in the conversion of 19 miles of existing gathering pipeline and its associated facilities. The Project will be entirely located within McKenzie County North Dakota and will fall under the jurisdiction of the Public Service Commission (PSC). The Project centerline will traverse Township 150N Range 95W Sections 5, 8, 17, 18, 19 & 20, Township 150N Range 96W Sections 13, 14 & 23, Township 151N Range 95W Sections 5, 7, 17, 18, 20, 29 & 32 and Township 152N Range 95W Sections 8, 17, 20, 29 & 32. The Project alignment and 1-mile wide Study Area are depicted on the attached maps.

The purpose of this request is to provide the U.S. Fish and Wildlife Service (USFWS) with notification of the proposed Project and to share Hess' analysis of the environmental topics relevant to the PSC's siting requirements. On November 2, 2017, E3 Environmental, LLC (E3) conducted a web-based consultation using USFWS's IPaC system. This analysis is based upon results of the project specific query of the IPaC system.

Federally Listed Species Analysis:
The results of the search of the USFWS's IPaC system on November 2, 2017 found the following:

- Least tern (*Sternula antillarum*) – endangered
- Piping plover (*Charadrius melodus*) – threatened, and designated critical habitat
- Rufa red knot (*Calidris canutus rufa*) –threatened
- Northern long-eared bat (*Myotis septenrionnalis*) – threatened
- Whooping crane (*Grus americana*) – endangered
- Pallid sturgeon (*Scaphirhynchus albus*) – endangered
- Dakota skipper (Hesperia dacotae) –threatened, and designated critical habitat
- Gray wolf (*Canis lupus*) – endangered

Least Tern
The interior populations of the Least Tern have historically been associated with large river systems for breeding and migratory habitats. Breeding birds are known to congregate in colonies, utilizing sandbar habitat common to larger rivers. The Least Tern is found in North Dakota during the late spring and summer breeding season (mid-May through late August, with the peak of the nesting season occurring from mid-June to mid-July). Desktop analysis supported with field studies have concluded that no suitable habitat is present within the Project area; therefore, impacts to the Least Tern are not anticipated.

E3 ENVIRONMENTAL™
871 Jefferson Avenue
St. Paul, MN 55102

Piping plover
The Piping plover is associated with shorelines along small alkaline lakes, large reservoir beaches, and river islands and adjacent sand pits. Breeding birds select wide beaches with highly clumped vegetation covering less than 25 percent of the area. Breeding season in North Dakota occurs mid-April through August. The Missouri River and Lake Sakakawea, approximately 8 miles north of the site at its nearest point, are the closest designated critical habitats for the Piping plover. Desktop analysis supported with field studies have concluded that no suitable habitat is present within the Project area; therefore, impacts to the Piping plover or its designated critical habitat are not anticipated.

Rufa red knot
The Rufa red knot migrates between breeding grounds in Canada and wintering grounds in South America. A significant factor threatening the Rufa red knot is destruction and modification of its habitat due to beach erosion and shoreline protection and stabilization projects. Migratory behavior and habitat requirements of this species are poorly understood particularly for those populations occupying the midcontinent flyways. Inland stopovers include the Mississippi Valley, Great Lakes, and Great Plains. Desktop analysis supported with field studies have concluded that no suitable habitat is present within the Project area; therefore impacts to the Rufa red knot are not anticipated.

Northern long-eared bat: The northern long-eared bat (NLEB) roosts underneath bark, in cavities, or in crevices of both live and dead trees. Populations have also been found in cool environments such as caves and mines, and prefer to spend winter hibernating in locations with high humidity and no air currents. Breeding occurs in late summer or early fall in maternity colonies where females give birth around the same time, which may occur anywhere from late May to late July. The Final 4(d) rule exempts incidental take of the NLEB from all activities occurring in areas that have not been affected by white-nose syndrome. The Study Area occurs outside of the USFWS white-nose syndrome buffer zone; as such, there are no restrictions for Project activities.

Whooping crane
The whooping crane is a large bodied marsh species that breeds primarily in Canada and winters in the Gulf of Mexico. This species has been closely studied and monitored in recent years due to its small population. North Dakota provides migratory habitat for the species, providing roosting and feeding opportunities during migration. This species prefers larger wetland complexes for roosting habitat, typically using adjacent uplands for foraging opportunities. The Project under consideration will not result in any impacts to the crane or a loss of crane habitat.

Least Pallid Sturgeon
The pallid sturgeon's preferred habitat includes the benthic environment associated with swift waters of large turbid, free-flowing rivers with braided channels, dynamic flow patterns, periodic flooding of terrestrial habitats, and requiring extensive micro habitat diversity. The species inhabits the Missouri and Mississippi Rivers from Montana to Louisiana. In North Dakota, reaches of the Missouri River have been cited as providing suitable habitat for the pallid sturgeon. However, there is no suitable sturgeon habitat in the Project area as the Missouri River does not intersect the project corridor; as such, impacts to the pallid sturgeon are not anticipated.

Dakota skipper
Dakota skippers require untilled, high-quality prairie. Habitat preferred by the skipper is wet-mesic prairie with little topographic relief on near-shore glacial lake deposits and in rolling

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871 Jefferson Avenue
St. Paul, MN 55102

native-prairie terrain over gravelly glacial moraine deposits. Larvae feed on grasses, favoring little bluestem (*Schizachyrium scoparium*). Adults commonly feed on nectar of flowering native forbs such as harebell (*Campanula rotundifolia*), wood lily (*Lilium philadelphicum*), and purple coneflower (*Echinacea angustifolia*). This species is not known to disperse widely and has low mobility, dispersing a maximum of 0.6-mile. The species is threatened by conversion of native prairie to cultivated agriculture or shrublands, over-grazing, invasive species, gravel mining, and inbreeding. The proposed Project site is primarily cultivated cropland and has been managed as such for more than 20 years. Review of aerial photos and soil survey data indicate that untilled, high-quality prairie dominated by native grasses that contain a high diversity of native forbs are not present within the Project site or within one-half mile of the site. Desktop analysis supported that no suitable habitat is present within the Project area; therefore, impacts to the Dakota skipper are not anticipated.

Gray wolf

The gray wolf is a large carnivore that through conservation measures has experienced strong population recovery, particularly in the Great Lakes states of the upper Midwest. As populations rebound, individuals may break from packs to explore opportunities to establish packs in unoccupied territory. Roaming individuals can cover great distances without establishing viable breeding populations in previously unoccupied habitat(s). This species is not tolerant of human disturbance and will tend to avoid interaction with humans. Therefore, this Project will have no effect on the gray wolf.

USFWS Managed Lands:

Conservation programs such as Waterfowl Production Areas and wetland and grassland easements represent an important tool used by USFWS to identify and manage high quality wildlife habitat. A review of public records failed to identify any of these USFWS managed lands in the Project study area. Hess requests that USFWS notify Hess of any USFWS managed lands located within the proposed study area.

Migratory Bird Consultation:

USFWS administers various wildlife related mandates of national concern including the Migratory Bird Treaty Act (MBTA). Hess understands that unlike the Endangered Species Act, the MBTA has no provisions for the allowance of a take and therefore compliance may best be achieved by avoiding or minimizing the potential to interact with migratory species during the active breeding season. Hess also understands that in North Dakota, the breeding season is typically defined as occurring annually from February 1 through July 15.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. E3 has been retained by Hess to provide environmental consulting support for this Project. Should you have any questions or require additional information, please contact me at 651-282-0652 or kschmidt@go2e3.com.

Sincerely,

Katie Schmidt

Katie Schmidt, Senior Consultant
E3 Environmental, LLC
871 Jefferson Ave
St. Paul, MN 55102

North Dakota Game and Fish Department

Consultation

From: Schumacher, John D.
To: Katie Schmidt
Subject: Hess - Keene Oil Gathering System Conversion Project
Date: Thursday, November 30, 2017 4:25:23 PM

Ms. Schmidt,

The North Dakota Game and Fish Department has reviewed this project for wildlife concerns. We do not believe it will have significant adverse effects on wildlife or wildlife habitat based on the information provided.

JOHN SCHUMACHER
RESOURCE BIOLOGIST
ND GAME AND FISH DEPT
701.328.6321

November 2, 2017

Mr. Greg Link, Chief
Conservation and Communication Division
North Dakota Game and Fish Department
100 N. Bismarck Expressway
Bismarck, ND 58501-5095

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics – Keene Oil Gathering System Conversion Project
State Conservation Priority Species Consultation

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics, referred to jointly as Hess, are planning the Keene Oil Gathering System Conversion Project (Project). The Project will result in the conversion of 19 miles of existing gathering pipeline and its associated facilities. The Project will be entirely located within McKenzie County North Dakota and will fall under the jurisdiction of the Public Service Commission (PSC). The Project centerline will traverse Township 150N Range 95W Sections 5, 8, 17, 18, 19 & 20, Township 150N Range 96W Sections 13, 14 & 23, Township 151N Range 95W Sections 5, 7, 17, 18, 20, 29 & 32 and Township 152N Range 95W Sections 8, 17, 20, 29 & 32. The Project alignment and 1-mile wide Study Area are depicted on the attached maps.

The purpose of this correspondence is to afford the North Dakota Game and Fish Department the opportunity to assess the Project and associated Study Area for the presence or absence of State Conservation Priority Species.

We appreciate your assistance with this request and look forward to your timely review and comments regarding this Project. E3 has been retained by Hess to provide environmental consulting support for this Project. Should you have any questions or require additional information, please contact me at 651-282-0652 or kschmidt@go2e3.com.

Sincerely,

Katie Schmidt

Katie Schmidt, Senior Consultant
E3 Environmental, LLC
871 Jefferson Ave
St. Paul, MN 55102

North Dakota Parks and Recreation Department

Consultation

November 2, 2017

Ms. Kathy Duttenhefner, Coordinator
Natural Resources Division
North Dakota Department of Parks and Recreation
1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics – Keene Oil Gathering System Conversion Project
Natural Heritage Inventory Review
State Park Lands; and Land and Water Conservation Fund Review

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics, referred to jointly as Hess, are planning the Keene Oil Gathering System Conversion Project (Project). The Project will result in the conversion of 19 miles of existing gathering pipeline and its associated facilities. The Project will be entirely located within McKenzie County North Dakota and will fall under the jurisdiction of the Public Service Commission (PSC). The Project centerline will traverse Township 150N Range 95W Sections 5, 8, 17, 18, 19 & 20, Township 150N Range 96W Sections 13, 14 & 23, Township 151N Range 95W Sections 5, 7, 17, 18, 20, 29 & 32 and Township 152N Range 95W Sections 8, 17, 20, 29 & 32. The Project alignment and 1-mile wide Study Area are depicted on the attached maps.

E3 Environmental, LLC (E3), on behalf of Hess, submits this information and respectfully requests the North Dakota Parks and Recreation Department (Department) to review a 1-mile wide study area, which is centered upon the Project alignment.

As indicated above, the purpose of this request is to provide the Department notice of the Project, and to ensure the environmental topics that fall under the purview of the Department, which are also relevant to the PSC's siting requirements for transmission facilities, are administrated properly. It is our understanding that the Department administers the following state programs:

- State Park Lands
- Land and Water Conservation Fund
- Natural Heritage Inventory

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. E3 has been retained by Hess to provide environmental consulting support for this Project. Should you have any questions or require additional information, please contact me at 651-282-0652 or kschmidt@go2e3.com.

Sincerely,

Katie Schmidt

Katie Schmidt, Senior Consultant
E3 Environmental, LLC
871 Jefferson Ave
St. Paul, MN 55102

Consultation

Chris Schmidt

From: Stegmiller, Joseph H. <jstegmiller@nd.gov>
Sent: Wednesday, November 15, 2017 2:49 PM
To: Chris Schmidt
Cc: Katie Schmidt
Subject: RE: Hess Corporation: Keene Gathering System Conversion Project & Surface Trust Lands

Mr. Schmidt,

The North Dakota Department of Trust Lands does not have any comments in regards to the proposed Keene Gathering System Conversions Project. The proposed pipeline route will not impact any tracts of land managed by the Surface Management Division. Therefore, the project will not require an easement from the Department of Trust Lands.

Joseph H. Stegmiller
Natural Resources Professional
North Dakota Department of Trust Lands
1707 N 9th Street
Bismarck ND 58506-5523
PH: (701)328-1912

From: Chris Schmidt [mailto:CSchmidt@go2e3.com]
Sent: Wednesday, November 15, 2017 9:32 AM
To: Stegmiller, Joseph H. <jstegmiller@nd.gov>
Cc: Katie Schmidt <KSchmidt@go2e3.com>
Subject: RE: Hess Corporation: Keene Gathering System Conversion Project & Surface Trust Lands

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Mr. Stegmiller,

Thank you. I look forward to receiving comments from the Department of Trust Lands.

Thanks again,

Chris Schmidt, GIT
Consultant
E3 Environmental, LLC
cschmidt@go2e3.com
O: 651.282.0654
M: 651.315.6066



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From: Stegmiller, Joseph H. [mailto:jstegmiller@nd.gov]
Sent: Wednesday, November 15, 2017 9:04 AM
To: Chris Schmidt <CSchmidt@go2e3.com>
Cc: Katie Schmidt <KSchmidt@go2e3.com>
Subject: RE: Hess Corporation: Keene Gathering System Conversion Project & Surface Trust Lands

Mr. Schmidt,

I will review the project and replay with any comments the Department of Trust Lands has as soon as possible.

Joseph H. Stegmiller
Natural Resources Professional
North Dakota Department of Trust Lands
1707 N 9th Street
Bismarck ND 58506-5523
PH: (701)328-1912

From: Chris Schmidt [mailto:CSchmidt@go2e3.com]
Sent: Tuesday, November 14, 2017 9:22 AM
To: Stegmiller, Joseph H. <jstegmiller@nd.gov>
Cc: Katie Schmidt <KSchmidt@go2e3.com>
Subject: Hess Corporation: Keene Gathering System Conversion Project & Surface Trust Lands

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Dear Mr. Stegmiller,

It has come to E3 Environmental, LLC's (E3) attention that Mr. Haupt has retired and that you are the new contact for State School Trust Lands associated with pipeline projects. E3 has been retained by Hess Corporation to provide environmental consulting support for the Keene Gathering System Conversion Project (see attached). For your convenience, E3 is submitting an electronic copy of the project notification letter, shapefiles and maps to assist in your review for the presence or absence of State School Trust Lands associated with the Project.

Please let me know if I can be of further assistance, or if you have any questions or concerns regarding the attached files.

Thank you for your time and consideration.

Sincerely,

Chris Schmidt, GIT
Consultant
E3 Environmental, LLC
cschmidt@go2e3.com
O: 651.282.0654
M: 651.315.6066
871 Jefferson Avenue
St. Paul, MN 55102
www.go2e3.com



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November 2, 2017

Mr. Michael Haupt, Land Management Professional
North Dakota Department of Trust Lands
Surface Management Division
1707 North 9th Street, P.O. Box 5523
Bismarck, ND 58506-5523

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics – Keene Oil Gathering System Conversion Project
School Trust Lands Consultation

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics, referred to jointly as Hess, are planning the Keene Oil Gathering System Conversion Project (Project). The Project will result in the conversion of 19 miles of existing gathering pipeline and its associated facilities. The Project will be entirely located within McKenzie County North Dakota and will fall under the jurisdiction of the Public Service Commission (PSC). The Project centerline will traverse Township 150N Range 95W Sections 5, 8, 17, 18, 19 & 20, Township 150N Range 96W Sections 13, 14 & 23, Township 151N Range 95W Sections 5, 7, 17, 18, 20, 29 & 32 and Township 152N Range 95W Sections 8, 17, 20, 29 & 32. The Project alignment and 1-mile wide Study Area are depicted on the attached maps.

The purpose of this correspondence is to request a review of the Project and associated Study Area (see attached) for the presence or absence of State School Trust Lands. This information will be included in the PSC application for the Project.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. E3 has been retained by Hess to provide environmental consulting support for this Project. Should you have any questions or require additional information, please contact me at 651-282-0652 or kschmidt@go2e3.com.

Sincerely,

Katie Schmidt

Katie Schmidt, Senior Consultant
E3 Environmental, LLC
871 Jefferson Ave
St. Paul, MN 55102

Consultation

Chris Schmidt

From: Bement, Allisen C. <abement@nd.gov>
Sent: Monday, November 13, 2017 3:34 PM
To: Chris Schmidt
Cc: Katie Schmidt
Subject: RE: Hess Corporation: Keene Gathering System Conversion Project & Mineral Management Consultation

Chris,

We agree that the data provided fairly represents the approximate location of the pipeline project as indicated by E3 Environmental and the proximity of mineral interests managed by this office to that pipeline, for use in a filing with the PSC in the state of North Dakota. However, we would like to point out that the mineral estate management by this office includes an undivided interest in T150N-R95W-18: Nw4SE, NE4SW4 which appears to be crossed in the maps provided to this office.

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

Respectfully,

Allisen Bement, RL
Land Professional
ND Department of Trust Lands
701.328.1952
abement@nd.gov

From: Chris Schmidt [mailto:CSchmidt@go2e3.com]
Sent: Monday, November 6, 2017 12:40 PM
To: Bement, Allisen C. <abement@nd.gov>
Cc: Katie Schmidt <KSchmidt@go2e3.com>
Subject: Hess Corporation: Keene Gathering System Conversion Project & Mineral Management Consultation

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Dear Ms. Bement,

E3 Environmental, LLC (E3) has been retained by Hess Corporation to provide environmental consulting support for the Keene Gathering System Conversion Project (see attached). For your convenience, E3 is submitting an electronic copy of the project notification letter, maps, and shapefiles to assist in your review of the Project.

Please let me know if I can be of further assistance, or if you have any questions or concerns regarding the attached files.

Thank you for your time and consideration.

Sincerely,

Chris Schmidt, GIT
Consultant
E3 Environmental, LLC
cschmidt@go2e3.com
O: 651.282.0654
M: 651.315.6066
871 Jefferson Avenue
St. Paul, MN 55102
www.go2e3.com



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November 2, 2017

Ms. Allisen Bement, Land Professional
North Dakota Department of Trust Lands
Mineral Management Division
1707 North 9th Street, P.O. Box 5523
Bismarck, ND 58506-5523

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics – Keene Oil Gathering System Conversion Project
State Mineral Trust Lands Consultation

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics, referred to jointly as Hess, are planning the Keene Oil Gathering System Conversion Project (Project). The Project will result in the conversion of 19 miles of existing gathering pipeline and its associated facilities. The Project will be entirely located within McKenzie County North Dakota and will fall under the jurisdiction of the Public Service Commission (PSC). The Project centerline will traverse Township 150N Range 95W Sections 5, 8, 17, 18, 19 & 20, Township 150N Range 96W Sections 13, 14 & 23, Township 151N Range 95W Sections 5, 7, 17, 18, 20, 29 & 32 and Township 152N Range 95W Sections 8, 17, 20, 29 & 32. The Project alignment and 1-mile wide Study Area are depicted on the attached maps.

A desktop review of the Project route was completed and no State Mineral Trust Lands appeared to be crossed by the Project route. The purpose of this consultation letters is to confirm the results of this review and provide your agency the opportunity to provide comment on the proposed Project.

We appreciate your assistance with this request and look forward to your timely review and comments regarding this Project. E3 has been retained by Hess to provide environmental consulting support for this Project. Should you have any questions or require additional information, please contact me at 651-282-0652 or kschmidt@go2e3.com.

Sincerely,
Katie Schmidt

Katie Schmidt, Senior Consultant
E3 Environmental, LLC
871 Jefferson Ave
St. Paul, MN 55102

North Dakota State Historic Preservation Office

Consultation

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

Jack Dalrymple
Governor of North Dakota

North Dakota State Historical Board

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Bismarck - President

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Valley City - Vice President

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Bismarck

Sara Otte Coleman
Director
Tourism Division

Kelly Schmidt
State Treasurer

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Secretary of State

Mark Zimmerman
Director
Parks and Recreation Department

Grant Levi
Director
Department of Transportation

Claudia J. Berg
Director

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September 30, 2016

Ms. Katie Schmidt
E3 Environmental, LLC
871 Jefferson Avenue
St. Paul, MN 55102

NDSHPO REF.: 16-1800 ND PSC "Hess Corporation's Subsidiaries: Hess North Dakota Pipelines, LLC and Hess Export Logistics Class I and Class III Inventory of the Johnson's Corner Merchant Capability Project"

Dear Ms. Schmidt,

We reviewed NDSHPO REF.: 16-1800 ND PSC "Hess Corporation's Subsidiaries: Hess North Dakota Pipelines, LLC and Hess Export Logistics Class I and Class III Inventory of the Johnson's Corner Merchant Capability Project," and find the report acceptable. There has been a good faith effort to identify and avoid impacts to "Significant Sites," provided the project remains as described and mapped in this report dated September 2016.

Thank you for the opportunity to review the project. If you have questions please contact Susan Quinnell at squinnell@nd.gov or (701) 328-3576.

Sincerely,

Claudia J. Berg
Director, State Historical Society of North Dakota

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

Doug Burgum
Governor of North Dakota

North Dakota
State Historical Board

Terrance Rockstad
Bismarck - President

Gereld Gerntholz
Valley City - Vice President

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Tourism Division

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Secretary of State

Melissa Baker
Director
Parks and Recreation Department

Thomas Sorel
Interim Director
Department of Transportation

Claudia J. Berg
Director

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November 9, 2017

Joseph K. Pnewski, MA, RPA
Associate Archaeologist
E3 Environmental, LLC
871 Jefferson Avenue
St. Paul, MN 55102

ND SHPO Ref: 18-0118 PSC "Hess North Dakota Pipelines, LLC and Hess North Dakota Export Logistics Keene Oil Gathering System Conversion Class I and Class III Cultural Resource Inventory, McKenzie County, North Dakota" in portions of [T151N R95W Section 7]

Dear Mr. Pnewski,

We reviewed ND SHPO Ref: 18-0118 PSC "Hess North Dakota Pipelines, LLC and Hess North Dakota Export Logistics Keene Oil Gathering System Conversion Class I and Class III Cultural Resource Inventory, McKenzie County, North Dakota," and find the report acceptable. There has been a good faith effort to identify and avoid impacts to "Significant Sites," provided the project remains as described and mapped in this report dated November 2017.

Thank you for the opportunity to review this project. If you have questions please contact or Susan Quinnell at squinnell@nd.gov or (701) 328-3576.

Sincerely,

Claudia J. Berg
Director, State Historical Society of North Dakota

North Dakota State Water Commission

Consultation

North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
(701) 328-2750 • TTY 1-800-366-6888 or 711 • FAX (701) 328-3696 • http://swc.nd.gov

December 4, 2017

Katie Schmidt
E3 Environmental
871 Jefferson Avenue
St. Paul, MN 55102

Dear Ms. Schmidt:

This is in response to your request for a review of the environmental impacts associated with the Hess North Dakota Pipelines LLC and Hess North Dakota export Logistics – Keene Oil Gathering System Conversion Project located in McKenzie County, ND.

The proposed project has been reviewed by State Water Commission staff, and the following comments are provided:

- If surface water or groundwater will be diverted for construction of the project, a water permit will be required per North Dakota Century Code (NDCC) § 61-04-02. Permits for temporary surface water diversions within the Little Missouri River Basin, if issued, have additional conditions per an Interim Policy signed by the State Engineer on June 22, 2017. Please consult with the Water Appropriations Division of the Office of the State Engineer (OSE) if you have any questions regarding this comment at 701-328-2754 or waterpermits@nd.gov.

- No permits are required relative to the National Flood Insurance Program (NFIP) based on the current effective FIRM and state minimum standards.

Thank you for the opportunity to provide review comments. If you have any questions, please call me at 701-328-4967.

Sincerely,

Jared Huibregtse
Water Resource Planner IV

JH:dm/1570

DOUG BURGUM, GOVERNOR
CHAIRMAN

GARLAND ERBELE, P.E.
CHIEF ENGINEER-SECRETARY

November 2, 2017

Mr. Todd Sando, State Engineer
North Dakota State Water Commission
900 East Boulevard Avenue, Dept. 770
Bismarck, ND 58505-0850

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics – Keene Oil Gathering System Conversion Project
Project Notification and Request for Review

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics, referred to jointly as Hess, are planning the Keene Oil Gathering System Conversion Project (Project). The Project will result in the conversion of 19 miles of existing gathering pipeline and its associated facilities. The Project will be entirely located within McKenzie County North Dakota and will fall under the jurisdiction of the Public Service Commission (PSC). The Project centerline will traverse Township 150N Range 95W Sections 5, 8, 17, 18, 19 & 20, Township 150N Range 96W Sections 13, 14 & 23, Township 151N Range 95W Sections 5, 7, 17, 18, 20, 29 & 32 and Township 152N Range 95W Sections 8, 17, 20, 29 & 32. The Project alignment and 1-mile wide Study Area are depicted on the attached maps.

The purpose of this correspondence is to provide notification of the Project and to provide the NDSWC the opportunity to comment on the Project. It is our understanding that the NDSWC administers water appropriation and sovereign lands permit programs, and may also have relevant information regarding rural water supply systems and projects. Copies of correspondence received in response to this letter will be included in the application to be filed with the PSC.

We appreciate your assistance with this request and look forward to your timely review and comments regarding this Project. E3 has been retained by Hess to provide environmental consulting support for this Project. Should you have any questions or require additional information, please contact me at 651-282-0652 or kschmidt@go2e3.com.

Sincerely,

Katie Schmidt

Katie Schmidt, Senior Consultant
E3 Environmental, LLC
871 Jefferson Ave
St. Paul, MN 55102

McKenzie County Weed Control Board

Consultation

November 2, 2017

Ms. Amber Higgins, Weed Control Officer
McKenzie County Weed Control Board
PO Box 930
Watford City, ND 58854

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics – Keene Oil Gathering System Conversion Project
Project Notification and Request for Review

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics, referred to jointly as Hess, are planning the Keene Oil Gathering System Conversion Project (Project). The Project will result in the conversion of 19 miles of existing gathering pipeline and its associated facilities. The Project will be entirely located within McKenzie County North Dakota and will fall under the jurisdiction of the Public Service Commission (PSC). The Project centerline will traverse Township 150N Range 95W Sections 5, 8, 17, 18, 19 & 20, Township 150N Range 96W Sections 13, 14 & 23, Township 151N Range 95W Sections 5, 7, 17, 18, 20, 29 & 32 and Township 152N Range 95W Sections 8, 17, 20, 29 & 32. The Project alignment and 1-mile wide Study Area are depicted on the attached maps.

Based on a review of the North Dakota Century Code 4.1-47-02, ND Administrative Code 7-06-01-02, North Dakota Department of Agriculture (NDDA) guidance documents and McKenzie County website, the following noxious weeds are currently listed:

- Absinth wormwood (*Artemisia absinthium*)*
- Black henbane (*Hyoscyamus niger*)
- Canadian thistle (*Cirsium arvense*)*
- Common burdock (*Arctium*)
- Dalmatian toadflaz (*Linaria dalmatica*)*
- Diffuse knapweed (*Centaurea diffusa*)*
- Field bindweed (*Convolvulus arvensis)*
- Houndstongue (*Cynoglossum officinale)*
- Leafy spurge (*Euphorbia esula*)*
- Musk thistle *(Carduus nutans)**
- Purple loosestrife *(Lythrum salicaria)**
- Russian knapweed (*Acroptilon repens*)*
- Saltcedar (*Tamarix ramosissima)**
- Spotted knapweed (*Centaurea masculosa*)*
- Yellow starthistle (Centaurea solstitialis)
- Yellow toadflax (*Linaria vulgaris*)*

*State and County listed noxious weeds.

To facilitate our environmental review, we are requesting the following information for areas crossed that are within the 1-mile wide Study Area associated with the Project:

- Confirmation that the list of noxious weeds above is correct and current;
- Known locations of noxious and/or invasive weed species along the proposed route; and

E3 ENVIRONMENTAL™
871 Jefferson Avenue
St. Paul, MN 55102

- Guidance and/or recommendations for weed control, pesticide use, and non-chemical treatment options.

We ask that your office provide the location, size, and extent of noxious/invasive weeds as a GIS shapefile (if possible), geographic coordinates (e.g., latitude/longitude), Public Land Survey System Section(s), or marked on a map. The information that your office provides will assist us in project planning and execution. Copies of correspondence received in response to this letter will be included in application to be filed with the PSC.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. E3 has been retained by Hess to provide environmental consulting support for this Project. Should you have any questions or require additional information, please contact me at 651-282-0652 or kschmidt@go2e3.com.

Sincerely,

Katie Schmidt

Katie Schmidt, Senior Consultant
E3 Environmental, LLC
871 Jefferson Ave
St. Paul, MN 55102

McKenzie County Water Resource District

Consultation

November 2, 2017

Mr. Jeff Shaffer, Director
McKenzie County Water Resource District
201 5th Street Northwest, Suite 1456
Watford City, ND 58854

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics – Keene Oil Gathering System Conversion Project
Project Notification and Request for Review

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics, referred to jointly as Hess, are planning the Keene Oil Gathering System Conversion Project (Project). The Project will result in the conversion of 19 miles of existing gathering pipeline and its associated facilities. The Project will be entirely located within McKenzie County North Dakota and will fall under the jurisdiction of the Public Service Commission (PSC). The Project centerline will traverse Township 150N Range 95W Sections 5, 8, 17, 18, 19 & 20, Township 150N Range 96W Sections 13, 14 & 23, Township 151N Range 95W Sections 5, 7, 17, 18, 20, 29 & 32 and Township 152N Range 95W Sections 8, 17, 20, 29 & 32. The Project alignment and 1-mile wide Study Area are depicted on the attached maps.

The purpose of this correspondence is to provide notification of the Project and to solicit comments that will assist in the regulatory process. To facilitate our review, we are requesting the following information be provided:

- Locations of any county-regulated drains, ditches, and/or other drainage features;
- Any special requirements, restrictions, or specifications regarding conducting expansion activities across or near county regulated drainage features;
- Any local ordinances related to drainage; and
- Any permits issued through your office, which may be applicable to the Project and a summary of the permit process and anticipated timeframes.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. E3 has been retained by Hess to provide environmental consulting support for this Project. Should you have any questions or require additional information, please contact me at 651-282-0652 or kschmidt@go2e3.com.

Sincerely,

Katie Schmidt

Katie Schmidt, Senior Consultant
E3 Environmental, LLC
871 Jefferson Ave
St. Paul, MN 55102

Western Area Water Supply Authority

Consultation

Katie Schmidt

From: Jacob Monson <jacob.monson@wawsp.com>
Sent: Tuesday, November 7, 2017 8:47 AM
To: Katie Schmidt
Cc: bfoster@co.mckenzie.nd.us
Subject: Keene Oil Gathering System - WAWSA
Attachments: WAWSA_Transmission.zip

Ms. Schmidt,

I have recently received your notification about the Keene Oil Gathering System Conversion Project. According to your letter, it seems the only area that this Project will be relevant to WAWSA infrastructure is Section 7 of T-151-N, R-95-W. Attached are shapefile components of the portion of our transmission extending east from HWY 23, running south to north in Section 7, and terminating at our reservoir in Section 6. You can also reference this link to our web map: https://arcg.is/10Si1X.

Please note that there will be rural distribution waterlines in the regions you designated in your letter. I have cc'd Bonnie Foster for your reference about these pipelines – she is the GIS coordinator with McKenzie County.

The information that would be interested by WAWSA is the timeline of the Project and any electronic data (GIS preferred) of the centerline routing. Let me know if you have any further questions or concerns.

Sincerely,
Jacob Monson
GIS Technician
Western Area Water Supply
701-774-6605 (*Ext. 206*)
http://www.wawsp.com



November 2, 2017

Mr. Jacob Monson
Western Area Water Supply Authority
820 E Broadway, Suite 101
PO Box 2343
Williston, ND 58802

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics – Keene Oil Gathering System Conversion Project
Project Notification and Request for Review

Hess North Dakota Pipelines LLC and Hess North Dakota Export Logistics, referred to jointly as Hess, are planning the Keene Oil Gathering System Conversion Project (Project). The Project will result in the conversion of 19 miles of existing gathering pipeline and its associated facilities. The Project will be entirely located within McKenzie County North Dakota and will fall under the jurisdiction of the Public Service Commission (PSC). The Project centerline will traverse Township 150N Range 95W Sections 5, 8, 17, 18, 19 & 20, Township 150N Range 96W Sections 13, 14 & 23, Township 151N Range 95W Sections 5, 7, 17, 18, 20, 29 & 32 and Township 152N Range 95W Sections 8, 17, 20, 29 & 32. The Project alignment and 1-mile wide Study Area are depicted on the attached maps.

The purpose of this correspondence is to afford the Western Area Water Supply Authority (WAWSA) the opportunity to review the Project and provide comment as appropriate.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. E3 has been retained by Hess to provide environmental consulting support for this Project. Should you have any questions or require additional information, please contact me at 651-282-0652 or kschmidt@go2e3.com.Per previous communication, E3 understands that no response from your agency indicates that the WAWSA has no concerns with the project.

Sincerely,

Katie Schmidt

Katie Schmidt, Senior Consultant
E3 Environmental, LLC
871 Jefferson Ave
St. Paul, MN 55102

Appendix D

Natural Resources Report









Photos courtesy of: Jon Knudsen

Natural Resource Survey Report

Keene Gathering System Conversion Project

McKenzie County, North Dakota

Prepared for:

Hess North Dakota Pipelines, LLC and

Hess Export Logistics

Prepared by:

E3 Environmental, LLC

November 2017

E3 Environmental

Enhancing Execution with Experience

TABLE OF CONTENTS

SECTION 1: INTRODUCTION 1
SECTION 2: SURVEY CORRIDOR 1
2.1 General landscape Characterization 1
2.2 Vegetation Communities 2
2.3 Climate 4
2.4 Soils 4
SECTION 3: SURVEY METHODOLOGY 8
3.1 Raptor Nests 9
3.2 Wetlands 9
3.3 Waterbodies 10
3.4 Woody Vegetation 10
3.5 Noxious Weeds 11
3.6 Threatened and Endangered Species 12
SECTION 4: SURVEY RESULTS 15
4.1 Raptor Nests 15
4.2 Wetlands 15
4.3 Waterbodies 16
4.4 Woody Vegetation 17
4.5 Noxious Weeds 17
4.6 Threatened and Endangered Species 17
SECTION 5: RECOMMENDATIONS 19
SECTION 6: REFERENCES 20

List of Tables

Table 1. GAP vegetation types and acreages within the Survey Corridor. 3
Table 2. Monthly recorded precipitation at National Weather Service Station in Williston, North Dakota. 4
Table 3. Soil components and acreages within Survey Corridor. 7
Source: (NRCS, 2016a) 8
Table 4. State and County designated noxious weeds with the potential to occur within the Survey Corridor. 11
Table 5. Federally listed species with the potential to occur within the Project Area. 12



Table 6. Avian nests and activity statuses located within the Survey Corridor. 15
Table 7. Wetlands, Waterbodies, and their Associated Acreages and Jurisdictional Determinations within the Survey Corridor. 16

List of Appendices

Appendix A. Natural Resource Maps
Appendix B. Field Photographs
Appendix C. Woody Vegetation Table
Appendix D. Noxious Weed Table
Appendix E. Carlson McCain Wetland Report

SECTION 1: INTRODUCTION

E3 Environmental, LLC (E3), at the request of Hess, performed natural resource surveys of the Keene Oil Gathering System Conversion Project (Project). Hess North Dakota Pipelines, LLC and Hess Export Logistics are wholly owned subsidiaries of the Hess Corporation (Hess). The Project includes approximately 19 miles of existing gathering line, which will be converted to a transmission line that would transport crude oil between Hess' existing Hawkeye Oil Facility, the Crestwood's Johnson's Corner Terminal and the Dakota Access Pipeline Facility.

E3 and Carlson McCain biologists conducted surveys to identify, delineate and inventory natural resources that could potentially be impacted by the Project. Surveys included:

- Raptor nest documentation and status determination;
- Wetland and waterbody boundary determination;
- Woody vegetation identification and inventory;
- Noxious weed identification and inventory; and
- Federally protected species survey and habitat assessment.

This report describes the methodologies used and documents the survey results.

SECTION 2: SURVEY CORRIDOR

The Project, which is approximately 19 miles in length, is located on private lands in McKenzie County, North Dakota. The scope of the Project consists of approximately 19 miles of existing gathering line, which would be converted to a transmission pipeline for the purpose of shipping of crude oil. E3 conducted natural resource surveys utilizing a typical 250-foot corridor (Survey Corridor) centered upon the proposed Project alignment. The Survey Corridor encompassed approximately 632 total acres. Refer to Appendix A for maps depicting the Project alignment and Survey Corridor.

2.1 GENERAL LANDSCAPE CHARACTERIZATION

The Survey Corridor is located entirely within the Northwestern Great Plains (43) Level III ecoregion, encompassing the Missouri Plateau of west-central North Dakota (Omernik, 1987; United States Environmental Protection Agency, 2013). The Northwestern Great Plains is characterized as a semiarid rolling plain of shale, siltstone and sandstone punctuated by scattered sandstone buttes and badland formations with minimal wetland basins (Omernik & Griffith, 2008). Appendix B contains photos taken during survey. Native shortgrass prairie persists in areas devoid of steep or broken topography, but native prairie has been largely replaced by dryland farming of spring wheat, alfalfa, oats, and sunflowers and by pasture for cattle grazing throughout most of the ecoregion. Habitat zones present in both uplands and wetlands consist of cultivated cropland, introduced perennial grassland and mixed forbs, native grassland,

shrubs, forest and woodland, riparian areas, and herbaceous wetlands (Bryce, et al., 1998).

The Project is located within the Northwestern Great Plains ecoregion, the Survey Corridor crosses the Missouri Plateau (43a) and River Breaks (43c) of the Level IV ecoregion (USEPA, 2013). The Missouri Plateau (43a) ecoregion was largely unaffected by glaciation and retains its original soils and complex stream drainage pattern (Bryce, et al., 1998). Physiography of the Missouri Plateau is described as moderately dissected, level to rolling plains with isolated sandstone buttes. This area is underlain by soft, calcareous shales, sandstones, and lignite coal. Dryland farming and cattle grazing are typical throughout this ecoregion.

The River Breaks (43c) are composed of erosional, broken terraces and uplands bordering the Missouri River and its tributaries (Bryce, et al., 1998). This ecoregion, unaffected by glaciation, is underlain by easily erodible shales easily carved into ravines and dissected hills. Cattle grazing is the predominant use for this ecoregion, as wooded draws and steep slopes restrict agrarian use.

2.2 VEGETATION COMMUNITIES

Vegetation communities are described by their location within United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Major Land Resource Areas (MLRA), which are broad geographic areas characterized by a particular pattern of soil, climate, vegetation, and land use. The Survey Corridor crosses one MLRA: Rolling Soft Shale Plains (MLRA 54) (USDA, NRCS, 2006).

The Rolling Soft Shale Plains are characterized by natural grasslands dominated by western wheatgrass (*Pascopyrum smithii*), green needlegrass (*Nassella viridula*), blue grama (*Bouteloua gracilis*), and little bluestem (*Schizachyrium scoparium*) (USDA, NRCS, 2006). Shrub and forb species including prairie rose (*Rosa arkansana*), western snowberry (*Symphoricarpos occidentalis*), and leadplant (*Amorpha canescens*) are interspersed throughout the uplands and mixed-prairie. Large patches of green ash (*Fraxinus pennsylvanica*), chokecherry (*Prunus virginiana*), and buffaloberry (*Shepherdia argentea*) typically occur in the draws and steep valleys common in this region.

Nine vegetation cover types, modeled by the Gap Analysis Program (GAP) as ecological systems, occur within Survey Corridor. The most dominant ecological systems include, Agricultural Vegetation, Shrub and Grassland, Developed and Other Human Use, and Forest and Woodland systems (described below). All ecological systems within the Survey Corridor are listed in Table 1 based on United States Geological Survey (USGS) GAP land cover data (US Geological Survey, 2011). Appendix B contains photographs of the Project area documenting the pre-project landscape.

- Agricultural Vegetation: This vegetation cover dominates the Survey Corridor, encompassing large continuous tracts as well as forming a mosaic with other land covers. Canola, corn, wheat, and alfalfa are the most common crop species being cultivated within the Survey Corridor.

- Shrub and Grassland: This vegetation cover type is commonly interspersed with cultivated landscape and occurs throughout the Survey Corridor. Dominant grasses for this ecological system include western wheatgrass, green needlegrass, and fescue (*Festuca spp.*), although blue grama (*Bouteloua gracilis*) and needle-and-thread (*Hesperostipa comate*) may also dominate. Shrub species including western snowberry, fringed sagewort (*Artemisia frigida*), and silver sagebrush (*Artemisia cana*) are also associated with this ecological system. Cool-season exotics such as Kentucky bluegrass (*Poa pratensis*), smooth bromegrass (*Bromus inermis*), and Japanese brome (*Bromus japonicas*) may dominate areas that are subject to intense grazing. This system is one of the most disturbed grassland systems in North Dakota (Comer, et al., 2003).

- Developed and Other Human Use: This cover type represents those portions of the landscape that have been developed including utility infrastructure, transportation corridors, industrial and residential development. This cover-type was found to be concentrated in northern portion of Survey Corridor.

- Forest and Woodland: This ecological system is common along intermittent or ephemeral streams and at the bottoms of steep draws. The vegetation associated with this ecological system is closely associated with mesic environment found adjacent to low-lying depressions, wetlands, and permanent or semi-permanent streams (Appendix B). Sedge (*Carex spp.*), bulrush (*Typha spp.*), and rush (*Juncus spp.*) are the dominant mesic vegetation classes found in proximity to wetland margins (Comer, et al., 2003).

Table 1. GAP vegetation types and acreages within the Survey Corridor.

Vegetation Type	Acres	% of Survey Corridor
Agricultural Vegetation	343.8	54.3
Shrubland and Grass Land	235.9	37.3
Developed and Other Human Use	37	5.9
Forest and Woodland	16	2.5
Introduced and Semi-Natural Vegetation	0.07	0.01
Nonvascular and Sparse Vascular Rock Vegetation	0	0
Recently Disturbed or Modified	0	0



Open Water	0	0
Semi Desert	0	0
Total	**632.77**	**100.0**

2.3 CLIMATE

The Project Area climate is semi-arid to sub-humid and continental, with warm summers and very cold winters (Sucik, 2002). In winter, the average temperature is 13 degrees Fahrenheit, with an average daily minimum temperature of 1 degree Fahrenheit. In summer, the average temperature is 72 degrees Fahrenheit, with an average daily maximum temperature of 88 degrees Fahrenheit. Mean annual precipitation for the Project Area is 15 inches. Most of the precipitation falls during the warm period with about 80 percent falling April through September (Sucik, 2002). The average seasonal snowfall is approximately 35 inches.

National Weather Service data for the Williston, North Dakota monitoring station (located approximately 28 miles northwest of Survey Corridor) recorded precipitation totals for the period from January 2016 to July 2016 to be 9.30 inches as described in Table 2 below (National Oceanic and Atmospheric Adminsistration (NOAA), 2016). The normal precipitation average for this time period is 9.67 inches. For this time period, rainfall was 0.37 inches below normal.

Table 2. Monthly recorded precipitation at National Weather Service Station in Williston, North Dakota.

Month	Recorded Precipitation	Normal Precipitation	Difference (inches)
January	0.38	0.59	-0.21
February	0.75	0.39	0.36
March	0.18	0.71	-0.53
April	1.95	1.00	0.95
May	1.81	1.92	-0.11
June	1.84	2.52	-0.68
July	2.39	2.54	-0.15
Total	**9.30**	**9.67**	**-0.37**

Source: NOAA preliminary climate Data Reports

2.4 SOILS

Soil types intersected by the Survey Corridor were analyzed through the NRCS Web Soil Survey in August of 2016 (NRCS, 2016a). Described below are the components of dominant soil orders within the Survey Corridor, including Belfield, Cabba, Chama, Daglum, Dogtooth, Grail, Savage, Sen, Williams, and Zahl soils. A list of all soil

classifications and the acreage encompassed by the Survey Corridor are located in Table 3.

2.4.1 BELFIELD

The Belfield soil series is composed of deep and very deep, well to moderately well drained, slowly permeable soils. These soils are formed from alkaline, calcareous residuum or alluvium, and are located in uplands, flats, terraces, and swales with slopes of 0 to 9 percent. Belfield soils are present in areas with a mean annual temperature of 43 degrees Fahrenheit, receiving 15 inches mean annual precipitation. Small grain agriculture, hay, and pasture are the primary land uses associated with soils in the Belfield series, while potential native vegetation populations include western wheatgrass, blue grama, and green needlegrass (NRCS, 2016b).

2.4.1 CABBA

The Cabba soil series is composed of shallow, well drained soils that are formed from residuum or colluvium or partial consolidations of loamy, sedimentary soil beds. These soils are located on sedimentary plains, escarpments, and hills with slopes of 2 to 70 perecnt. Cabba soils are present in areas with a mean annual temperature of 43 degrees Fahrenheit, receiving 16 inches mean annual precipitation. Rangeland is the primary land use associated with soils in the Cabba series, while potential native vegetation populations include little bluestem, western wheatgrass, needle-and-thread, prairie sandreed, bluebunch wheatgrass, green needlegrass, plains muhly (*Muhlenbergia cuspidate*), and many common forbs and shrubs (NRCS, 2016b).

2.4.2 CHAMA

The Chama soil series is composed of well drained, moderately to slowly moderately permeable soils that are formed from materials resulting from weathered soft siltstone, mudstone, and shale. These soils are located in upland areas with slopes of 0 to 46 percent. Chama soils are present in areas with a mean annual temperature of 42 degres Fahrenheit, receiving 15 inches mean annual precipitation. Small grain agriculture and rangeland are the primary land uses associated with soils in the Chama series, while potential native vegetation populations include western wheatgrass, needle-and-thread, and blue grama (NRCS, 2016b).

2.4.3 DAGLUM

The Daglum soils series is composed of deep and very deep, moderately well and well drained, slowly or very slowly permeable soils. These soils are formed in clayey alluvium or residuum on foot slopes and on upland or terrace swales, with slopes of 0 to 25 percent. Daglum soils are present in areas with a mean annual air temperature of about 42 degrees Fahrenheit, receiving 16 inches mean annual precipitation. Rangeland, pasture, and small grain agriculture are primary the land uses associated with soils in the Daglum series, while potential native vegetation populations include western

wheatgrass, blue grama, green needlegrass, threadleaf sedge (*Carex filifolia*), and forbs (NRCS, 2016b).

2.4.4 DOGTOOTH

The Dogtooth soil series is composed of moderately deep, well drained, high permeability soils formed from residual components of weathered saline-alkali, calcareous, soft shale, siltstone, or mudstone. These soils are located in upland areas with slopes of 0 to 25 percent. Dogtooth soils are present in areas with a mean annual temperature of 42 degrees Fahrenheit, receiving 15 inches mean annual rainfall. Rangeland and pasture are the primary land uses associated with soils in the Dogtooth series, while potential native vegetation populations include western wheatgrass, blue grama, inland saltgrass, sedges, prickly pear (*Opuntia polyacantha*), clubmoss, and some legumes (NRCS, 2016b).

2.4.5 GRAIL

The Grail soil series is composed of very deep, well drained soils with slow permeability found in alluvium. These soils are found on terraces, fans, swales, and foothills with slopes of 0 to 15 percent. Most areas composed of this soils series are used for cultivated crops including barley, oats, and wheat. Western wheatgrass, big bluestem, green needlegrass, and needle-and-thread are typical native grasses found within this series.

2.4.6 SAVAGE

The Savage soil series is composed of very deep, well drained soils that are formed in silty alluvium, loess, or in glaciogluvial or glaciolacustrine material. These soils are located on alluvial fans, stream terraces, drainageways, sedimentary plains, and till plains with slopes of 0 to 25 percent. Savage soils are present in areas with a mean annual temperature of 42 degrees Fahrenheit, receiving 16 inches mean annual precipitation. Rangeland, dryland, and irrigated crop agriculture are the primary land uses associated with soils in the Savage series, while potential native vegetation populations include bluebunch wheatgrass, western wheatgrass, green needlegrass, and perennial forbs (NRCS, 2016b).

2.4.7 SEN

The Sen soil series is composed of well drained, moderately permeable soils that are formed in calcareous siltstone or shale. These soils are located in upland plains with slopes of 0 to 25 percent. Sen soils are present in areas with a mean annual temperature of 42 degrees Fahrenheit, receiving 15 inches mean annual precipitation. Small grain agriculture is the primary land use associated with soils in the Sen series, while potential native vegetation populations include green needlegrass, needle-and-thread, western wheatgrass, blue grama, and a variety of forbs (NRCS, 2016b).

2.4.8 WILLIAMS

The Williams soil series is composed of very deep, well drained soils that are in calcareous glacial till. These soils are located on glacial till plains and moraines with slopes of 0 to 35 percent. Williams soils are present in areas with a mean annual temperature of 40 degrees Fahrenheit, receiving 14 inches mean annual precipitation. Small-grain agriculture and pasture are the primary land uses associated with soils in the Williams series, while potential native vegetation populations include western wheatgrass, needle-and-thread, blue grama, green needlegrass, and prairie junegrass (*Koeleria cristata*) (NRCS, 2016b).

2.4.9 ZAHL

The Zahl soil series is composed of very deep, well drained, moderately slow or slowly permeable soils that form are formed in calcareous glacial till. These soils are located on glacial till plains, moraines, and valley side slopes with slopes of 1 to 60 percent. Zahl soils are present in areas with a mean annual temperature of 40 degrees Fahrenheit, receiving 14 inches mean annual precipitation. Rangland, pasture, and small grain agriculture are the primary land uses associated with soils in the Zahl series, while potential native vegetation populations include little bluestem, western wheatgrass, and needle-and-thread (NRCS, 2016b).

Table 3. Soil components and acreages within Survey Corridor.

Map Unit Symbol	Soil Types	Acres within Survey	Percent within Map Unit
E2601C	Amor-Cabba loams, 6 to 9 percent	5.3	0.84%
E2601D	Amor-Cabba loams, 9 to 15 percent slopes	1.9	0.30%
E2725F	Arikara-Shambo-Cabba loams, 9 to 70	4.5	0.71%
E1403D	Beisigl-Flasher-Telfer loamy fine sands, 6 to	0.4	0.06%
E0605A	Belfield-Grail clay loams, 0 to 2 percent	34.2	5.41%
E0617B	Belfield-Savage-Daglum complex, 2 to 6	18.3	2.89%
E3013F	Brandenburg-Cabba-Dogtooth complex, 15	8.9	1.40%
E3013D	Brandenburg-Searing-Dogtooth complex, 6	8.0	1.26%
E4190F	Cabba-Chama-Havrelon, occasionally	7.3	1.15%
E2741D	Cabba-Chama-Sen silt loams, 9 to 15	38.1	6.01%
E2617F	Cabba-Chama-Shambo loams, 9 to 50	25.2	3.98%
E2737C	Chama-Cabba-Sen silt loams, 6 to 9	15.0	2.37%
E2913B	Chama-Sen-Cabba silt loams, 3 to 6	6.5	1.03%
E0447B	Daglum-Belfield complex, 0 to 6 percent	50.9	8.04%
E0701F	Dogtooth-Janesburg-Cabba complex, 6 to	31.5	4.97%
E0559B	Dogtooth-Janesburg silt loams, 0 to 6	16.1	2.54%
E2120A	Farnuf loam, 0 to 2 percent slopes	3.7	0.59%
E2120B	Farnuf loam, 2 to 6 percent slopes	8.4	1.32%

Map Unit Symbol	Soil Types	Acres within Survey	Percent within Map Unit
E2120C	Farnuf loam, 6 to 9 percent slopes	1.7	0.27%
E2213A	Golva silt loam, 0 to 2 percent slopes	2.2	0.34%
E4139A	Korchea-Fluvaquents complex, channeled,	3.1	0.50%
E0821A	Lawther silty clay, 0 to 2 percent slopes	13.2	2.08%
E4542B	Lehr-Bowdle loams, 2 to 6 percent slopes	1.4	0.22%
E4561F	Manning-Schaller-Wabek complex, 6 to 35	6.2	0.98%
E1009B	Moreau-Barkof silty clays, 3 to 6 percent	13.0	2.06%
E0907D	Moreau-Cabba complex, 9 to 15 percent	4.8	0.76%
E0913C	Moreau-Wayden silty clays, 6 to 9 percent	6.7	1.06%
E3513B	Niobell-Williams loams, 3 to 6 percent	12.9	2.04%
E2641C	Reeder-Werner loams, 6 to 9 percent slopes	7.0	1.11%
E0921C	Regent-Cabba complex, 6 to 9 percent	4.6	0.72%
E0651B	Regent-Janesburg complex, 3 to 6 percent	8.9	1.40%
E0515B	Rhoades-Daglum complex, 0 to 6 percent	0.0	0.01%
E0835A	Savage-Grail silty clay loams, 0 to 2 percent	41.5	6.56%
E0837B	Savage silty clay loam, 2 to 6 percent	13.5	2.14%
E0837C	Savage silty clay loam, 6 to 9 percent	1.5	0.24%
E2439B	Sen-Janesburg silt loams, 3 to 6 percent	3.7	0.58%
E1865B	Tally-Parshall fine sandy loams, 2 to 6	2.7	0.43%
E3523A	Tansem-Roseglen silt loams, 0 to 2 percent	1.1	0.18%
E3571F	Wabek-Zahl complex, 9 to 35 percent	3.2	0.51%
E3527A	Williams-Bowbells loams, 0 to 3 percent	2.0	0.32%
E3527B	Williams-Bowbells loams, 3 to 6 percent	11.0	1.74%
E3541B	Williams-Zahl loams, 3 to 6 percent slopes	31.1	4.91%
E3541C	Williams-Zahl loams, 6 to 9 percent slopes	39.9	6.30%
E3637D	Zahl-Beisigl-Tally complex, 9 to 15 percent	7.9	1.24%
E3609F	Zahl-Cabba-Maschetah complex, 6 to 70	20.6	3.26%
E3641D	Zahl-Cabba-Williams complex, 9 to 15	27.3	4.31%
E3567F	Zahl-Max loams, dissected, 15 to 45 percent slopes	10.4	1.65%
E3639C	Zahl-Williams-Cabba complex, 6 to 9	45.5	7.19%
Survey Corridor Total		632.0	100.00%

Source: **(NRCS, 2016a)**

SECTION 3: SURVEY METHODOLOGY

E3 completed natural resource surveys on May 18-21, and June 8-9, 2016, subsequent surveys were executed to address Project scope changes on August 16-17, August 30, 2016, and October 31st, 2017. Additionally, these efforts were augmented by Carlson McCain who completed wetland surveys on behalf of E3 on June 2, 2017. All field

studies were performed on foot by a team of qualified professionals. Data was collected using Trimble® Juno T41/5, Trimble® GeoExplorer 6000 XT, or Trimble® GeoExplorer 6000 XH handheld GPS units and Terrasync® GIS software.

3.1 RAPTOR NESTS

Pedestrian raptor nest surveys were conducted by within the Survey Corridor and within line-of-site of the Survey Corridor. Suitable nesting substrates, such as ash and elm stands, were searched for raptor nests within the Project. Potential nest structures were observed from a suitable distance to avoid disturbing the birds (if present). Binoculars or spotting scopes were used to identify adult birds and to assess behavior relative to the breeding (e.g. incubating or behaving agonistically). Those nests located within the Survey Corridor that were unoccupied were searched for signs of recent activity (fresh mute, regurgitated pellets, eggs, eggshell fragments, prey remains, etc.). Accurate GPS locations of raptor nests were recorded at each nest site and the nest status, condition, substrate, and species of raptor using the nests were documented (if possible). Annual activity status and productivity determinations for nests were recorded for all nests. Note that many species of raptors (e.g. red-tailed hawks) reuse nesting sites annually.

3.2 WETLANDS

Field survey identified and recorded the boundaries of all wetlands observed during field surveys using methodology in accordance with the USACE *Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)* (Environmental Laboratory, 2010). For an area to be delineated as a regulated wetland, the hydrophytic vegetative, wetland hydrology, and hydric soils must all be present at some point during the growing season and consistent with federal classification criteria. Wetlands inventoried within the Survey Corridor were classified using the Cowardin System, developed by the USFWS (Cowardin et al. 1979).

3.2.1 WETLAND VEGETATION

More than 50 percent of the vegetative cover must consist of obligate or facultative wetland species as determined by the dominance test using the 50/20 rule; the prevalence index; or by evidence of morphological adaptation (USACE 1987). Hydrophytic vegetation was determined to be present if any of these three indicators were satisfied. If none of the indicators are satisfied, then hydrophytic vegetation is absent unless (1) indicators of hydric soil and wetland hydrology are present and (2) the site meets the requirements for a problematic wetland situation.

3.2.2 WETLAND HYDROLOGY

To be considered a wetland, there must be evidence of periodic or permanent ground inundation. The presence of wetland hydrology was evaluated by recording the extent of

observed surface flows, the depth of inundation, the depth to saturated soils, and the depth to free water in soil test pits. Other evidence such as water-stained leaves or general drainage patterns can indicate a site has the proper hydrology to be a wetland.

3.2.3 WETLAND SOILS

The National Technical Committee for Hydric Soils (NTCHS) defines a hydric soil as a soil that is formed under conditions of saturation, flooding, or ponding that occurs long enough during the growing season to develop anaerobic conditions (or conditions of limited oxygen) at or near the soil surface and that favor the establishment of hydrophytic vegetation. The USDA-NRCS *Field Indicators of Hydric Soils in the United States*—Guide for Identifying and Delineating Hydric Soils, Version. 7.0 was used to determine the presence of hydric soils (2010). The soil conditions within the Survey Corridor were sampled by taking cores along wetland/upland boundary to examine the water table depth and to identify hydric indicators.

3.3 WATERBODIES

E3 biologists identified and recorded the boundaries of all waterbodies observed during field surveys by mapping the ordinary high water mark (OHWM) of each feature. Common indicators of an OHWM include open water or evidence of a natural line visible on the bank, shelving or terracing, changes in soil characteristics, vegetation changes, the presence of litter and debris, and watermarks on structures that are inundated during normal high water conditions. The OHWM typically represents the potential limits of the USACE's jurisdiction. A jurisdictional characterization was made for each waterbody, following the criteria outlined in the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (2007). However, the USACE has full discretion in determining the jurisdictional status of referenced wetlands and waterbodies in this report.

3.4 WOODY VEGETATION

E3 biologists mapped, characterized, and inventoried woody vegetation present within the Survey Corridor. The boundaries of each distinct woody vegetation patch are depicted on the Project maps in Appendix A. To inventory woody vegetation direct tallies (100%) were employed in forested upland lands, shrub lands, and riparian zones for all trees greater than one-inch diameter at breast height (DBH); sub-sampling was employed in woodlands too dense to utilize direct tally. Large shrub patches were inventoried by documenting percent cover, unless habitat patches were small enough to count each individual. Regardless of DBH, all trees and shrubs were mapped, characterized, and inventoried within shelterbelts and windbreaks.

3.5 NOXIOUS WEEDS

Noxious weeds are defined by the Federal Noxious Weed Act of 1974 as "a plant which is of foreign origin, is new to, or is not widely prevalent in the United States, and can directly or indirectly injure crops or other useful plants, livestock or the fish and wildlife resources of the United States, or public health" (Title 7 United States Code 2801-2814, 2011). The State of North Dakota defines noxious weeds as "weeds that are difficult to control, easily spread, and injurious to public health, crops, livestock, land, or other property" (North Dakota Century Code 4.1-47-01, 2015). North Dakota has County Weed Boards in all 53 counties, each of which has the opportunity to add noxious weeds to the state list for regulation only within their jurisdiction.

The North Dakota Department of Agriculture identifies 11 plant species as noxious weeds (2016). McKenzie County recognizes six additional problematic noxious weeds within its boundaries (North Dakota Department of Agriculture, 2016) (Table 4).

Table 4. State and County designated noxious weeds with the potential to occur within the Survey Corridor.

Common Name	Scientific Name	Noxious Designation	
		North Dakota	McKenzie County
Absinth wormwood	*Artemisia absinthium*	X	X
Baby's breath	*Gypsophila paniculata*		X
Black henbane	*Hyoscyamus niger*		X
Canada thistle	*Cirsium arvense*	X	X
Common burdock	*Arctium minus*		X
Dalmatian toadflax	*Linaria dalmatica*	X	X
Diffuse knapweed	*Centaurea diffusa*	X	X
Field bindweed	*Convolvulus arvensis*		X
Halogeton	*Halogeton glomeratus*		X
Houndstongue	*Cynoglossum officinale*		X
Leafy spurge	*Euphorbia esula*	X	X
Musk thistle	*Carduus nutans*	X	X
Purple loosestrife	*Lythrum salicaria*	X	X
Russian knapweed	*Acroptilon repens*	X	X
Saltcedar	*Tamarix ramosissima*	X	X
Spotted knapweed	*Centaurea stoebe*	X	X
Yellow toadflax	*Linaria vulgaris*	X	X

Source: North Dakota Department of Agriculture, 2016

E3 conducted surveys for noxious weeds within the Survey Corridor. Noxious weed infestations were identified and delineated in the field by mapping their boundaries using Trimble GPS units. Percent cover for all noxious weeds within each patch was estimated for each species.

3.6 THREATENED AND ENDANGERED SPECIES

The United States Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC) was accessed on June 23, 2016 and on November 2, 2017 to obtain information regarding the potential presence of threatened or endangered species within the Survey Corridor; Table 5 contains a list generated by the IPaC system. IPaC results report those species previously recorded within boundaries of the query, which in this case corresponds with the Project. The IPaC identified 8 threatened, or endangered species that have the potential to occur within the Survey Corridor. No designated critical habitat for these species occurs within the Survey Corridor. In addition to the IPaC review field studies were conducted to confirm the presence or absence of these listed species or their habitat.

Table 5. Federally listed species with the potential to occur within the Project Area.

Common Name	Scientific Name	Federal Status
Interior least tern	*Sterna antillarum athalassos*	Endangered
Piping plover	*Charadrius melodus*	Threatened
Rufa red knot	*Calidris canutus rufa*	Threatened
Whooping crane	*Grus americana*	Endangered
Pallid sturgeon	*Scaphirhynchus albus*	Endangered
Dakota skipper	*Hesperia decotae*	Threatened
Gray wolf	*Canis lupus*	Endangered
Northern long-eared bat	*Myotis septentrionalis*	Threatened

Source: (USFWS, 2016b).

3.6.1 INTERIOR LEAST TERN

Federal Status: Endangered

The interior least tern is the smallest member of the gull family and is federally listed as endangered due to river channelization and impoundment, water pollution, and lower water levels. The interior least tern is found throughout major interior rivers of the United States, including the Mississippi and Missouri rivers, where terns nest in bare, sandy areas along open water bodies. Nests are shallow depressions and constructed between late April and August. Least terns prefer habitat near open or flowing water

(USFWS, 2016c). The interior least tern is identifiable by its small size, measuring at approximately nine inches in length. Breeding adults have gray upper bodies and white lower bodies, with a black cap, black nape, and black eye stripe. Vocalization is short and high pitched (USFWS, 2016c).

3.6.2 PIPING PLOVER

Federal Status: Threatened

The piping plover is a small shorebird that is federally listed as threatened due to habitat loss and degradation. The piping plover is identifiable by its small size and stocky stature, with a sandy brown colored upper body, and white lower body. During the breeding season, adults have a black forehead, a black breast band, and an orange bill (USFWS, 2016c). This species nest on open, sparsely vegetated sand or gravel beaches adjacent to alkali wetlands; and on beaches, sand bars and dredged material islands of major river systems (USFWS, 2016c).

3.6.3 RUFA RED KNOT

Federal Status: Threatened

The rufa subspecies of the red knot is a medium sized shorebird that is federally listed as threatened due to horseshoe crab overharvesting, coastal development, and climate change. The rufa red knot is identifiable by its proportionally large wingspan of 20 inches to its body length of 9 inches. This bird is a larger member of the sandpiper family, with a short, straight bill that tapers to the tip. During breeding, rufa red knots bear a reddish breeding plumage, which is gray the rest of the year (USFWS, 2016c). Migratory habits and habitat requirements of this species are poorly understood, especially for populations utilizing midcontinent and intercontinental flyways. Migration routes are typically between South America and Canada, with inland stopovers in the Great Plains, Great Lakes, and various areas within the Mississippi Valley (USFWS, 2016c).

3.6.4 WHOOPING CRANE

Federal Status: Endangered

The whooping crane is a large bird species that is federally listed as endangered due to habitat destruction and historic over-hunting. The whooping crane is identified by its height, standing erect at five feet, and by its snow white plumage, with black primaries. This large-bodied bird is known by its vocal tone, which is a loud, single note that is vocalized when alarmed. The whooping crane may live up to 30 years (USFWS, 2016c). This species prefers a variety of wetland habitats in both salt and fresh water. Nesting occurs in wetland potholes in Canada, predominantly consisting of bulrush, but also including populations of cattail, sedge, musk-grass, and other common aquatic plants. Nest sites are typically found in shallow diatom ponds. Migration paths include stops in

a variety of landscapes, although wetlands are preferred throughout the route (USFWS, 2016c).

3.6.5 PALLID STURGEON

Federal Status: Endangered

The pallid sturgeon is an aquatic fish that is federally endangered, primarily due to the habitat destruction resulting from river channelization and damming. The pallid sturgeon is identified by its flat, shovel-shaped snout, with a long, slender, and fully plated caudal peduncle. Consistent with other sturgeon species, the mouth of the pallid sturgeon is ventrally positioned, protrusible, and toothless. This species has a cartilaginous skeletal structure (USFWS, 2016c). The pallid sturgeon is a large river obligate, primarily in Missouri and Mississippi River Systems, in areas with diverse habitat options. Pallid sturgeons prefer benthic environments with predominantly sandy and fine substrates, with successful populations of micro-invertebrates and deep water for spawning activity (USFWS, 2016c).

3.6.6 GRAY WOLF

Federal Status: Endangered

The gray wolf is a large canine species that is federally listed as endangered primarily due to habitat loss, bounty hunting and illegal harvest. The gray wolf is identifiable by its canine body shape, long bushy tail with a black tip, and a mix of gray and brown coat colors. The average size of a gray wolf is 3-5 feet in length, weighing approximately 60-145 pounds (USFWS, 2016c). This species prefers a wide range of habitat, including forests, plains, prairies, agricultural areas, swamps, and barren lands, but has been extirpated from most of its historic range. Dens are located near water and dug into well-drained soil on a south-facing slope, under boulders, among tree roots, or in cut banks, hollow logs, or other natural structures. This species is a roaming animal, therefore are wide-ranging and rare to encounter (USFWS, 2016c).

3.6.7 DAKOTA SKIPPER

Federal Status: Threatened

The Dakota skipper is a butterfly species listed as federally threatened due to habitat conversion from native prairie to agricultural. The Dakota skipper is identified by its one-inch wingspan and thick body, with an orange-brown color and brown characteristic wing markings. This butterfly has stronger wing motions compared to other species, resulting in faster and more powerful flight (USFWS, 2015c). The Dakota skipper is a low mobility species, therefore has short dispersal ranges (USFWS, 2015d). Suitable Dakota skipper habitat is described as native prairie grasslands with minimal degradation due to anthropogenic disturbance or encroachment by invasive species (USFWS, 2015).

3.6.8 NORTHERN LONG-EARED BAT

Federal Status: Threatened

The northern long-eared bat (NLEB) is a federally threatened species primarily due to the onset of white-nose syndrome (WNS), which affects multiple bat species in the United States. NLEBs are medium sized bats with a body length of 3-4 inches and a wingspan of 9-10 inches. Their fur color ranges medium to dark brown on the back and light brown on the underside. This bat is distinguished by its long ears (USFWS, 2016c). During the summer months, this small mammal roosts individually or in colonies underneath exfoliating bark of standing trees or in any indentations on both live and dead trees (typically 3 inches or greater in diameter). Signs of roost presence include fallen loose bark and fecal matter in concentrated areas near tree bases in older stands. Breeding begins in late summer or early fall (USFWS, 2016c). Currently, the NLEB is managed as threatened under the Final 4(d) rule.

SECTION 4: SURVEY RESULTS

4.1 RAPTOR NESTS

Field studies recorded four potential raptor nests were recorded within line-of-site of the Survey Corridor; Table 6 summarizes the observation. Only one of these (NST-1) was classified as active during the 2016 surveys as it was occupied by an incubating female northern harrier.

Table 6. Avian nests and activity statuses located within the Survey Corridor.

Nest ID	Species	Activity Status	Habitat
NST-1	Northern harrier	Active - Incubation	Grassland
NST-2	Unknown	Inactive	Grassland
NST-3	Unknown	Inactive	Grassland
NST-4	Unknown	inactive	Grassland

4.2 WETLANDS

Desktop review of the Survey Corridor indicates both lentic and lotic wetlands are present within the Project. The National Wetlands Inventory (NWI) dataset contains thirteen palustrine emergent wetland features that intersect the Survey Corridor. During field surveys, E3 recorded 14 wetlands, totaling approximately 4 acres (Table 7). The wetlands were classified as Palustrine Emergent (PEM), Palustrine Scrub Shrub (PSS), Palustrine Forested (PFO) or Riverine wetland (R) features. Refer to the Project maps in Appendix A for the location of these features and Appendix B for photos.

Subsequent field survey conducted by Carlson McCain in the spring of 2017 identified and delineated two additional wetlands, totaling approximately 1.13 acres (See Table 7).

Both features are seasonally flooded Palustrine Emergent (PEMC) wetlands located adjacent to intermittent streams. Appendix E contains the Carlson McCain report.

4.3 WATERBODIES

The National Hydrography Dataset (NHD) depicts nineteen waterbodies that intersect the Survey Corridor. Field studies were conducted to verify presence or absence of mapped wetland (e.g.; NWI) and/or waterbody (NHD) features. Field surveys confirmed the presence of three waterbody features: 1) Sand Creek; 2) Clear Creek; and 3) Handy Water Creek. Each of these waterbody features are associated with a wetland feature. These wetland/waterbody features are detailed in Table 7. A jurisdictional characterization was made for these waterbodies. Refer to the Project maps in Appendix A for the location of these features.

Subsequent field studies conducted by Carlson McCain, identified two additional wetlands/waterbody within the Survey Corridor; Dry Creek and a tributary to Dry Creek. These wetland/waterbody features are outlined in Table 7. Refer to Appendix E for the full Carlson McCain report.

Table 7. Wetlands, Waterbodies, and their Associated Acreages and Jurisdictional Determinations within the Survey Corridor.

Water Feature ID	Feature Type	Classification*	Jurisdictional Determination**	Crossing Length (ft)	Surveyed Acres
WB-01	Wetland	PEM	Yes	238	0.56
WB-02	Wetland	PEM	No	321	0..35
WB-03	Wetland	PEM	No	176	0.09
WB-04	Wetland/Waterbody	R	No	280	0.64
WB-05	Wetland	PSS	No	297	0.69
WB-06	Wetland/Waterbody	R	No	71	0.04
WB-07	Wetland	PEM	No	93	0.04
WB-08	Wetland	PEM	No	314	0.7
WB-09	Wetland/Waterbody	R	No	53	0.03
WB-10	Wetland	PEM	No	361	0.4
WB-11	Wetland	PEM	No	139	0.2
WB-12	Wetland	PEM	No	231	0.24
WB-13	Wetland	PFO	No	67	0.06
WB-14	Wetland	PEM	No	126	0.05
WB-15	Wetland/Waterbody***	PEMC	Yes	170	0.32
WB-16	Wetland/Waterbody***	PEMC	Yes	382	0.81

*Cowardin et al., 1972
**USACE has final authority over jurisdictional status
*** Carlson McCain field surveyed wetland/waterbody

4.4 WOODY VEGETATION

Woody vegetation was recorded at various locations within the Survey Corridor, typically comprised of communities of snowberry, prairie rose, and chokecherry (*Prunus virginiana*) (Appendix A). The vegetation associated with incised drainages was often woody, typically comprised of green ash, chokecherry, fireberry hawthorn (*Crataegus chrysocarpa*), and Siberian elm (*Ulmus pumila*). The riparian zones intersected by the Survey Corridor typically contain a mix of green ash, chokecherry, and fireberry hawthorn, interspersed occasionally with boxelder (*Acer negunda*) and Siberian elm. A total of 65 woody vegetation patches were mapped within the Survey Corridor, totaling 22.25 acres. Appendix C lists the species inventory within each patch and the estimated number of trees that could be impacted within a 50-foot construction right-of-way (ROW) for each woody vegetation patch. Refer to the Project maps in Appendix A for the locations of these features.

4.5 NOXIOUS WEEDS

Field surveys recorded 46 noxious weed infestations, totaling 3.7 acres (Appendix D). Four species listed by McKenzie County (Absinthe Wormwood, Canada Thistle, and Common Burdock, Field Bindweed) and two species (Canada Thistle and Absinthe Wormwood) listed by the State of North Dakota were observed. The most common weed recorded was Canada thistle. Common burdock was observed intermittently during the survey, typically associated with woodland margins or rights-of-way. Single occurrences of both absinthe wormwood and field bindweed were observed and recorded. Refer to the Project maps in Appendix A for the locations of these features.

4.6 THREATENED AND ENDANGERED SPECIES

No candidate, threatened, or endangered species or known critical habitat were encountered during field surveys. The following sections detail the potential effects the Project could have on listed species.

4.6.1 INTERIOR LEAST TERN

Federal Status: Endangered

Regionally, the Missouri River, which is located approximately nine miles to the east of the Project, is known to provide suitable breeding habitat for interior least terns. Field studies confirmed the absence of suitable breeding habitat (e.g.; sandbars, riverbanks or broad beaches) within the Project. Because this is a conversion of existing pipeline systems, construction activities will be small in scale and limited to tie-in locations at existing facilities, any impacts to this species are not anticipated.

4.6.2 PIPING PLOVER

Federal Status: Threatened

In North Dakota, the Piping plover is seasonal resident that can be found nesting along alkali wetlands as well as along the shores and sand flats of both Lake Sakakawea and the Missouri River. The Project is located approximately nine miles to the east of Lake Sakakawea and the Missouri River and therefore due to this distance the Project will not impact nesting activities occurring in association with these features. Field studies confirmed the absence of alkali wetlands with suitable plover breeding habitat within the Project. Because this is a conversion of existing pipeline system, construction activities will be small in scale and limited to tie-in locations at existing facilities, any impacts to this species are not anticipated.

4.6.3 RUFA RED KNOT

Federal Status: Threatened

The rufa red knot is a seasonally transient species that passes through North Dakota when migrating between its breeding and wintering grounds. Preferred migratory habitat is closely associated with foraging and has been characterized as wetlands with mudflats and/or sandbars associated with larger waterbody features. Field surveys have confirmed the absence of suitable foraging habitat within the Project. Because this is a conversion of existing pipeline system, construction activities will be small in scale and limited to tie-in locations at existing facilities, any impacts to this species are not anticipated.

4.6.4 WHOOPING CRANE

Federal Status: Endangered

Suitable migratory habitat for the whooping crane is potentially located within the Survey Corridor (wet fields and croplands). Because this is a conversion of existing pipeline systems, construction activities will be small in scale and limited to tie-in locations at existing facilities, any impacts to this species are not anticipated.

4.6.5 PALLID STURGEON

Federal Status: Endangered

The Project does not cross any waterbodies classified as suitable habitat for the pallid sturgeon. Therefore, the Project will have no impacts to this listed species.

4.6.6 GRAY WOLF

Federal Status: Endangered

The Survey Corridor intersects potentially suitable habitat for the gray wolf, however because this is a conversion of existing pipeline systems, construction activities will be

small in scale and limited to tie-in locations at existing facilities, any impacts to this species are not anticipated.

4.6.7 DAKOTA SKIPPER

Federal Status: Threatened

To date, no Dakota skippers have been identified within the Survey Corridor and closest USFWS designated critical habitat is located six miles northeast of the northern end of the Project. Field studies confirmed the absence of preferred skipper habitat. Because this is a conversion of existing pipeline systems, construction activities will be small in scale and limited to tie-in locations at existing facilities, any impacts to this species are not anticipated.

4.6.8 NORTHERN LONG-EARED BAT

Federal Status: Threatened

Potentially suitable habitat in the form green ash coulees and small riparian galleries occur within the Survey Corridor. The Project occurs outside of the USFWS designated White-Nose Syndrome Zone, and therefore the USFWS places no restrictions to tree-removing activities (see the Final 4(d) Rule for this species). Because this is a conversion of existing pipeline systems, construction activities will be small in scale and limited to tie-in locations at existing facilities, any impacts to this species are not anticipated.

SECTION 5: RECOMMENDATIONS

Because this is a conversion of existing pipeline systems, construction activities will be small in scale and limited to tie-in locations at existing facilities, the implementation of standard best management practices are recommended.

SECTION 6: REFERENCES

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Appendix A Survey Maps



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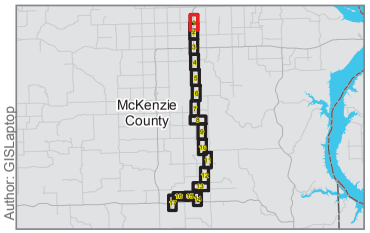

- Above Ground Facility
- Milepost
- Centerline
- NHD Waterway
- NWI Wetland
- NHD Waterbody
- Environmental Survey Corridor

Natural Resource Survey Data*

- Noxious Weeds
- Noxious Weeds
- Woody Vegetation - Shrub
- Woody Vegetation - Tree
- Woody Vegetation - Shrubs
- Woody Vegetation - Trees
- Wetland/Waterbody
- Nest

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Page 1 of 17

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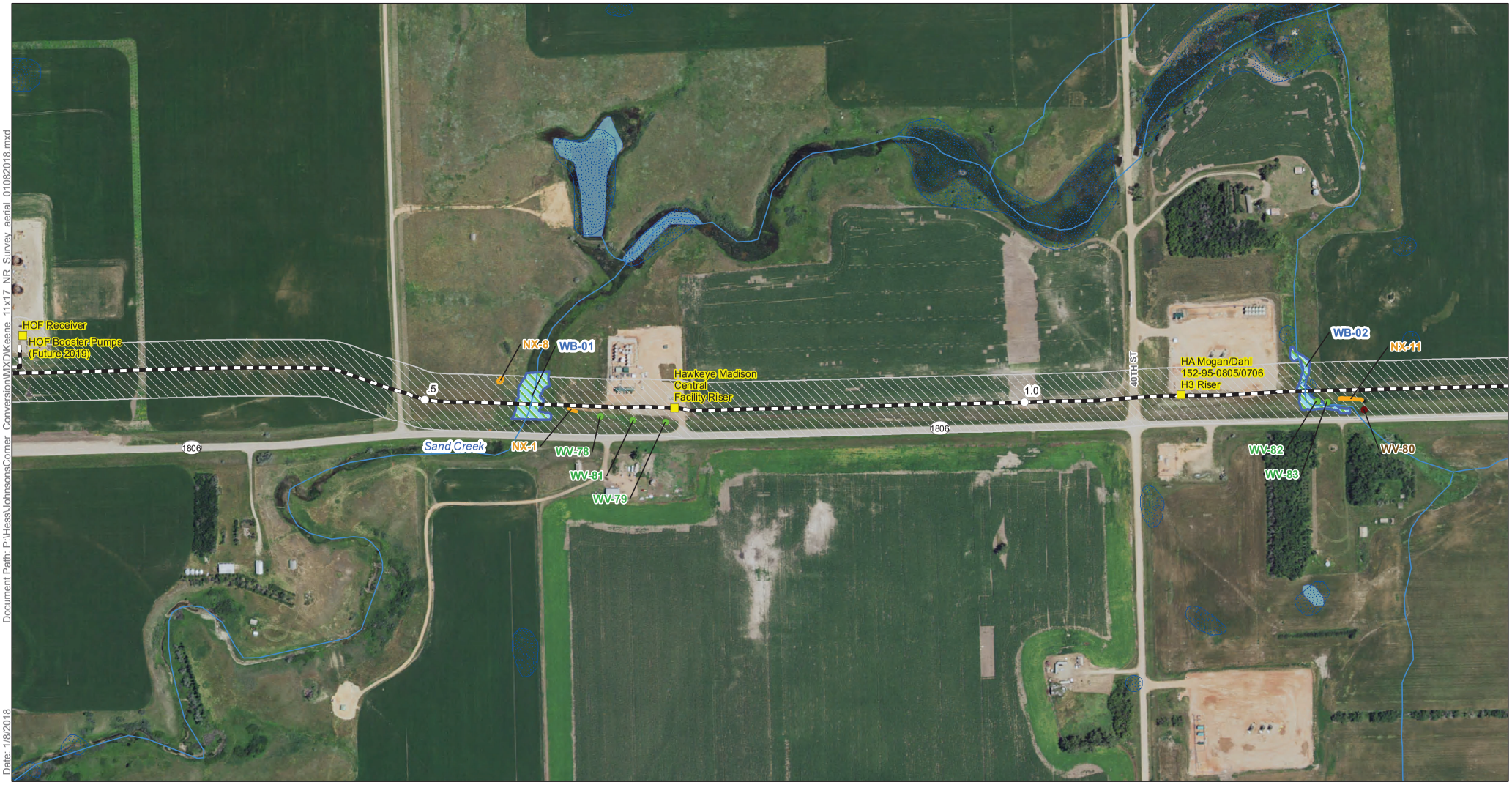

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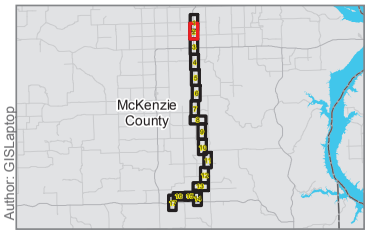

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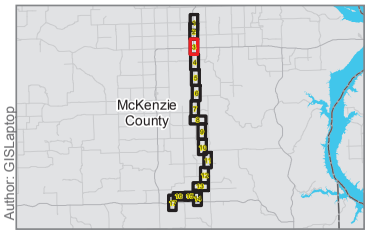

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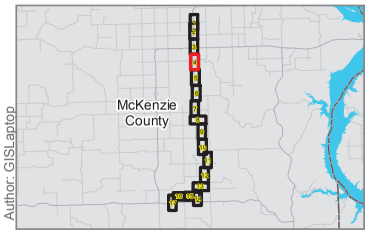

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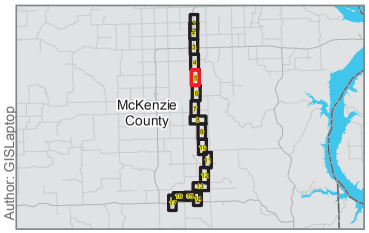

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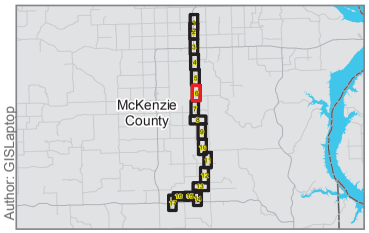

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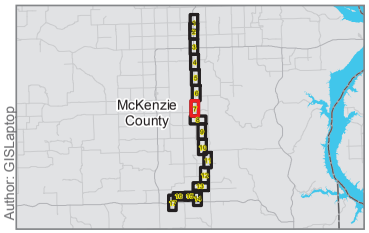

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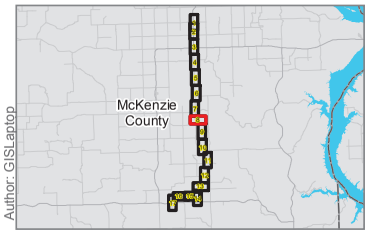

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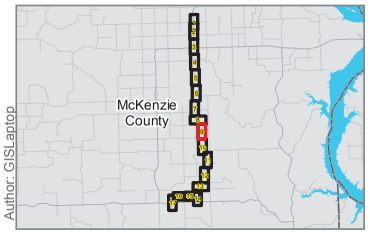

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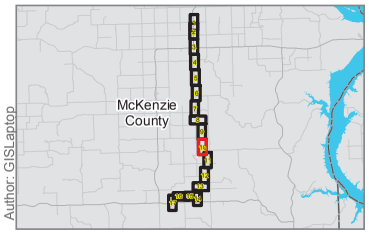

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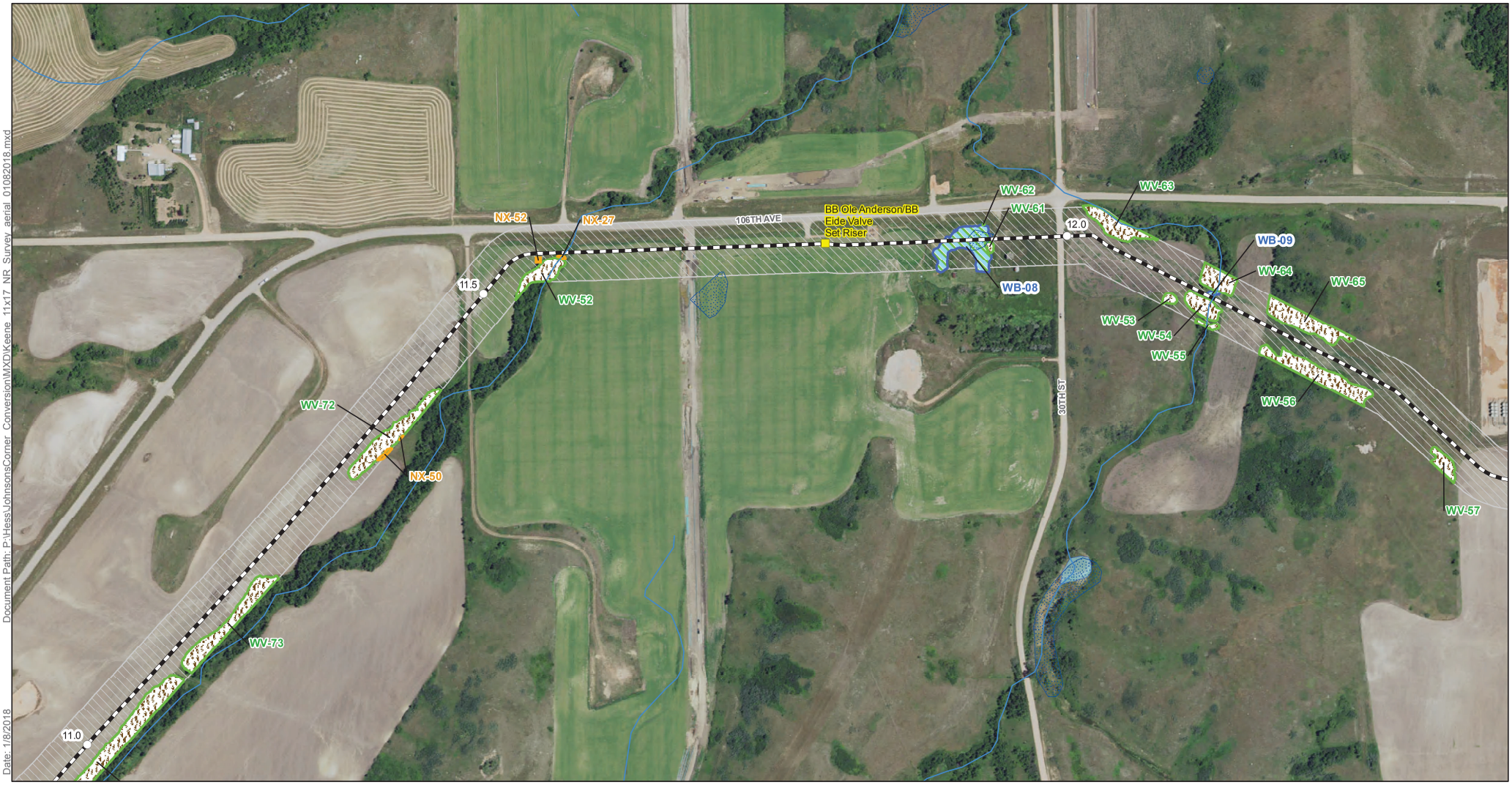

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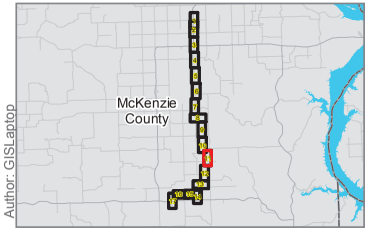

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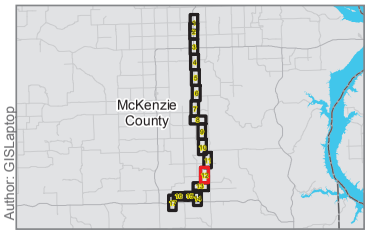

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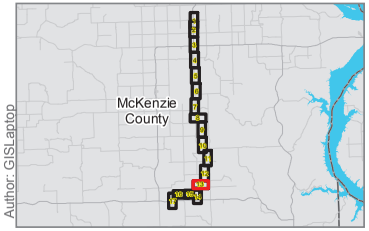

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- Wetland/Waterbody
- Nest

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Natural Resource Report Maps

McKenzie County, North Dakota



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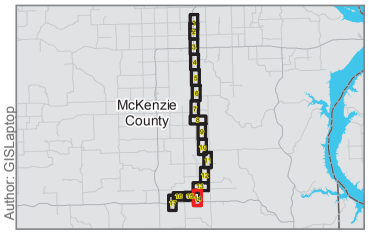
Author: GISLaptop



- Above Ground Facility
- Milepost
- Centerline
- NHD Waterway
- NWI Wetland
- NHD Waterbody
- Environmental Survey Corridor

Natural Resource Survey Data*

- Noxious Weeds
- Noxious Weeds
- Woody Vegetation - Shrub
- Woody Vegetation - Tree
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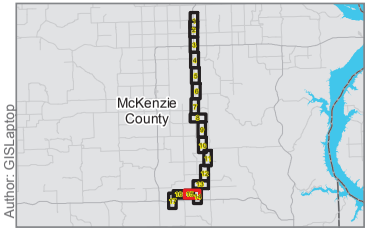

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Natural Resource Report Maps

Page 15 of 17

McKenzie County, North Dakota

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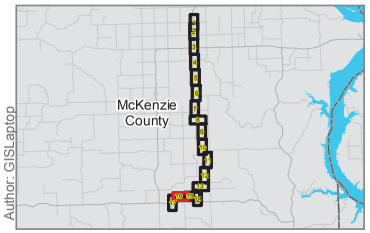

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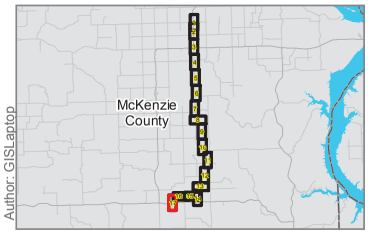

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Natural Resource Report Maps

McKenzie County, North Dakota

Appendix B

Field Photographs



Photo 1. Missouri Plateau ecoregion within the Survey Corridor.



Photo 2. Northwestern Great Plains Mixedgrass Prairie located within the Survey Corridor.



Photo 3. Cultivated Cropland located within the Survey Corridor.



Photo 4. Western Great Plains Depressional Wetland System located within the Survey Corridor.



Photo 5. Western Great Plains Wooded Draw and Ravine located within the Survey Corridor.



Photo 6. Mixed shrubland community dominated by silver buffaloberry, western snowberry, and chokecherry within the Survey Corridor.

Appendix C: Woody Vegetation Table

Woody Vegetation

ID	Patch Type	Species	Number of Plants		Area Surveyed (Acres)
			Survey Area	Const. ROW	
WV-10	Upland Shrub	Snow Berry	40%	0	0.1042
		Chokecherry	3	0	
WV-11	Upland Shrub	Snow Berry	25%	25%	0.3908
		Silver Buffaloberry	30%	30%	
		Prairie Rose	2%	2%	
WV-12	Upland Shrub	Chokecherry	9	4	0.0140
WV-13	Upland Shrub	Chokecherry	20%	20%	0.0871
		Silver Buffaloberry	50%	50%	
WV-14	Upland Shrub	American Plum	1%	1%	5.3111
		Chokecherry	25%	25%	
		White Sagebrush	1%	1%	
		Silver Buffaloberry	15%	15%	
		Fireberry Hawthorn	35%	35%	
		Snow Berry	30%	30%	
		Prairie Rose	1%	1%	
		Tatarian Honeysuckle	2%	2%	
WV-15	Upland Shrub	Chokecherry	35%	35%	0.3972
		Snow Berry	15%	15%	
		Silver Buffaloberry	25%	25%	
		Fireberry Hawthorn	5%	5%	
WV-16	Upland Shrub	Snow Berry	35%	0	0.1076
		Chokecherry	15%	0	
WV-17	Upland Shrub	Snow Berry	25%	25%	0.2547
		Chokecherry	10%	10%	
		Silver Sage Brush	2%	2%	
		Silver Buffaloberry	5%	5%	
WV-18	Upland Shrub	Snow Berry	30%	30%	0.9030
		Silver Sage Brush	2%	2%	
		Chokecherry	5%	5%	
		Prairie Rose	2%	2%	
WV-19	Upland Shrub	Snow Berry	20%	20%	1.6805
		Silver Sage Brush	2%	2%	
		Chokecherry	40%	40%	
		Fireberry Hawthorn	15%	15%	
		Saskatoon Serviceber	3%	3%	
		Prairie Rose	2%	2%	
WV-20	Upland Deciduous	Green Ash	2	0	0.0075
WV-23	Upland Shrub	Snow Berry	25%	0	0.0712
WV-24	Upland Shrub	Snow Berry	20%	20%	0.1644
		Silver Buffaloberry	4	0	
WV-25	Upland Shrub	Snow Berry	15%	0	0.1344
		Prairie Rose	5%	0	
		Chokecherry	2	0	
WV-26	Upland Shrub	Snow Berry	17%	0	0.0949
WV-27	Upland Shrub	Snow Berry	10%	0	0.0163
WV-28	Upland Shrub	Snow Berry	5%	0	0.0022
		American Plum	1	0	
WV-29	Upland Shrub	Snow Berry	15%	0	0.0611
		Silver Sage Brush	1	0	
WV-30	Upland Shrub	Chokecherry	10%	10%	0.0228
		Silver Sage Brush	2%	2%	
		Snow Berry	10%	10%	

Woody Vegetation

ID	Patch Type	Species	Number of Plants		Area Surveyed (Acres)
			Survey Area	Const. ROW	
WV-31	Upland Shrub	Chokecherry	15%	0	0.0026
WV-32	Upland Shrub	Chokecherry	5%	5%	0.3652
		Snow Berry	5%	5%	
		Fireberry Hawthorn	5%	5%	
		Prairie Rose	2%	2%	
		Silver Sage Brush	10%	10%	
WV-39	Upland Shrub	Snow Berry	55%	55%	0.0051
WV-40	Upland Shrub	Silver Sage Brush	1	0	0.0008
WV-41	Upland Shrub	Silver Buffaloberry	1	1	0.0008
WV-42	Upland Deciduous	Siberian Elm	1	0	0.0008
WV-47	Upland Deciduous	Green Ash	1	1	0.0008
WV-48	Upland Deciduous	Green Ash	1	1	0.0008
WV-49	Upland Deciduous	Green Ash	2	0	0.0008
WV-50	Upland Deciduous	Green Ash	1	1	0.0008
WV-51	Upland Shrub	Snow Berry	10%	0	0.0020
WV-52	Riparian Deciduous	Boxelder	10	0	0.3147
		American Elm	5	0	
		Green Ash	2	0	
		Chokecherry	10%	0	
		Tatarian Honeysuckle	1%	0	
		Fireberry Hawthorn	2%	0	
WV-53	Upland Deciduous	Boxelder	1	0	0.0536
		Silver Buffaloberry	5%	0	
WV-54	Upland Deciduous	Green Ash	13	0	0.2596
		Chokecherry	10%	0	
		Snow Berry	5%	0	
WV-55	Upland Deciduous	Siberian Elm	3	0	0.0477
		Chokecherry	5%	0	
		Snow Berry	5%	0	
WV-56	Upland Deciduous	Boxelder	1	0	0.7817
		Chokecherry	30%	0	
		American Plum	1%	0	
		Fireberry Hawthorn	2%	0	
		Silver Buffaloberry	10%	0	
		Snow Berry	15%	0	
WV-57	Upland Deciduous	Green Ash	1	0	0.1884
		Chokecherry	20%	0	
		Silver Buffaloberry	5%	0	
		Snow Berry	20%	0	
WV-58	Upland Deciduous	Green Ash	2	0	1.4295
		Snow Berry	30%	0	
		Silver Buffaloberry	15%	0	
		Chokecherry	8%	0	
WV-59	Upland Shrub	Silver Sage Brush	10	0	0.0068
WV-60	Upland Shrub	Chokecherry	15%	0	0.0223
WV-61	Upland Shrub	Silver Buffaloberry	60%	0	0.0310
		Tatarian Honeysuckle	2%	0	
		Russian Olive	2	0	
WV-62	Upland Deciduous	Green Ash	1	0	0.0003
WV-63	Riparian Deciduous	Siberian Elm	10	0	0.4161
		Green Ash	12	0	
		Boxelder	5	0	

Woody Vegetation

ID	Patch Type	Species	Number of Plants		Area Surveyed (Acres)
			Survey Area	Const. ROW	
		Chokecherry	15%	0	
		Tatarian Honeysuckle	1%	0	
		Snow Berry	5%	0	
WV-64	Riparian Deciduous	Boxelder	3	0	0.3099
		Green Ash	5	0	
		Siberian Elm	6	0	
		Snow Berry	5%	0	
		Chokecherry	15%	0	
		Tatarian Honeysuckle	1%	0	
		Fireberry Hawthorn	5%	0	
		Silver Buffaloberry	10%	0	
WV-65	Upland Shrub	Snow Berry	15%	0	0.6129
		Silver Buffaloberry	50%	0	
		Prairie Rose	1%	0	
		Fireberry Hawthorn	5%	0	
WV-66	Upland Shrub	Snow Berry	20%	0	1.4699
		Silver Buffaloberry	30%	0	
WV-67	Upland Deciduous	Chokecherry	10%	0	0.0700
		Green Ash	4	0	
		Snow Berry	5%	0	
		Siberian Elm	3	0	
		Russian Olive	1	0	
WV-68	Upland Deciduous	Chokecherry	10%	0	0.6416
		Prairie Rose	1%	0	
		Green Ash	70	0	
		Siberian Elm	5	0	
		Snow Berry	5	0	
		Silver Buffaloberry	10	0	
WV-69	Upland Deciduous	Green Ash	42	0	1.3171
		Chokecherry	2%	0	
		Prairie Rose	1%	0	
		Snow Berry	20%	0	
		Silver Buffaloberry	5%	0	
WV-70	Upland Shrub	Snow Berry	15%	0	0.0537
WV-71	Upland Deciduous	Green Ash	12	0	0.1194
		Snow Berry	5%	0	
		Chokecherry	10%	0	
WV-72	Upland Deciduous	Boxelder	55	0	0.6845
		Green Ash	60	0	
		Snow Berry	2%	0	
		Fireberry Hawthorn	10	0	
		Prairie Rose	1%	0	
		Chokecherry	15%	0	
WV-73	Upland Deciduous	Boxelder	55	0	0.7439
		Green Ash	82	0	
		Snow Berry	2%	0	
		Chokecherry	15%	0	
		Fireberry Hawthorn	3%	0	
		Prairie Rose	1%	0	
WV-74	Upland Deciduous	Boxelder	35	0	1.6579
		Green Ash	70	0	
		Chokecherry	20%	0	

Woody Vegetation

ID	Patch Type	Species	Number of Plants		Area Surveyed (Acres)
			Survey Area	Const. ROW	
		Snow Berry	5%	0	
		Fireberry Hawthorn	10%	0	
WV-75	Upland Deciduous	Boxelder	3	0	0.2023
		Green Ash	7	0	
		Chokecherry	2%	0	
		Snow Berry	1%	0	
		Fireberry Hawthorn	1%	0	
WV-76	Upland Deciduous	Boxelder	7	0	0.6262
		Green Ash	14	0	
		Chokecherry	4%	0	
		Snow Berry	1%	0	
		Fireberry Hawthorn	2%	0	
WV-77	Upland Shrub	Snow Berry	50%	0	0
		Chokecherry	10%	0	
WV-78	Upland Shrub	Silver Buffaloberry	1	0	0
WV-79	Upland Shrub	Silver Buffaloberry	1	0	0
WV-80	Upland Deciduous	Green Ash	1	0	0
WV-81	Upland Shrub	Silver Buffaloberry	1	0	0
WV-82	Upland Shrub	Chokecherry	1	0	0
WV-83	Upland Shrub	Chokecherry	1	0	0
WV-84	Upland Shrub	Snow Berry	25	0	0
WV-85	Upland Shrub	Prickly Rose	20%	0	0
WV-86	Upland Shrub	Silver Buffaloberry	1	0	0

Appendix D: Noxious Weed Table

Noxious Weeds

Weed ID	Patch Type	Acres
NX-01	Canada Thistle 10%	0.003
NX-02	Canada Thistle 5%	0.031
NX-03	Canada Thistle 5%	0.016
NX-04	Absinthe Wormwood 10%	0.049
	Canada Thistle 5%	
NX-05	Canada Thistle 10%	0.005
NX-06	Canada Thistle 10%	0.003
NX-07	Canada Thistle 10%	0.016
NX-08	Canada Thistle 5%	0.010
NX-09	Canada Thistle 30%	0.070
NX-10	Canada Thistle 5%	0.010
NX-11	Canada Thistle 10%	0.017
NX-12	Canada Thistle 20%	0.006
NX-13	Canada Thistle 10%	0.048
	Field Bindweed 20%	
NX-14	Canada Thistle 15%	0.043
	Common Burdock 10%	
NX-15	Canada Thistle 15%	0.011
NX-16	Canada Thistle 15%	0.010
	Common Burdock 5%	
NX-17	Canada Thistle 10%	0.003
NX-18	Canada Thistle 20%	0.031
NX-19	Canada Thistle 15%	0.038
	Common Burdock 2%	
NX-20	Canada Thistle 10%	0.003
NX-21	Canada Thistle 10%	0.026
NX-22	Canada Thistle 10%	0.076
NX-23	Canada Thistle 15%	0.003
NX-24	Canada Thistle 30%	0.051
NX-25	Canada Thistle 20%	0.023
NX-26	Canada Thistle 30%	0.013
NX-27	Canada Thistle 5%	0.008
NX-28	Canada Thistle 20%	0.015
NX-30	Canada Thistle 30%	0.456

Weed ID	Patch Type	Acres
NX-31	Canada Thistle 20%	0.173
NX-32	Canada Thistle 10%	0.034
	Common Burdock 5%	
NX-33	Canada Thistle 30%	0.020
NX-34	Canada Thistle 30%	0.042
NX-42	Common Burdock 25%	0.014
NX-43	Canada Thistle 5%	0.033
NX-45	Canada Thistle 30%	1.170
NX-46	Canada Thistle 10%	1.12
NX-47	Common Burdock 25%	0.014
NX-49	Canada Thistle 10%	0.005
NX-50	Canada Thistle 10%	0.021
NX-51	Canada Thistle 5%	0.023
NX-52	Canada Thistle 2%	0.001
NX-53	Canada Thistle 20%	0.001
NX-54	Canada Thistle 2%	0.001
	Field Bindweed 1%	0.001
NX-55	Canada Thistle 3%	0.001
NX-56	Canada Thistle 5%	0.001

Appendix E: Carlson McCain Wetland Report

Wetland Report

Crestwood – Johnsons Corner Project
McKenzie County, North Dakota
Carlson McCain Project #6848

Prepared for:

E3 Environmental, LLC
871 West Jefferson Avenue
St. Paul, MN 55102

June 2, 2017

Carlson McCain

600 South 2nd Street, Suite 105
Bismarck, ND 58504
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Crestwood – Johnsons Corner Project
McKenzie County, North Dakota

TABLE OF CONTENTS

1.0 SCOPE OF WORK 1
2.0 PROCEDURES 2
3.0 RESULTS 3
4.0 REFERENCES 4

TABLES

Table 1. Delineated Wetlands 3

APPENDICES

Appendix A Figures
Figure 1. General Location
Figure 2. Topography
Figure 3. Wetland Field Survey
Appendix B Project Photographs

1.0 SCOPE OF WORK

The Crestwood – Johnsons Corner Project (Project) determined the extent of waterbody and wetland features within the boundaries of the Project's Survey Area. The Survey Area is Approximately 1,220 feet in length by 100 feet wide. It covers approximately 2.80 acres in Section 18, Township (T) 150 North (N), Range (R) 95 West (W) of McKenzie County, North Dakota (Figures 1 and 2).

Carlson McCain, Inc. (Carlson McCain) performed a wetland field determination for the Survey Area. The survey was conducted by Chad Tucker, Biologist, of Carlson McCain on June 2, 2017. Weather at the time of the survey was sunny and 92 degrees Fahrenheit, with southerly winds at 15 miles per hour.

2.0 PROCEDURES

Hydrological indicators used for wetland identification were determined on-site based on topographic position and presence of hydric vegetation. Resource information was used to identify and aid in delineation of potential wetlands within the Survey Area. McKenzie County NAIP aerial photographs; U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) (USFWS, 2013); U.S. Geological Survey (USGS) National Hydrography Dataset (NHD); and the digital web soil survey (USDA-NRCS, 2013) were consulted prior to the wetland and waterbody field determination. Geospatial field data was collected using Sony Xperia Android Tablets paired with an EOS ARROW Lite global positioning system.

3.0 RESULTS

The Survey Area contained two NHD intermittent streams; Dry Creek and an unnamed tributary to Dry Creek. Two PEMC classified NWI signatures are also associated with the Survey Area.

Two wetlands are located within the Survey Area (Table 1). Wetland locations are identified in Figure 3 and photographs of the Survey Area are attached in Appendix B.

Wetland 1 covers approximately 0.32 acres within the Survey Area. This wetland encompasses the dry, saline channel of Dry Creek. Wetland 2 is a wetland complex of the unnamed intermittent stream. Wetland 2 covers approximately 0.81 acres within the Survey Area.

Table 1. Delineated Wetlands

Wetland ID	Associated Stream Name[1]	Tributary to	Longitude	Latitude	NWI Classification	Acres
Wetland 1	Dry Creek	Bear Den Creek	-102.890980	47.81098	PEMC	0.32
Waterbody 2	Unnamed	Dry Creek	-102.888726	47.81097	PEMC	0.81

[1]Waterbody names and tributaries were obtained from the attributes of the National Hydrology Dataset.

4.0 REFERENCES

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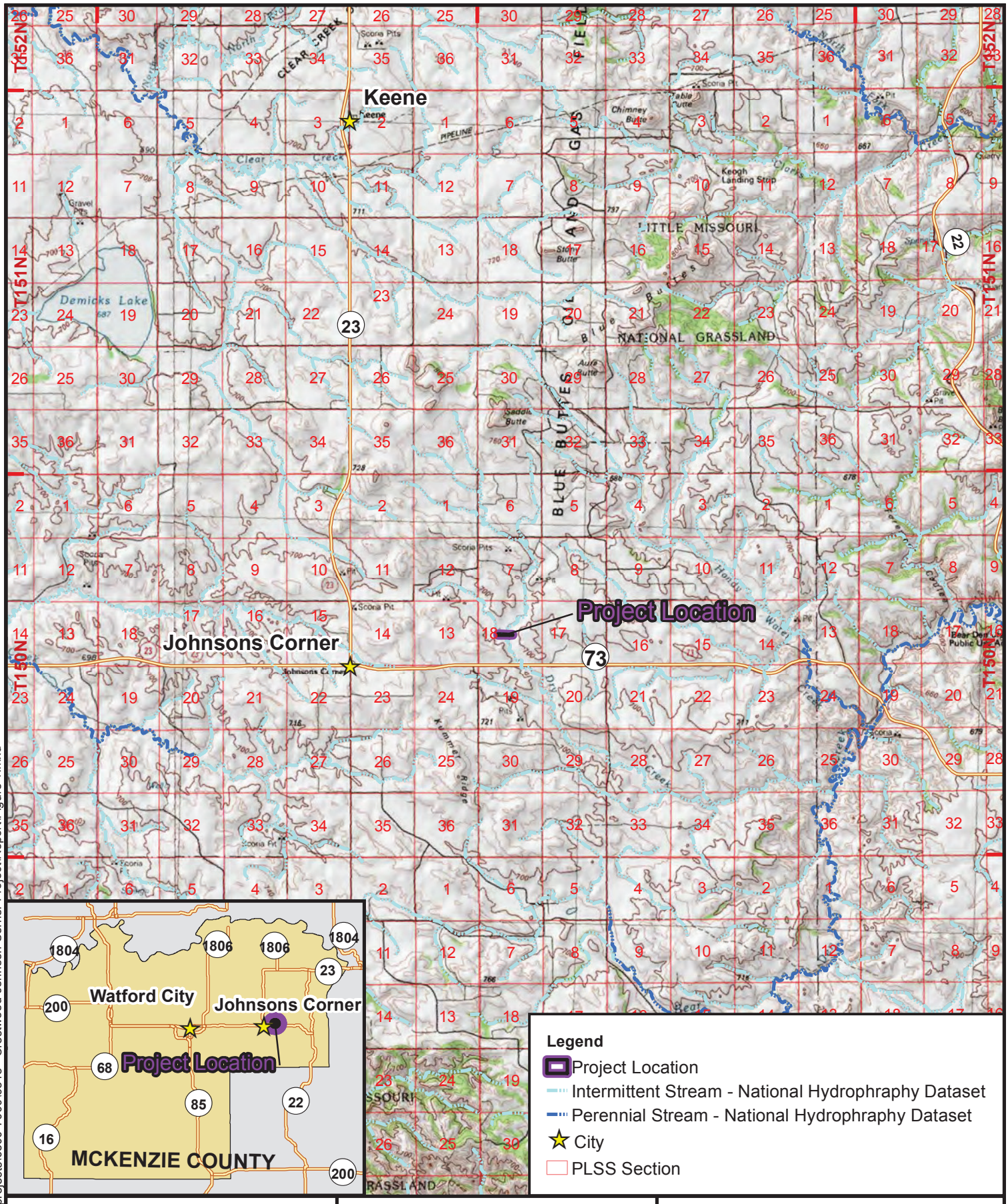
Appendix A

Figures



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0 1 2 Miles

Basemap: ND GIS_Hub_All_Elevation
Topomap Shaded Relief 100K

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Figure 1
General Location

Crestwood - Johnsons Corner Project
E3 Environmental, LLC

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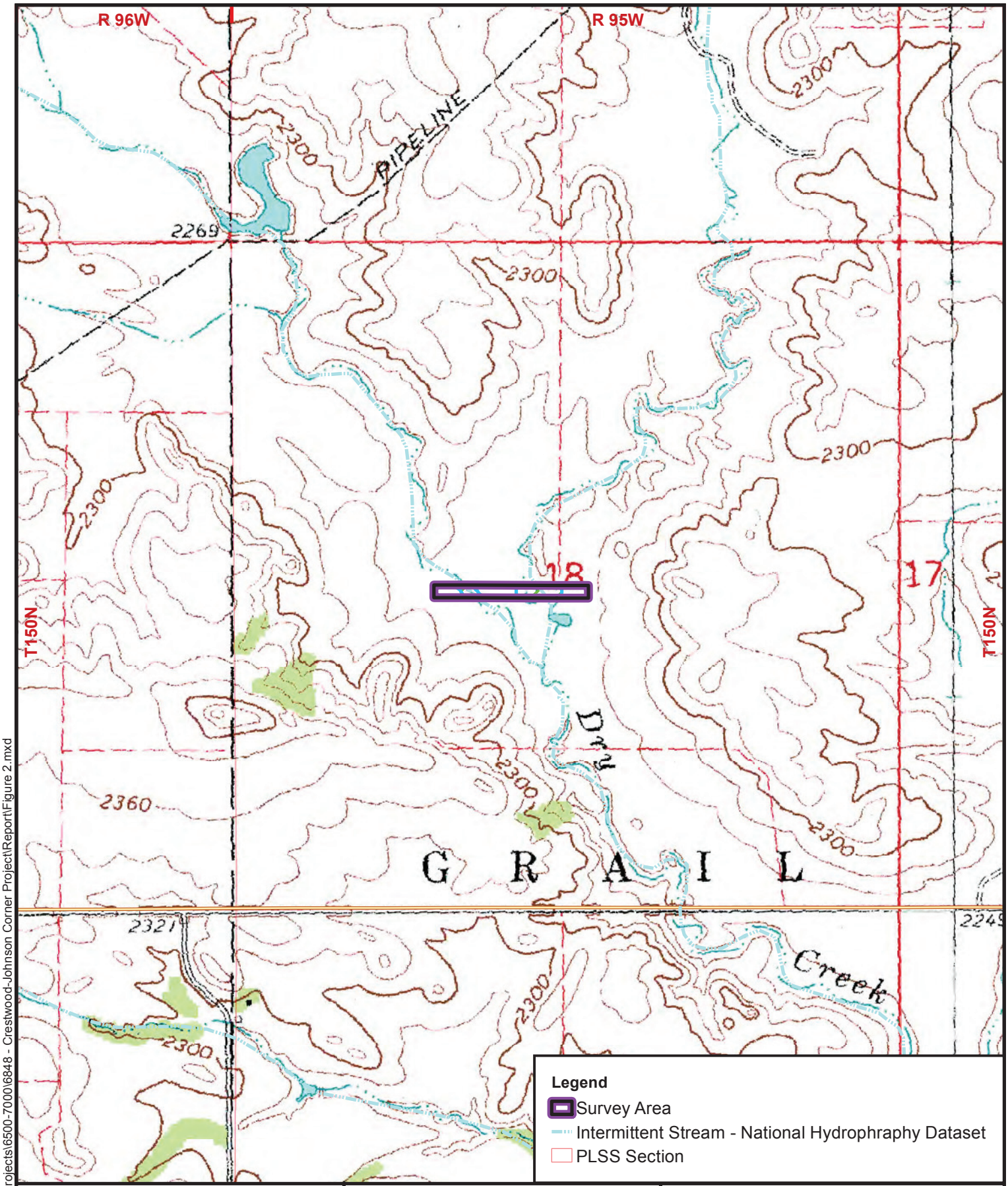
June 2017



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Basemap: ND GIS_Hub_All_Elevation
Topomap DRG 24K

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Figure 2
Topography

Crestwood - Johnsons Corner Project
E3 Environmental, LLC

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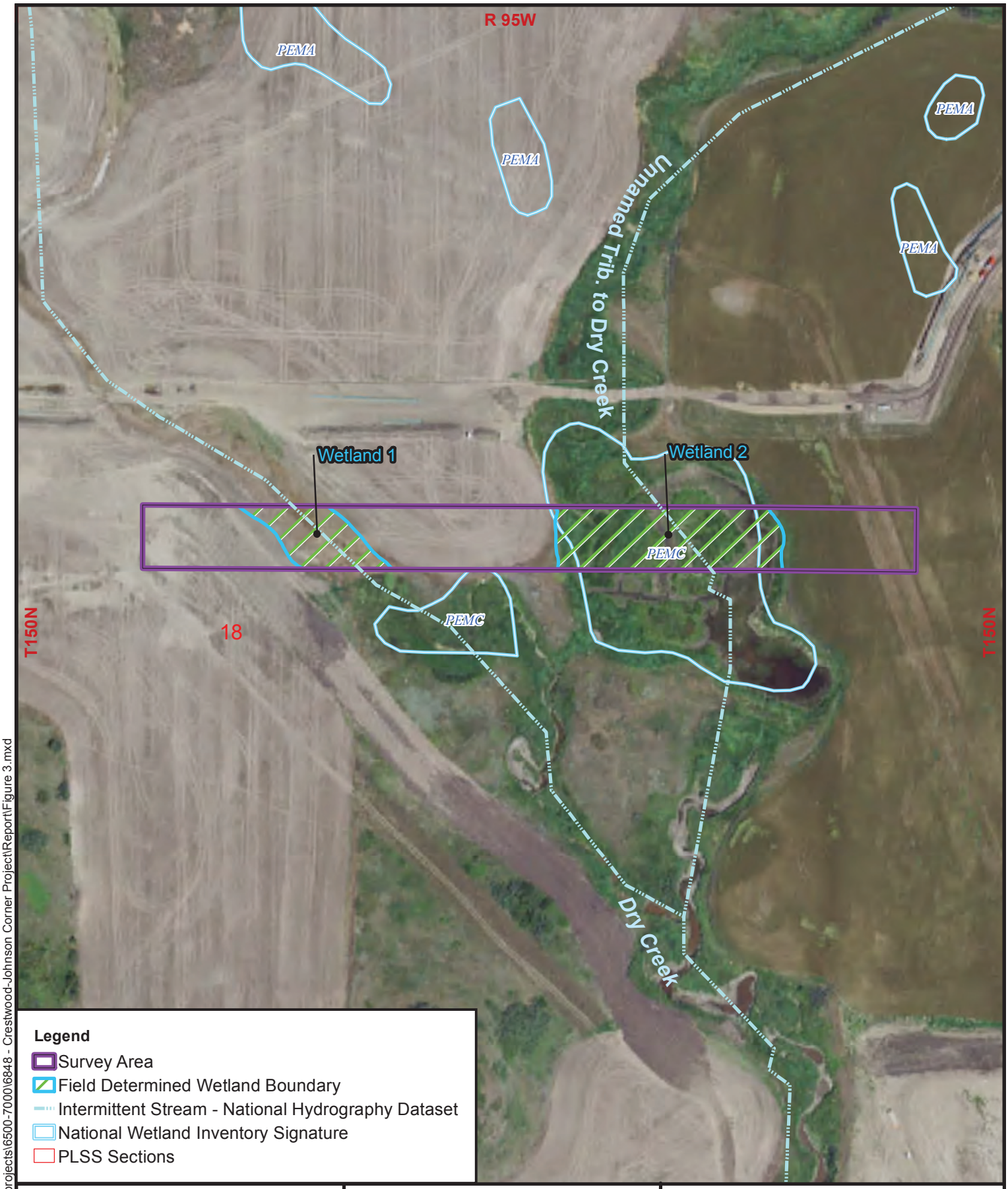
June 2017



Legend

- Survey Area
- Field Determined Wetland Boundary
- Intermittent Stream - National Hydrography Dataset
- National Wetland Inventory Signature
- PLSS Sections

1:2,400

0 100 200 Feet

Basemap: McKenzie County NAIP 2016

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600 South 2nd Street, Suite 105, Bismarck, North Dakota 58504
www.carlsonmccain.com

Figure 3
Wetland Survey

Crestwood - Johnsons Corner Project
E3 Environmental, LLC

R:\projects\6500-7000\6848 - Crestwood-Johnson Corner Project\Report\Figure 3.mxd

June 2017

Appendix B

Field Photographs



Photograph 1. View of Wetland 1 looking south from the northern edge of the Survey Area.



Photograph 2. View of Wetland 1 looking north from the Southern edge of the Survey Area.



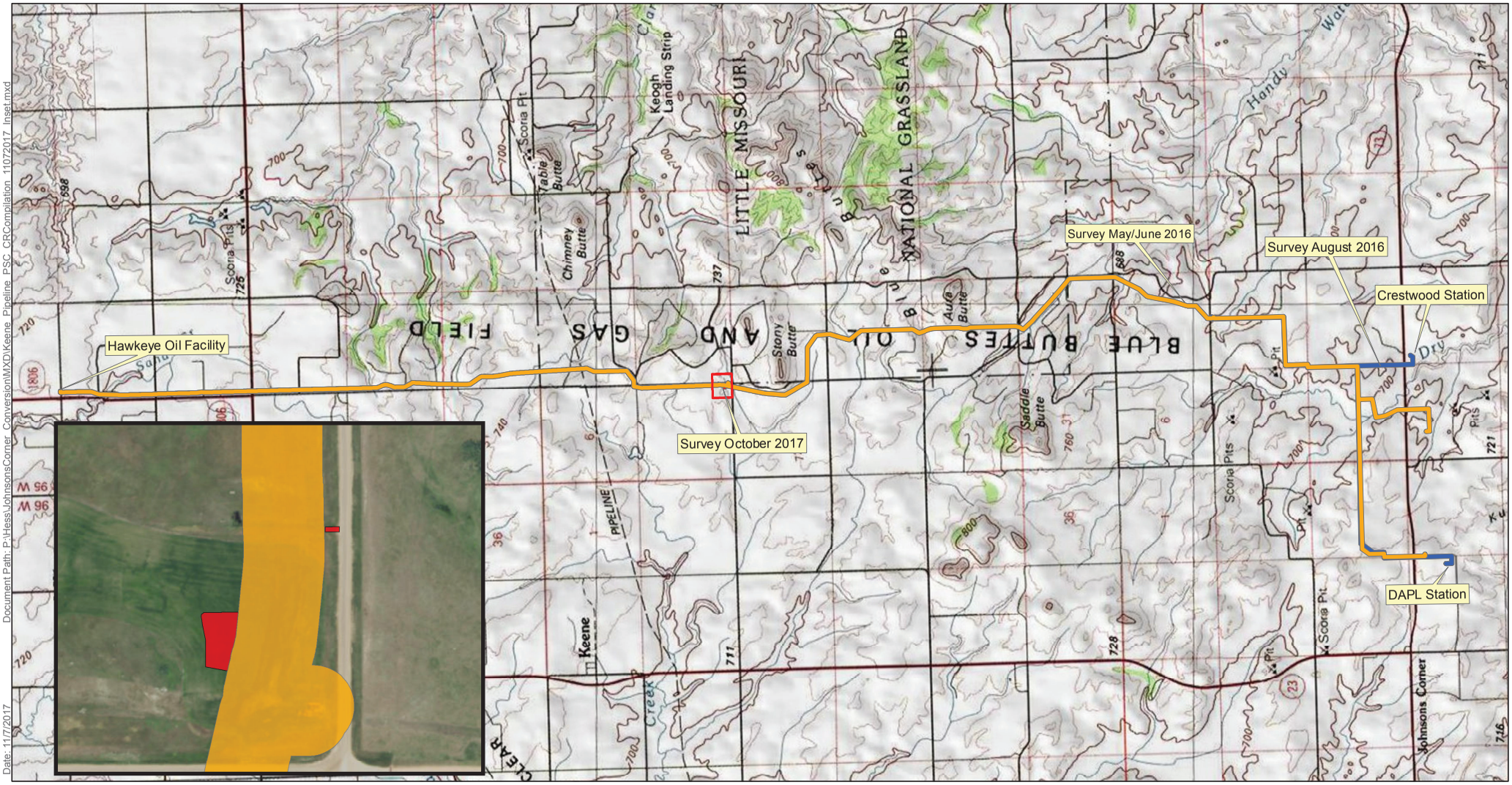
Photograph 3. View of Wetland 2 looking west from the eastern edge of the Survey Area.

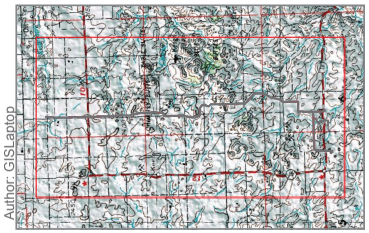


Photograph 4. View of Wetland 2 looking South from the northern edge of the Survey Corridor.

Appendix E

Cultural Resources Report





Survey May/June 2016
Survey August 2016
Survey October 2017

N

E3 Environmental
Enhancing Execution with Experience

0 5,000 10,000 20,000 Feet

1:60,000

Map not to scale, for environmental review purposes only.

Hess Corporation

Keene Gathering Line Systems

Cultural Resource Survey Areas

McKenzie County, ND

Author: GISLaptop

Date: 11/7/2017

Document Path: P:\Hess\JohnsonsCorner_Conversion\MXD\Keene_Pipeline_PSC_CRCompilation_11072017_Inset.mxd

Original Cultural Resource Survey Report and SHPO Concurrence Letter

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

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Mark Zimmerman
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Parks and Recreation Department

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Director
Department of Transportation

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Director

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September 30, 2016

Ms. Katie Schmidt
E3 Environmental, LLC
871 Jefferson Avenue
St. Paul, MN 55102

NDSHPO REF.: 16-1800 ND PSC "Hess Corporation's Subsidiaries: Hess North Dakota Pipelines, LLC and Hess Export Logistics Class I and Class III Inventory of the Johnson's Corner Merchant Capability Project"

Dear Ms. Schmidt,

We reviewed NDSHPO REF.: 16-1800 ND PSC "Hess Corporation's Subsidiaries: Hess North Dakota Pipelines, LLC and Hess Export Logistics Class I and Class III Inventory of the Johnson's Corner Merchant Capability Project," and find the report acceptable. There has been a good faith effort to identify and avoid impacts to "Significant Sites," provided the project remains as described and mapped in this report dated September 2016.

Thank you for the opportunity to review the project. If you have questions please contact Susan Quinnell at squinnell@nd.gov or (701) 328-3576.

Sincerely,

Claudia J. Berg
Director, State Historical Society of North Dakota









Photos courtesy of: Chris Schmidt and Dan Woodward

Hess North Dakota Pipelines, LLC and Hess Export Logistics Class I and Class III Inventory of the Johnson's Corner Merchant Capability Project, McKenzie County, North Dakota.

Prepared for:

Hess North Dakota Pipelines LLC &

Hess Export Logistics

Prepared by:

E3 Environmental, LLC

September 2016

E3 Environmental

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MANUSCRIPT DATA RECORD FORM

1. Manuscript Number: [SHPO assigns]

2. SHPO Reference #: [SHPO assigns]

3. Authors: Garrett Knudsen and Joseph Pnewski

4. Title: Hess Corporation's subsidiaries: Hess North Dakota Pipelines, LLC and Hess Export Logistics Class I and Class III Inventory of the Johnson's Corner Merchant Capability Project

5. Report Date: September 2016

6. Number of Pages (Including front matter, references cited and appendices): 71

7. Type – I = Inventory (Class I and Class III CRI)

8. Acres – 610

9. Legal Location(s) (no quarter sections) with Historic Context Study Unit(s):

Consult township tables in The North Dakota Comprehensive Plan for Historic

Preservation: Archeological Component, (SHSND 1990) for Study Unit assignments.

Study Units: LM, CB, KN, HE, SM, GA, JA, GR, NR, SR, SO, SH, YE

COUNTY	TWP	RNG	SEC	SU
McKenzie	152N	95W	5, 8, 17, 20, 29, 32	GA
	151N	95W	5-7, 17, 18, 20, 29, 32	GA
	150N	95W	5, 7, 8, 17-20	GA
	150N	96W	13, 14, 23, 24	GA

Hess North Dakota Pipelines, LLC and Hess Export Logistics

Johnson's Corner Merchant Capability Project

Class I and Class III Cultural Resource Inventory

Submitted to:

State Historical Society of North Dakota

Prepared for:

Hess North Dakota Pipelines LLC & Hess Export Logistics.

Prepared By:

Garrett L. Knudsen and Joseph K. Pnewski

Principal Investigator:

Garrett L. Knudsen

September 2016

E3 Environmental, LLC
871 Jefferson Ave
St. Paul, MN 55102

THE CONTENTS OF THIS REPORT ARE PRIVLEDGED AND CONFIDENTIAL AND AS SUCH HAS BEEN REDACTED.

Addendum Cultural Resource Survey Report and SHPO Concurrence Letter

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

Doug Burgum
Governor of North Dakota

North Dakota
State Historical Board

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Bismarck - President

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Valley City - Vice President

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Medora - Secretary

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Director
Parks and Recreation Department

Thomas Sorel
Interim Director
Department of Transportation

Claudia J. Berg
Director

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November 9, 2017

Joseph K. Pnewski, MA, RPA
Associate Archaeologist
E3 Environmental, LLC
871 Jefferson Avenue
St. Paul, MN 55102

ND SHPO Ref: 18-0118 PSC "Hess North Dakota Pipelines, LLC and Hess North Dakota Export Logistics Keene Oil Gathering System Conversion Class I and Class III Cultural Resource Inventory, McKenzie County, North Dakota" in portions of [T151N R95W Section 7]

Dear Mr. Pnewski,

We reviewed ND SHPO Ref: 18-0118 PSC "Hess North Dakota Pipelines, LLC and Hess North Dakota Export Logistics Keene Oil Gathering System Conversion Class I and Class III Cultural Resource Inventory, McKenzie County, North Dakota," and find the report acceptable. There has been a good faith effort to identify and avoid impacts to "Significant Sites," provided the project remains as described and mapped in this report dated November 2017.

Thank you for the opportunity to review this project. If you have questions please contact or Susan Quinnell at squinnell@nd.gov or (701) 328-3576.

Sincerely,

Claudia J. Berg
Director, State Historical Society of North Dakota









Photos courtesy of: Chris Schmidt and Dan Woodward

Keene Oil Gathering System Conversion Class I and Class III Cultural Resources Inventory, McKenzie County, ND

Prepared for:

Hess North Dakota Pipelines LLC &

Hess North Dakota Export Logistics

Prepared by:

E3 Environmental, LLC

November 2017

E3 Environmental

Enhancing Execution with Experience

MANUSCRIPT DATA RECORD FORM

1. Manuscript Number: [SHPO assigns]

2. SHPO Reference #: [SHPO assigns]

3. Authors: Joseph Pnewski

4. Title: Hess North Dakota Pipelines, LLC and Hess North Dakota Export Logistics Keene Oil Gathering System Conversion Class I and Class III Cultural Resource Inventory

5. Report Date: November, 2017

6. Number of Pages (Including front matter, references cited and appendices): 35

7. Type – I = Inventory (Class I and Class III CRI)

8. Acres – 0.4 acres

9. Legal Location(s) (no quarter sections) with Historic Context Study Unit(s):

Consult township tables in The North Dakota Comprehensive Plan for Historic

Preservation: Archeological Component, (SHSND 1990) for Study Unit assignments.

Study Units: LM, CB, KN, HE, SM, GA, JA, GR, NR, SR, SO, SH, YE

COUNTY	TWP	RNG	SEC	SU
McKenzie	150N	95W	7	GA

Hess North Dakota Pipelines, LLC
and
Hess North Dakota Export Logistics

Keene Oil Gathering System Conversion

Class I and Class III Cultural Resource Inventory

Submitted to:

State Historical Society of North Dakota

Prepared for:

Hess North Dakota Pipelines LLC & Hess North Dakota Export Logistics.

Prepared By:

Joseph K. Pnewski

Principal Investigator:

Joseph K. Pnewski

November 2017

E3 Environmental, LLC
871 Jefferson Ave
St. Paul, MN 55102

THE CONTENTS OF THIS REPORT ARE PRIVLEDGED AND CONFIDENTIAL AND AS SUCH HAS BEEN REDACTED.

Appendix F

10-Year Plan

CROWLEY | FLECK PLLP
ATTORNEYS

Brian R. Bjella
100 West Broadway, Suite 250
P.O. Box 2798
Bismarck, ND 58502-2798
701.223.6585
bbjella@crowleyfleck.com

July 11, 2016



via Hand Delivery

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

Dear Mr. Nitschke:

In re: Hess Corporation Ten-Year Plan
Our File No. 11-024-049

On behalf of Hess Corporation ("Hess"), we hereby submit eleven copies of Hess's Ten-Year Plan pursuant to North Dakota Century Code § 49-22-04 and North Dakota Administrative Code Chapter 69-06-02.

Sincerely yours,

BRIAN R. BJELLA

bw
Enc.
Ten-Year Plan to:
County Auditors:
McKenzie and Williams Counties
Dale Weathersby
Notice to:
State Agencies and Officers designated in
§ 69-06-01-05, N.D. Adm. Code.

HESS CORPORATION
Tioga Office Complex
10384 68th St NW
Tioga, North Dakota 58852
701-664-6200

June 29, 2016

PUBLIC SERVICE COMMISSION – State Capitol
Director of Administration
600 East Boulevard, Dept 408
Bismarck, ND 58505-0480

RE: HESS CORPORATION – 2016 Ten-Year Plan

Dear Director of Administration:

On behalf of HESS CORPORATION and its subsidiary entities that own and operate assets in North Dakota (collectively "HESS"), we hereby submit HESS' Ten-Year Plan pursuant to North Dakota Century Code § 49-22-04 and North Dakota Administrative Code Chapter 69-06-02.

SECTION A: Existing Energy Conversion Facilities.

HESS owns and operates the Tioga Gas Plant ("TGP") in Tioga, North Dakota. The general location, size, and a more detailed description of the TGP is included in North Dakota Public Service Commission Case No. PU-10-120.

SECTION B: Energy Conversion Facilities Under Construction.

HESS has no energy conversion facilities currently under construction.

SECTION C: Proposed Energy Conversion Facilities on Which Construction is Intended Within the Ensuing Five Years.

HESS has no proposed energy conversion facilities on which construction is intended within the next five years.

SECTION D: Proposed Energy Conversion Facilities During the Next Ten-Year Time Period.

HESS has no proposed energy conversion facilities on which construction is intended within the next ten years.

SECTION E: Existing Transmission Facilities (Electric).

HESS has no existing electrical transmission facilities.

SECTION F: Existing Transmission Facilities (Pipeline).

1. Location: HESS operates a pipeline (Residue Gas) beginning at the TGP extending southerly under Lake Sakakawea and then extending in a southwesterly direction to an interconnect point with the Northern Border pipeline south of Watford City, North Dakota. This pipeline was constructed pursuant to Public Service Commission Certificate of Site Compatibility for Transmission Facility Corridor #62 issued on March 11, 1992, and Public Service Commission Permit for the Construction of a Transmission Facility #72 issued on July 21, 1992. This pipeline is exempt for FERC jurisdictional purposes pursuant to the FERC Order issued on May 27, 1994. Attached hereto is a system map showing the location of the actual pipeline route.

a) Type and Capacity: The design specifications for this facility are as follows:

i) Product Type - natural gas

ii) Length of Facility in Miles - approximately 61

iii) Pipe Size - 10.75 inches O.D.

iv) Maximum Design Operating Pressure - 1440 pounds per square inch gage (psig)

v) Maximum Design Flow Rate - 65 million standard cubic feet per day (mmscfd)

vi) Compressor or pumping station specifications, including type, horse power, output pressure, and capacity –

(1) Tioga Compressor Station:

(a) Type: 3 centrifugal

(b) Suction Pressure: 700 psig

(c) Discharge Pressure: 1300 psig

(d) Station Horsepower: 6750 hp

(e) Maximum Capacity: 99 mmcfd

(2) Cherry Creek Compressor Station:

(a) Type: 2 reciprocating

(b) Suction Pressure: 875 psig

(c) Discharge Pressure: 1420 psig

(d) Station Horsepower: 1600 hp

(e) Maximum Capacity: 65 mmcfd

vii) Minimum Cover Over Pipe - 48 inches, except in a situation where rock makes 48 inches impractical.

b) In-service date for the pipeline was December 1992.

c) There is no projected retirement date during the next ten-year period for this pipeline facility.

2. HESS installed three natural gas liquids pipelines (NGLs) of approximately 3.6 miles in length from the Tioga Gas Plant to the newly constructed Tioga Rail Terminal west of the city of Tioga. The pipelines transport propane, butane, and natural gasoline liquid products owned by HESS from the TGP to the Tioga Rail Terminal ("TRT") for shipment by rail. This project was approved by the North Dakota Public Service Commission in Case #PU-11-104.

3. HESS converted three existing pipeline segments, once used as gathering pipelines, into a crude oil transmission pipeline connecting the Ramberg Truck Facility ("RTF") to the TRT. This pipeline is 10.2 miles in length and consists of 14-inch nominal diameter steel pipe. This project was approved by the North Dakota Public Service Commission in Case No. PU-12-683.

a) Type and Capacity: The design specifications for the pipeline are as follows:
   i) Product Type – crude oil
   ii) Length in Miles - approximately 1.1
   iii) Pipe Size – 14.00 inches O.D.
   iv) 0.375-inch line pipe wall thickness
   v) Maximum Operating Pressure - 500 pounds per square inch gage (psig)
   vi) Normal Operating Pressure: approximately 100 pounds per square inch gauge (psig)
   vii) Maximum Design Flow Rate – 120,000 barrels per day (bpd)
   viii) Normal Throughput: approximately 54,000 barrels per day (bpd)

b) Minimum Cover Over Pipe - 48 inches, except in a situation where rock makes 48 inches impractical.

SECTION G: Proposed Transmission Facilities on Which Construction is Intended Within the Ensuing Five Years (Electric).

HESS has no proposed electric transmission facilities on which construction is intended within the ensuing five years.

SECTION H: Proposed Transmission Facilities on Which Construction is Intended Within the Ensuing Five Years (Pipeline).

1. On behalf of Hess North Dakota Pipelines LLC, HESS constructed an approximately 25-mile-long pipeline system (Hawkeye Pipeline system) connecting Bakken production fields south of Lake Sakakawea to existing processing facilities north of the Lake. New pipeline construction ties into the existing pipeline infrastructure crossing Lake Sakakawea. The new and repurposed pipeline system will transport crude oil and natural gas liquids as well as two 24-strand fiber optic cables from south of Lake Sakakawea in McKenzie County, North Dakota, to the RTF.
   a) Hess received corridor certificates and route permits for these projects from the North Dakota Public Service Commission in Case Nos. PU-15-31 and PU-15-32.

   b) Proposed in-service date for the pipeline(s) is 4th Q, 2016 – 1st Q 2017

2. On behalf of Hess North Dakota Export Logistics LLC, HESS is proposing to construct approximately 1.1 miles of 12-inch diameter crude oil pipeline (ETP Interlink) originating at the RTF, and terminating at a facility located approximately 7 miles south of Tioga, North Dakota. The pipeline will transport crude oil from the RTF to the facility where it can be transported via interconnecting pipelines for distribution to refineries across the United States. The application for this project was filed May 6, 2016 and is scheduled for hearing July 26, 2016; North Dakota Public Service Commission Case No. PU-16-189. Attached hereto is a system map showing the location of the proposed pipeline route.
   b) Type and Capacity: The design specifications for the pipeline are as follows:
      i) Product Type – crude oil
      ii) Length in Miles - approximately 1.1
      iii) Pipe Size - 12.75 inches O.D.
      iv) 0.375-inch line pipe wall thickness, 0.500-inch bore pipe wall thickness
      v) Maximum Operating Pressure - 1184 pounds per square inch gage (psig)
      vi) Normal Operating Pressure: approximately 100 pounds per square inch gauge (psig)
      vii) Maximum Design Flow Rate – 70,000 barrels per day (bpd)
      viii) Normal Throughput: approximately 50,000 barrels per day (bpd)
      ix) Maximum Operating Temperature: 100 degrees Fahrenheit

   c) Minimum Cover Over Pipe - 48 inches, except in a situation where rock makes 48 inches impractical.

   d) Proposed in-service date for the pipeline is November 2016.

3. Hess North Dakota Pipelines LLC, HESS is considering the construction of a pipeline interconnection (Johnson's Corner Interconnect) from the Hess Blue Buttes Olson pad south to terminals at Johnson's Corner in McKenzie County, North Dakota. Subject to acquisition of rights-of-way, execution of commercial agreements, and PSC Permit issuance, the pipeline is anticipated to flow north from Johnson's Corner for transport to the RTF via the Keene Oil Gathering system and Hawkeye Oil Facility.

   a) Type and Capacity: The design specifications for the pipeline are as follows:
      i) Product Type – crude oil
      ii) Length in Miles - approximately 5 miles
      iii) Pipe Size - 10.75 inches O.D. Schedule 40 X-42
      iv) Maximum Operating Pressure TBD
      v) Normal Operating Pressure 350 pounds per square inch gage (psig)
      vi) Maximum Design Flow Rate – 40,000 barrels per day (bpd)
      vii) Normal Throughput: approximately 20-30,000 barrels per day (bpd)
      viii) Maximum Operating Temperature: 100 degrees Fahrenheit

   b) Minimum Cover Over Pipe - 48 inches, except in a situation where rock makes 48 inches impractical.

   c) Proposed in-service date for the pipeline 2nd Q 2017.

SECTION I: Proposed Transmission Facilities During the Next Ten-Year Time Period (Electric and Pipeline).

HESS has no proposed electric or pipeline transmission facilities proposed during the next ten-year time period other than the facilities described in Section H.

SECTION J: Regional Coordination.

In the ordinary course of business, HESS engages with other upstream and midstream oil and gas companies in discussions regarding commercial options for the transportation of produced hydrocarbons from production areas to markets. However, HESS facilities are not part of a coordinated single regional plan.

SECTION K: Environmental Information.

HESS recognizes the various federal, state, and municipal regulatory agencies within the state of North Dakota that have environmental compliance authority over the construction, operation, and maintenance of transmission pipelines. HESS is committed to ongoing working relationships with each of these agencies, and will consult and coordinate with federal, state, and local agencies and governmental units regarding the projects, as may be required. HESS will obtain all required environmental and siting permits for projects.

HESS is committed to environmental compliance during the execution of any future projects and will seek the approval of and comply with the conditions of all federal, state, and municipal agencies having jurisdictional authority over the construction and installation of any new facilities.

Environmental information related to HESS' existing permitted projects is available in the applicable dockets for those projects.

SECTION L: Projected Demand for Service.

The projected future supplies of oil and gas entering these pipelines will be produced from several fields located in Divide, Williams, Mountrail, McKenzie and Burke Counties. Also, the expansion of the Tioga Gas plant and third party pipeline facilities in conjunction with the growth of the Bakken development taking place in North Dakota will add further to projected supplies.

Respectfully submitted the day and year set forth above.

HESS CORPORATION
Tioga Office Complex
10384 68th St NW
Tioga, North Dakota 58852

By _____
Dale Weathersby

Enc.
cc: - County Auditors of McKenzie and Williams Counties
- State Agencies and Officers designated in § 69-06-01-05, ND Adm Code "Notice of Filing"
- Brent Lohnes, Director Operations - Minot, ND

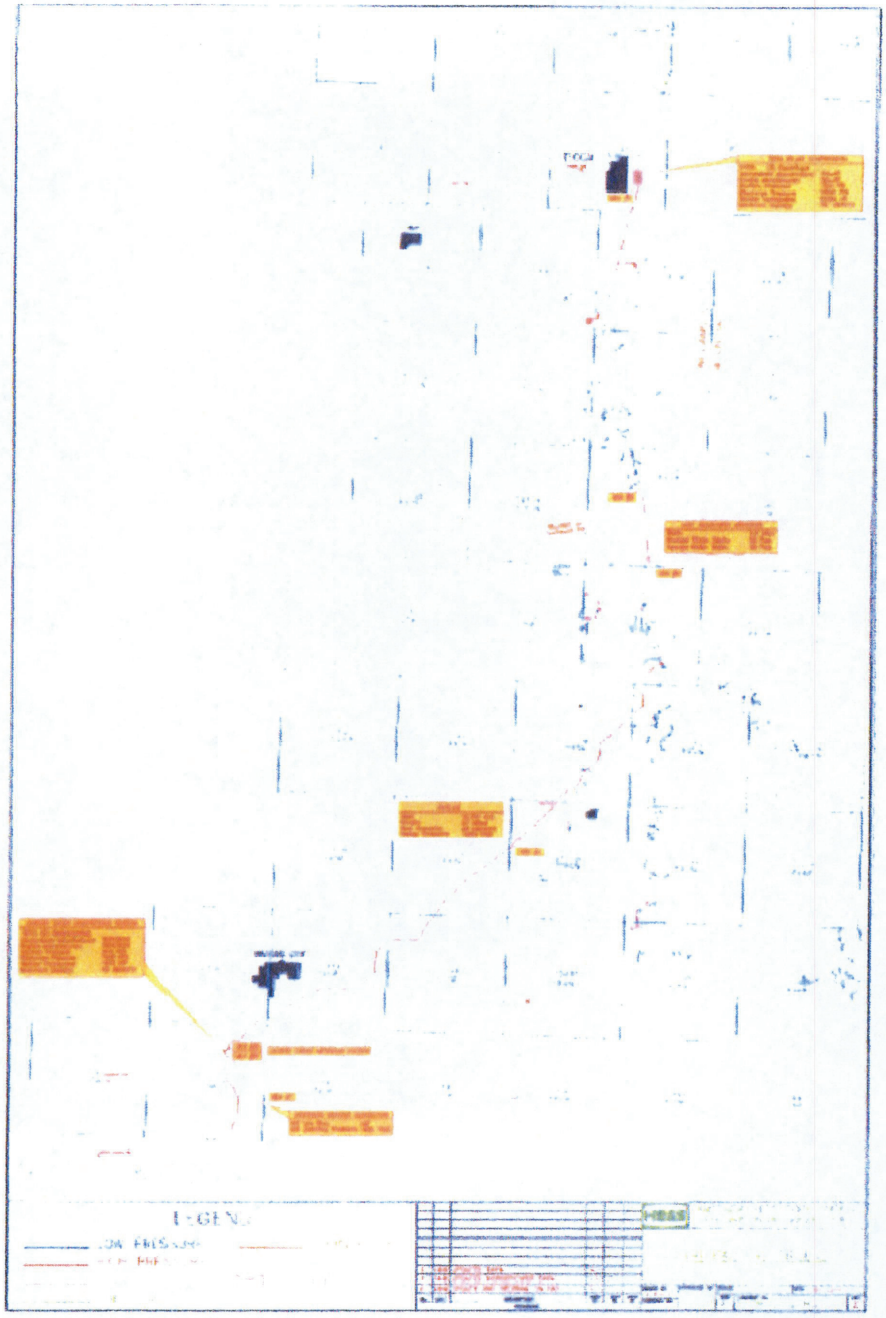

Figure 1 Residue Gas Pipeline

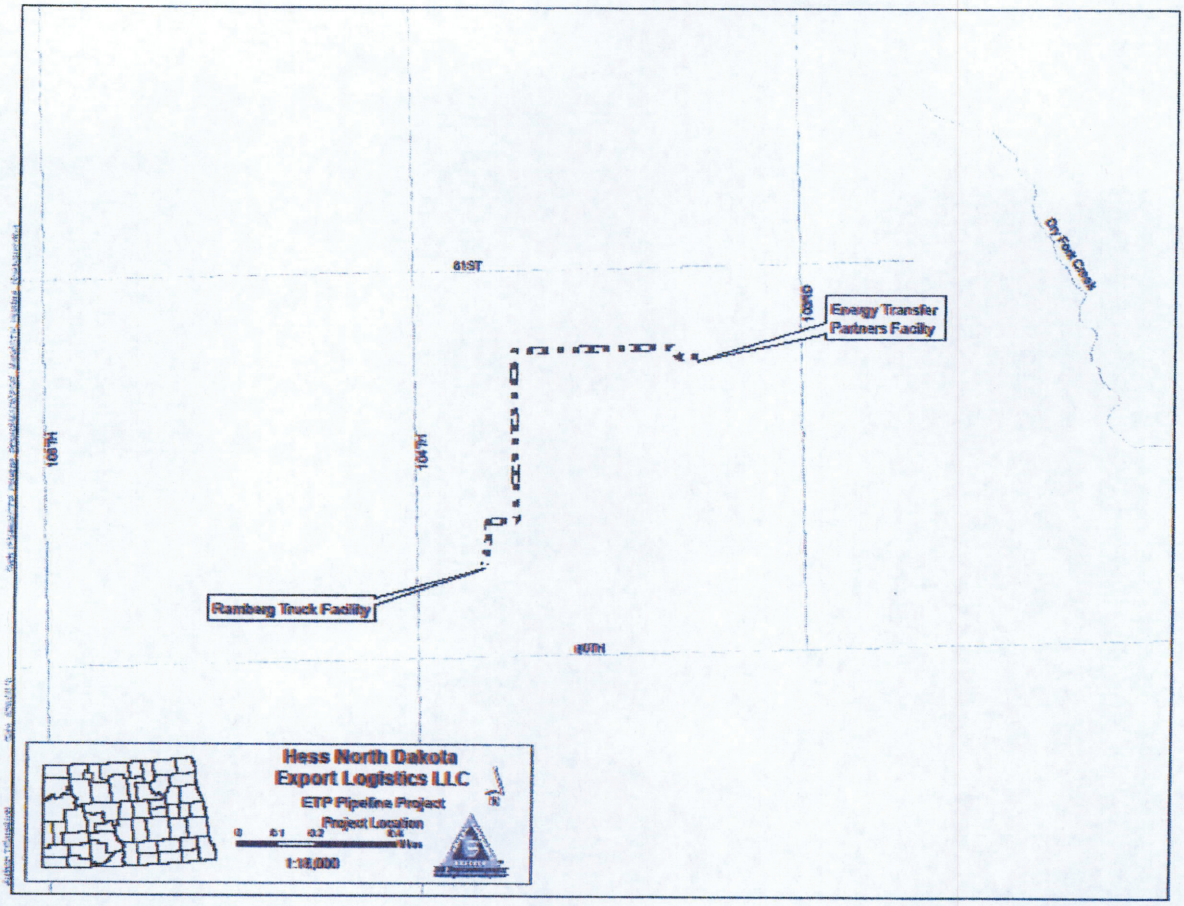

Figure 2 ETP Interconnect Pipeline

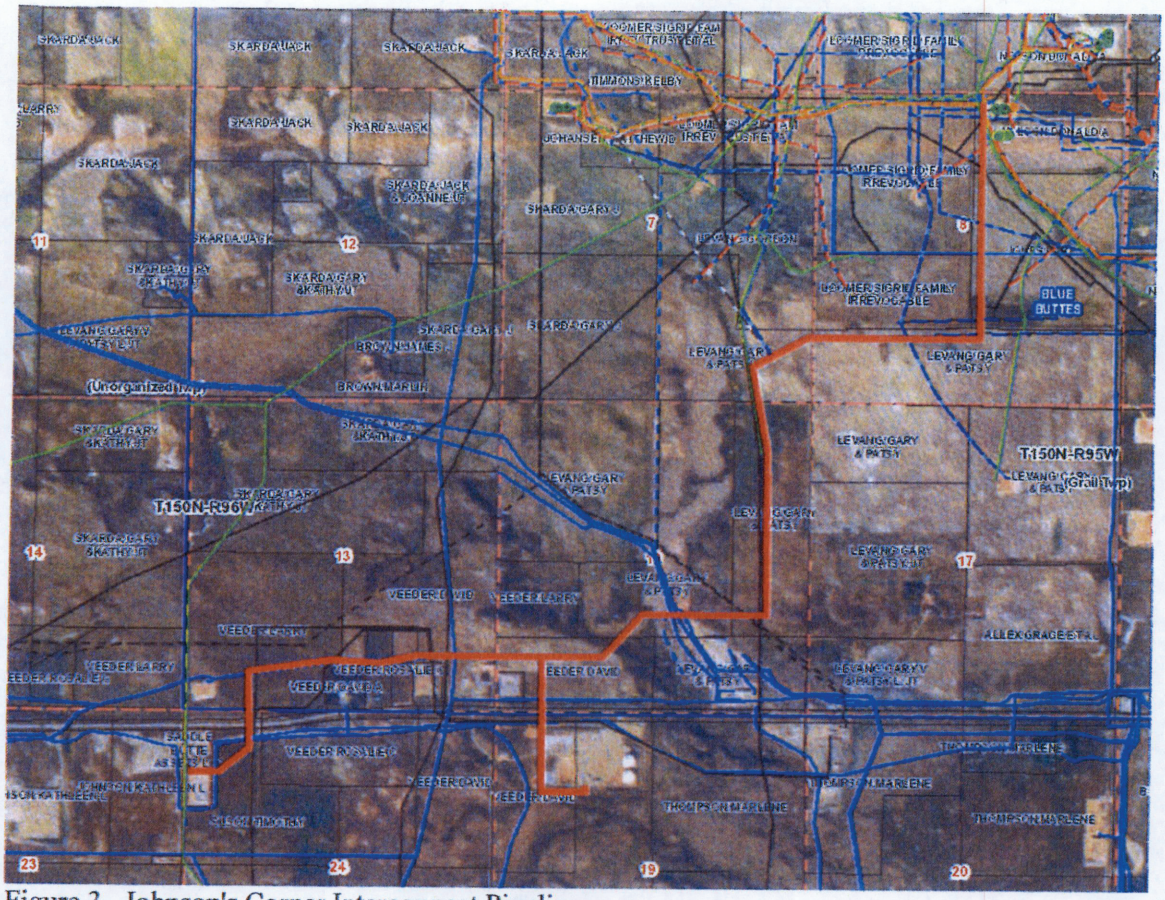

Figure 3 Johnson's Corner Interconnect Pipeline

Appendix G

Landowner Waivers

Landowner Waivers Pending