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December 22, 2014

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Patricia Van Gerpen
Executive Director
Public Utilities Commission
500 East Capitol Avenue
Pierre, South Dakota 57501

RE: APPLICATION TO THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION FOR A PERMIT FOR THE DAKOTA ACCESS PIPELINE UNDER THE ENERGY CONVERSION AND TRANSMISSION FACILITY ACT; HP14-002
Our file: 0300

Dear Ms. Van Gerpen:

Earlier this afternoon I uploaded a revised application and revised exhibits A and C. The documents were revised to reflect route changes which we consider to be significant.

They are referenced as Route Changes A and B. Route Change A is in Spink County and is approximately 6 miles in length. Route Change A is designed to avoid center pivot irrigation systems and also incorporated routing feedback from impacted landowners in the area. Route Change B is in Turner and Lincoln Counties and is approximately 16 miles in length. Route Change B is designed to avoid property inside and close to developing areas near Sioux Falls.

We were able to timely notify landowners along the new revised routes of the upcoming Commission meetings regarding the project. We will mail out the revised documents to county auditors shortly.

Very truly yours.

MAY, ADAM, GERDES & THOMPSON, LLP

Brett Koenecke

DAKOTA ACCESS PIPELINE PROJECT
ENERGY TRANSMISSION FACILITY: SDCL 49-41B

Submitted to: The South Dakota Public Utilities Commission

December 2014

Prepared By:

Perennial Environmental Services, LLC

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- A1- Project Vicinity Maps
- A2- Topographic Maps
- A3- Soil Maps
- A4- Hydrology Maps
  - Spink County Pump Station Surface Water Map
  - Surface Water Maps
  - Minnehaha Source Water Map
  - Rural Water Systems Map
- A5- Land Use Maps

Exhibit B: Project Typicals and Flow Diagrams
- Project Typicals
- Project Flow Diagrams

Exhibit C: Supplementary Tables
- Soil Characteristics for Each Soil Map Unit within the Project Area
- Waterbodies Crossed by the Project
- Federally and State Listed Threatened and Endangered Species in South Dakota

Exhibit D: Dakota Access Project Plans
- Draft Stormwater Pollution Prevention Plan
  - Best Management Practice Figures
  - Draft Spill Prevention, Containment, and Countermeasures Plan
  - Inspection Forms and Instructions
- Blast Plan
- Horizontal Directional Drill Contingency Plan
- Agricultural Impact Mitigation Plan

LIST OF ACRONYMS

AIMP	Agricultural Impact Mitigation Plan
ARSD	Administrative Rules of South Dakota
API	American Petroleum Institute
ARMS	Archeological Research Management System
ATWS	additional temporary workspace
BMP	best management practice
bpd	barrels per day
CCR	Central Control Room
DAPL	Dakota Access Pipeline
ESC	Emergency Support Center
ETCO	Energy Transfer Crude Oil
EPA	U.S. Environmental Protection Agency
FBE	fusion bonded epoxy
FRP	Facilities Response Plan
GIS	Geographic Information System
HCA	high consequence area
HDD	horizontal directional drilling
L/R	launcher and receiver
MLV	mainline valve
MP	milepost
OSRP	Oil Spill Response Plan
NRCS	Natural Resources Conservation Service
PCN	Pre-Construction Notification
PEM	palustrine emergent
PHMSA	Pipeline and Hazardous Materials Safety Administration
Project	Dakota Access Pipeline Project
psig	pounds per square inch gauge
PSS	palustrine scrub shrub
ROW	right-of-way
SDCL	South Dakota Codified Law
SDDENR	South Dakota Department of Environment and Natural Resources
SDGFP	South Dakota Game, Fish, and Parks

SDGS	South Dakota Geological Survey
SDNHP	South Dakota Natural Heritage Program
SDSARC	South Dakota State Archaeological Resources Center
SHPO	State Historic Preservation Officer
SWPPP	Stormwater Pollution and Prevention Plan
TMDL	total maximum daily loads
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound

EXECUTIVE SUMMARY

Dakota Access, LLC (Dakota Access), is proposing to construct the Dakota Access Pipeline Project (Project). DAPL-ETCO Operations Management, LLC will operate the Project. The overall proposed Project is a 1,134-mile-long, 12-inch to 30-inch diameter pipeline that will connect the rapidly expanding Bakken and Three Forks production areas in North Dakota to existing crude infrastructure in Illinois. The project originates in the northwest portion of North Dakota and traverses southeast through South Dakota, Iowa, and Illinois and terminates at the existing Patoka, Illinois hub. The pipeline is proposed to transport approximately 450,000 barrels per day (bpd) initially, with an anticipated capacity 570,000 bpd or more. Once the crude arrives at the existing tank farms in Patoka, shippers will be able to access and distribute their crude to multiple markets, including Midwest and Gulf Coast markets via existing and proposed pipeline infrastructure.

Approximately 272.3 miles of the 1,134-mile-long pipeline will be constructed within South Dakota, crossing 13 counties in the eastern half of the state. The Project enters South Dakota in Campbell County approximately 17 miles east of the Missouri River, and continues southeast through McPherson, Edmunds, Faulk, Spink, Beadle, Kingsbury, Miner, Lake, McCook, Minnehaha, Turner, and Lincoln counties. The Project crosses the Big Sioux River approximately 14 miles south of Sioux Falls, and continues in a southeast direction through Iowa. One pump station is located within South Dakota, approximately seven miles southeast of Redfield in Spink County.

1.0 (20:10:22:01) DEFINITIONS

No information requested by the rule to be included within the application.

2.0 (20:10:22:02) CONTENT OF NOTIFICATION OF INTENT

No information requested by the rule to be included within the application.

3.0 (20:10:22:03) PREFILING CONFERENCE

No information requested by the rule to be included within the application.

4.0 (20:10:22:04) GENERAL FORMAT OF APPLICATION FOR PERMIT

No information requested by the rule to be included within the application.

5.0 (20:10:22:05) APPLICATION CONTENTS

In addition to the siting permit under the Energy Conversion and Transmission Facility Act, Table 5.0-1 lists federal and state permits currently identified for the construction of the Project within South Dakota. Correspondence is ongoing with the agencies identified below and the status column is the anticipated formal submittal timeframe of an application, report, request for clearance, etc.

Table 5.0-1
Anticipated Permits for South Dakota Segment of DAPL

Agency	Permit	Agency Action	Estimated Application Date
Federal			
U.S. Army Corps of Engineers, Omaha District – South Dakota Regulatory Office	Sections 404/401 Clean Water Act Nationwide Permit 12	Authorization of discharge of fill material into waters of the U.S., including wetlands	Submit Pre-Construction Notification December 2014
	Section 10 Rivers and Harbors Act	Authorization of pipeline crossings of navigable waters of the U.S.	December 2014
	Section 106 Archaeological Resources Protection Act	Section 106 consultation through the Nationwide Permit 12 process	December 2014
U.S. Fish and Wildlife Service, South Dakota Ecological Services Field Office	Endangered Species Act Section 7 Consultation	Consider lead agency findings of impacts on federally listed; provide Biological Opinion if the Project is likely to adversely affect federally listed or proposed species or their habitats	Submit Biological Opinion in March 2015
U.S. Fish and Wildlife Service, Sand Lake National Wildlife Refuge Complex	Wetland and Grassland Easements– Special Use Permit	Issuance of a one-time use permit, valid for 5 years, for construction of pipeline through protected features within U.S. Fish and Wildlife Service easements	Submit Application February 2015
	Wetland and Grassland Easements– Right-of-Way easement	Issuance of a 30-year-term right-of-way easement after construction, for long-term maintenance and management of pipeline	Submit Application August 2015
Farm Service Agency/Natural Resources Conservation Service	Crop Reserve Program	Authorization of crossing areas enrolled in the Crop Reserve Program	June 2015
Pipeline and Hazardous Materials Safety Administration	49 CFR Part 194 and 195	Integrity Management Plan and Emergency Response Plan	September 2016
State			
South Dakota Department of Environment and Natural Resources	National Pollutant Discharge Elimination System General Permit for Discharges of Hydrostatic Test Water (SDG070000)	Consider issuance of General Permit for hydrostatic test water discharge to waters of the U.S., construction dewatering to waters of the state	September 2015
	Surface Water Withdrawal Permit	Consider issuance of surface water withdrawal permit for temporary use	September 2015
	South Dakota Codified Law Sec 34A-18 Oil Spill Response Plan	Oil Spill Response Plan	Submit September 2016
South Dakota Game Fish and Parks	State Listed Threatened and Endangered Species	Consultation on natural resources	February 2015

Table 5.0-1
Anticipated Permits for South Dakota Segment of DAPL

Agency	Permit	Agency Action	Estimated Application Date
South Dakota State Historical Society, State Historic Preservation Office	Section 106 of National Historic Preservation Act	Review and comment on activities regarding jurisdictional cultural resources	May 2015
South Dakota Department of Transportation	Crossing Permits	Consider issuance of permits for crossing state highways	May 2015
Local			
County Road Departments	Crossing Permits	Issuance of permits for crossing of county roads	July 2015
County and Local Authorities	Floodplain, Conditional Use, and building permits where required	Review under county approval process	July 2015

6.0 (20:10:22:06) NAMES OF PARTICIPANTS REQUIRED

The following Project contact information includes those participating at the time of filing, and those individuals authorized to receive communications relating to the application.

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7.0 (20:10:22:07) NAME OF OWNER AND MANAGER

The proposed pipeline project will be owned by Dakota Access, LLC and operated by DAPL-ETCO Operations Management, LLC; the Project Director is:

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8.0 (20:10:22:08) PURPOSE OF FACILITY

The Dakota Access Pipeline is a proposed 1,134 mile, 12 inch to 30 inch crude oil pipeline system being designed to safely carry 570,000 bpd or more of light sweet crude (approximately 450,000 bpd initially) through the states of North Dakota, South Dakota, Iowa, and Illinois and ultimately terminating in Patoka, Illinois. The Project's purpose is to move an economical abundant reliable domestic supply of crude oil from the Bakken and Three Forks production area in North Dakota to a crude oil market hub located near Patoka, Illinois. From the Patoka hub, the crude oil will be transported by other pipelines to refineries located in the Midwest and the Gulf Coast to further the U.S. goal of energy independence.

9.0 (20:10:22:09) ESTIMATED COST OF FACILITY

The cost of constructing the entire 1,134-mile-long pipeline beginning in North Dakota, going through South Dakota and Iowa, and terminating in Illinois is estimated to be approximately $3.8 billion. Construction of the 272.3-miles of pipeline and facilities within South Dakota will cost approximately $820 million.

10.0 (20:10:22:10) DEMAND FOR FACILITY

Dakota Access has secured binding long-term transportation and deficiency contracts from multiple committed shippers to support development of the Dakota Access Pipeline with a crude oil transportation capacity of approximately 450,000 bpd, with ninety percent (90%) of the transportation capacity subscribed by those committed shippers and the remaining ten percent (10%) of the transportation capacity reserved for walk-up shippers. Transportation service on the Dakota Access Pipeline shall be provided by Dakota Access pursuant to the Interstate Commerce Act and in accordance with the rules and regulations of the Federal Energy Regulatory Commission for common carrier crude oil pipeline transportation service thereunder. Subscriptions from committed shippers were obtained by Dakota Access in connection with an initial open season that ran from March 12 to May 23, 2014, and an expansion open season that commenced on September 23, 2014, and will conclude in mid-December of 2014.

11.0 (20:10:22:11) GENERAL SITE DESCRIPTION

The Project originates in North Dakota and enters South Dakota in Campbell County approximately 17 miles east of the Missouri River. The Project continues southeast

through McPherson, Edmunds, Faulk, Spink, Beadle, Kingsbury, Miner, Lake, McCook, Minnehaha, Turner, and Lincoln counties. A summary of the Project facilities in South Dakota is outlined in Table 11.0-1. The Project exits South Dakota as it crosses the Big Sioux River approximately 14 miles south of Sioux Falls, and continues in a southeast direction through Iowa. Approximately 272.3 miles of the 1,134-mile-long pipeline and one pump station will be constructed within South Dakota. Detailed maps of the Project area within South Dakota are provided in Exhibits A1 and A2. Additionally, Dakota Access will construct aboveground appurtenances including 31 mainline valves (MLVs) and three pig launcher and receiver (L/R) facilities. Contractor/staging yard (s) will be required.

Table 11.0-1
Summary of the Project Facilities in South Dakota

Pipeline Crossing Length (miles) / Pump Station Impact Area (acres)	County	Milepost Start	Milepost End
Pipeline Facilities			
29.1	Campbell	210.1	239.2
6.6	McPherson	239.2	245.8
36.2	Edmunds	245.8	282.0
27.9	Faulk	282.0	309.9
36.0	*Spink	309.9	346.1
28.6	Beadle	346.1	374.7
21.9	Kingsbury	374.7	396.6
14.1	Miner	396.6	410.7
18.7	Lake	410.7	429.4
1.7	McCook	429.4	431.1
25.7	Minnehaha	431.1	456.8
2.2	*Turner	456.8	458.1
23.6	*Lincoln	458.1	481.7
Total 272.3			
Pump Station			
9.0	Spink	332.1	332.2

*These counties contain reroutes that currently do not incorporated in the overall Project MPs, therefore miles crossed may be different than MP start and MP end.

Pipeline Facilities

Construction of the new pipeline will require a typical construction ROW width of 125 feet in uplands, 100 feet in non-forested wetlands, 85 feet in forested areas (wetlands and

uplands), and up to 150 feet in agricultural areas. Following construction, a 50-foot wide permanent easement will be retained along the pipeline. These are depicted on the typical drawings included in Exhibit B.

Where necessary, Dakota Access will utilize additional temporary workspace (ATWS) outside of the construction ROW to facilitate specialized construction procedures, such as horizontal directional drills (HDDs); railroad, road, wetland, waterbody, and foreign utility line crossings; tie-ins with existing pipeline facilities; areas with steep side slopes; and pipeline crossovers. These ATWS will be allowed to revert to pre-existing conditions following construction activities, so there will be no permanent impacts on these areas. The general location and layout of ATWSs proposed to facilitate specialized construction procedures are depicted on the drawings provided for review in Exhibit A2; these sizes and locations are subject to change based on permit conditions, landowner negotiations, awarded contractor review, etc.

During construction of the pipeline, the contractor will require off ROW areas for the storage of pipe and equipment necessary for the construction of the Project facilities. These staging/contractor yards will be located near the Project at locations with convenient and safe access to the Project areas. Efforts will be made to select contractor yards that have been previously disturbed by human activity but do not have an ongoing land use that will preclude Project usage. These areas will also be restored to preconstruction conditions or as otherwise directed by the landowner.

Dakota Access will utilize existing public and private roads to access the pipeline ROW and aboveground facilities to the extent practicable. Existing roads utilized will include paved, gravel, or pasture roads, and other conveyances. Some roads will require modification or improvement to facilitate safe access for construction equipment and personnel. The Project may require construction of new temporary and permanent roads to provide access to the new pipeline both during construction and for future pipeline maintenance activities. Access roads have not been thoroughly defined during this early design phase. Dakota Access will seek and enter into road use agreements with all affected units of government.

Aboveground Facilities

The pump station is planned to be located in southwestern Spink County, approximately seven miles southeast Redfield, South Dakota at milepost (MP) 332.2. The pump station site will consist of approximately nine acres, and will be acquired in fee from landowners. The pump station will be fenced and contain three pumps driven by electric motors, an electrical and controls building, electrical substation, a surge tank, a communications tower, and parking area for station personnel. Electricity will be utilized for all pumps, lights, and heating in the buildings. Design and construction of the pump station will meet the requirements of the National Electric Code and American Petroleum Institute (API) 500. Dakota Access will purchase electricity for the pump station from the incumbent provider. The pump station will be fully automated for unmanned operation. Remote start/stop, set point controls, unit monitoring equipment, and station information will be installed at each location. Backup power at the pump station will consist of batteries to maintain communications between the pump station and the pipeline control center and to provide lighting and power for minor facility procedures if

the local utility power supply is disrupted. The pipe entering and exiting the pump station will be located underground; however, some of the piping within the pump station yard (after entering and prior to exiting the pump station facilities) will be aboveground. Exhibit A4 shows the location and the typical plan view of the pump station in Spink County.

Dakota Access plans to install 31 MLVs along the route in South Dakota. Approximate locations for these valves are shown in the route mapping presented in Exhibits A2, A3, and A4. The MLVs will be constructed within the 50-foot permanently maintained ROW, and be approximately 75-feet-long and 50-feet-wide. These valve sites will be located within an easement obtained from landowners. The spacing intervals between the MLVs along the ROW are based upon the location of the high consequence areas (HCAs) and permit requirements. All valves will have remote actuators so that in the unlikely event of an emergency, these valves can be quickly activated from the operational control room to isolate sections of the pipeline to minimize environmental impacts.

All pipeline segments will allow the passage of internal inspection devices, which are capable of detecting internal and external anomalies in the pipe such as corrosion, dents, and scratches. Internal inspection of pipelines has been largely responsible for reducing pipeline incident frequencies over the past decade. Pig L/Rs are designed to launch and receive these internal inspection devices. A total of three L/Rs will be installed in South Dakota; one located at the pump station, and the remaining two are located along the pipeline. The L/Rs are 200-feet-wide by 400-feet-long; therefore, the two L/R stations not located within the pump station footprint, fall outside of the general 50-foot permanent easement and additional easements or acquisition of property will occur. Approximate locations of the L/R sites are illustrated in Exhibits A2, A3, and A4 and the L/R and MLV typical drawings are included in Exhibit B.

12.0 (20:10:22:12) ALTERNATIVE SITES

The following sections discuss the data utilized to produce the currently proposed preferred route for the Project.

12.1 ROUTE SELECTION

Dakota Access utilized a sophisticated and proprietary Geographic Information System (GIS) based routing program to determine the preferred pipeline route based on multiple publicly available and purchased datasets. Datasets utilized during the Project routing analysis included engineering (e.g., existing pipelines, railroads, karst, and power lines, etc.), environmental (e.g., critical habitat, fault lines, state parks, national forests, brownfields, national registry of historic places, etc.), and land (e.g., dams, airports, cemeteries, schools, mining, and military installations, etc.). Each of these datasets were weighted based on the desire to co-locate with certain features (low values) and the risk of crossing, or desire to avoid others (higher the risk, the higher the value), while minimizing overall length of the route. The GIS program utilized the weighted datasets to produce the preferred baseline route. For example, the existing pipelines dataset was assigned the lowest value so that the routing tool followed existing pipelines to the extent possible to minimize potential impacts. An example of a high weighted feature is the national parks dataset; therefore the GIS routing program excluded any national parks from the preferred pipeline route to avoid impacts to these federal lands.

12.2 ROUTE EVALUATION

The baseline centerline route was the output of the GIS routing analysis that was completed during the fatal flaws phase of the Project, and the basis of further investigation. As the Project moved into the design phase, coordination with agencies within states crossed by the Project advanced, survey data collection commenced, landowners were engaged, and additional datasets were collected. These more focused datasets were then utilized to incorporate reroutes as needed to optimize the route.

The proposed pipeline route has been modified in multiple locations for constructability issues and various other reasons including avoidance of Well Head Protection/HCAs, U.S. Fish and Wildlife Service (USFWS) easements, environmental features such as wetlands and waterbodies, cultural resource sites, incompatible land uses (e.g., recently expanded quarries), home/farm sites, buildings, irrigation systems, power poles/towers and other structures, trees planted for windbreaks, and property corners. Route modifications were made through a process that included detailed review of recent aerial imagery, actual site visits, the existing datasets, and helicopter reconnaissance as warranted. There are three basic categories of route modifications including, realignments, minor reroutes, and major reroutes.

Realignments are small changes in the pipeline route resulting in a change in centerline location of less than 150 feet. Realignments are fully within the 400-foot environmental/cultural survey corridor and do not require additional survey efforts if surveys were already complete at the time of realignment. To date, there have been a total of 92 realignments constituting a total length of 35.6 miles of route modification.

Minor reroutes are changes in the pipeline route of greater than 150 feet from the original centerline and therefore require some additional environmental/cultural survey coverage if surveys were completed prior to development of the reroute. Minor reroutes are relatively short and typically do not involve new landowners. There have been a total of 37 minor reroutes with a total length of 28.0 miles.

Major reroutes are more extensive route modifications over many miles and involving multiple new landowners. Major reroutes typically require additional environmental/cultural survey coverage. Presently, there has been three major reroutes with a total length of 55.1 miles. The two most recent reroutes, due to identification late in the route development process are depicted in the maps and tables, but are not incorporated into the Project MPs. The Spink County reroute is identified with an "A" before the MPs, while the Turner and Lincoln counties reroute is identified with a "B". At this point in time, all reroutes depicted in Exhibit A are considered the proposed route.

12.3 PROPOSED ROUTE

The currently proposed route most closely meets the objectives of the Project, while minimizing potential impacts to the environment and maintaining the health and safety of the public. Additional route modifications will continue through permitting and land acquisition processes to further reduce environmental impacts and reduce the need for eminent domain. Dakota Access is committed to working with individual landowners along the route to reduce the need for eminent domain and believes this route aids in

accomplishing that goal. The proposed route is illustrated within the Project maps in Exhibit A1.

13.0 (20:10:22:13) ENVIRONMENTAL INFORMATION

Sections 20:10:22:14 – 20:10:22:17 (Effect on Physical Environment, Hydrology, Effect on Terrestrial Ecosystems, and Effect on Aquatic Ecosystems) describe the existing environment, and the potential temporary and permanent impacts that may occur from the proposed Project.

13.1 OTHER MAJOR INDUSTRIAL FACILITIES

The potential cumulative impacts associated with the Project may result from the impacts of construction and operation of the Project facilities combined with the impacts of other proposed major developments occurring within the vicinity of the Project. For the purposes of this analysis, Dakota Access attempted to identify current and planned major industrial projects by reviewing South Dakota Public Utilities Commission and Federal Energy Regulatory Commission dockets as well as other publicly available online resources.

To date, no major projects within the Project vicinity have been identified through these searches; therefore no adverse cumulative impacts are anticipated.

14.0 (20:10:22:14) EFFECT ON PHYSICAL ENVIRONMENT

The following sections contain information on the physical environment within the Project area, including topography, geology, soils, deposits, erosion, sedimentation, subsidence, and geological constraints.

14.1 REGIONAL LAND FORMS

The state of South Dakota is generally equally divided east and west by the Missouri River, with the western half of the state having greater topography than the eastern half of the state. The project is located in the eastern half of the state where elevations can range from 1,000 feet to 2,000 feet. The portion of Project area located east of the Missouri River and west of the James River is within the Glaciated Missouri Plateau of the Great Plains physiographic province (U.S. Geological Survey [USGS], 2004a). This includes the Project area that crosses Campbell, McPherson, and Edmunds counties. The remaining Project area is located within the Central Lowlands province (USGS, 2004a). The Central Lowlands province is further divided into the James Basin and Coteau des Prairies Divisions. The Coteau des Prairies Division is a hilly highland, while the James Basin Division is flat and comparatively low. The Project crosses the James Basin Division through Faulk, Spink, Beadle, and the western part of Kingsbury counties. The land form then shifts into the Coteau des Prairies Division in the eastern part of Kingsbury, Miner, Lake, McCook, Minnehaha, and Turner counties. The Project exits South Dakota through Lincoln County, where the land form returns to the James Basin Division (South Dakota Department of Environment and Natural Resources [SDDENR], 2009).

14.2 TOPOGRAPHIC MAP

A topographic map of the Project area is included in Exhibit A2.

14.3 GEOLOGICAL FEATURES

The Project is located in the Great Plains and Central Lowlands physiographic provinces (USGS, 2004a), and lies within the glaciated portion of South Dakota. Surficial deposits within this region are composed primarily of alluvium, eolian deposits, lacustrine sediments, moraine (till), and outwash (USGS, 2005). Alluvium consists of clay and silt, with lesser amounts of sand and gravel deposited by recent streams, and is typically black or dark-brown and rich in organic matter. Eolian deposits form via the sorting of clay, silt, and sand-sized particulates from surficial sediments. Lacustrine sediments accumulate in areas containing ponded glacial meltwater and are often found in association with outwash deposits. Lacustrine sediments range in grain size from clay to fine sand and range in color from green to gray to black to white to possibly pink. Moraine is a relatively flat to gently rolling surface formed of debris (till) released from beneath a glacier. Till consists of non-stratified, unsorted debris that has been transported and deposited directly by glacial ice. Outwash is sand and gravel, with minor silt and clay, deposited by meltwater streams (South Dakota Geological Survey [SDGS], 2004a).

The bedrock geology is composed of Cretaceous and Precambrian aged rocks that formed in marine environments (The Paleontology Portal, 2003). These deposits include (from oldest to youngest) Sioux Quartzite, undifferentiated Cretaceous rocks, Carlile Shale, Niobrara Formation, and Pierre Shale. Sioux Quartzite is described as being composed of conglomerate and mudstone layers, pink and reddish to tan in color, fine to coarse grained, and siliceous. Undifferentiated Cretaceous rock is composed of spiculite, shale, chalk, silty clay, and quartz-rich sandstone. Carlile Shale is dark gray to black in color, silty to sandy with several zones of septarian, fossiliferous, and carbonate concentrations. The Niobrara Formation is composed of chalk, marl, and shale and contains thin laterally continuous bentonite beds. Pierre Shale contains minor sandstone, conglomerate, and abundant carbonate and ferruginous concentrations (SDGS, 2004b).

Bedrock in the Project area crops out along the Missouri River bluffs, along many rivers and creeks, and other areas where the glacial sediment has been removed by erosion. Sioux Quartzite crops out in Minnehaha, McCook, and Turner counties. Niobrara Formation crops out in Lincoln County. Pierre Shale crops out in Campbell, Edmunds, and McPherson counties. Undifferentiated Late Cretaceous sediment crops out in Minnehaha, McCook, and Turner counties (SDGS, 2004b).

Formations crossed by the Project ROW include the Sioux Arch which contains metamorphosed sandstone and claystone that was deposited in a shallow sea environment. The Sioux Arch is composed of metamorphic rocks; no fossils have been found in them to date (The Paleontology Portal, 2003).

14.4 ECONOMIC DEPOSITS

Of South Dakota's primary non-fuel resources, approximately 69 percent of the total non-fuel production value in 2011 originates from a combination of cement (portland), clays, feldspar, gemstones, gold, gypsum, iron ore, lime, mica, silver, and stone (dimension granite). Crushed stone amount to approximately 16 percent of the state's non-fuel production value, while the remaining 15 percent comes from construction sand and gravel (USGS, 2011). Campbell, Edmunds, Kingsbury, Lake, Lincoln, McPherson, Spink, and Turner counties contain construction sand and gravel. Minnehaha County

contains construction sand and gravel, as well as crushed stone. The SDGS Sand, Gravel, and Construction Aggregate Mining Interactive Map did not identify industrial mining operations within one mile of the Project area; therefore, it is not anticipated that the Project will impact mineral resources (SDGS 2014).

14.5 SOILS

The discussion below provides general information about the nature and properties of the soils crossed by the Project. Maps depicting the limits of the soil map units within the Project area are provided in Exhibit A3. Exhibit C includes total crossing distance of each soil series unit, the acres impacted by construction of the aboveground pump station, and the characteristics of each of the soil map units within the Project area, including prime farmland, hydric properties, compaction potential, erosion, restrictive soil layers, shallow bedrock, and revegetation properties. All of these soil characteristics are described below.

Prime Farmland

The U.S. Department of Agriculture (USDA) defines prime farmland as "land best suited to food, feed, forage, fiber, and oilseed crops" (Natural Resources Conservation Service [NRCS], 2014). This designation includes cultivated land, pasture, woodland, or other lands that are either used for food or fiber crops or are available for these uses. Urbanized land and open water are excluded from prime farmland. Prime farmland typically contains few to no rocks, is permeable to water and air, is not excessively erodible or saturated with water for long periods, and is not subject to frequent, prolonged flooding during the growing season. Soils that do not meet the above criteria may be considered prime farmland if the limiting factor is mitigated (e.g., artificial drainage). In addition, the USDA defines farmland of statewide importance as farmland for the "production of food, feed, fiber, forage, and oil seed crops…those that are nearly prime farmland and that produce high yields of economic important crops when treated and managed according to acceptable farming methods" (NRCS, 2014).

Approximately 37 percent (99.9 miles) of the soils crossed by the pipelines are considered to be prime farmland, and approximately 44 percent (120.5 miles) of the route is identified as farmland of statewide importance. During construction activities, the topsoil layer from cultivated prime farmland areas associated with the pipeline will be stripped to the maximum depth of 12 inches and segregated from the subsoil. Unless the landowner or land management agency requests otherwise, topsoil will be stripped from over the pipeline trench and the adjacent subsoil storage area. Segregated topsoil will be returned following backfilling of the subsoil, ensuring preservation of topsoil within the construction area. Following the completion of construction, areas of prime farmland disturbed by the installation of the pipelines will be allowed to revert to pre-construction uses; therefore, construction activities in these areas will not adversely impact prime farmland.

The pump station in Spink County is located on 4.3 acres of prime farmland. However this location is not under active cultivation; therefore impacts to prime farmland are not anticipated from the pump station.

Hydric Soils and Compaction Potential

Hydric soils are defined as "soils that formed under conditions of saturation, flooding, or ponding long enough during growing season to develop anaerobic conditions in the upper part" (U.S. Army Corps of Engineers [USACE], 1987). Soils that are artificially drained or protected from flooding (i.e., by levees) are still considered hydric if the soils are those that are poorly or very poorly drained. Due to extended periods of saturation, hydric soils can be prone to compaction and rutting particularly if the operation of heavy equipment occurs when soils are saturated. The majority of the soils within the Project area are classified as hydric in Exhibit C.

Due to the large amount of hydric soils within the Project area, soil compaction and rutting will likely result from the operation of heavy equipment along the Project ROW, ATWS, and access roads. The extent of soil compaction will depend on the degree the soils are saturated, with the most severe compaction occurring where heavy equipment is operated on highly saturated soils. Dakota Access will minimize these impacts by implementing mitigation measures such as the uses of timber mats in certain areas. Additionally, wetland crossing techniques have been outlined in the Project-specific Stormwater Pollution and Prevention Plan (SWPPP) (Exhibit D).

Erosion

Erosion is a continuing process that can be accelerated by human disturbances. Factors that can influence the degree of erosion include soil texture, structure, length and percent of slope, vegetative cover, as well as rainfall or wind intensity. Soils most susceptible to erosion by water are typified by bare or sparse vegetative cover, non-cohesive soil particles with low infiltration rates, and moderate to steep slopes. Wind erosion processes are less affected by slope angles. Characterization of erosion potential includes both water and wind as agents of erosion.

Soils that are classified as having high erosion potential can be highly erodible but do not always exhibit this condition because of the multitude of parameters that require evaluation. Typically, field determinations of the length of the slope class crossed are needed before a soil can be definitively identified as having high erosion potential. For example, a soil map unit may have a slope class of 2 to 5 percent. If most of the map unit crossed actually has a slope of 2 percent, the soils would most likely not have high erosion potential. However, if most of the map unit being crossed had actual slopes of 5 percent, the soils would most likely be considered as having high erosion potential.

Soils with high erosion potential within the Project area were identified based on NRCS designations of land capability class and subclass. Soils with a land capability class and subclass of Ve through VIIIe are considered to be highly erodible. Soils with a land capability class and subclass of IIIe through IVe are considered to be moderately erodible. The remaining land capability classes and subclasses are considered to have low erodibility. Exhibit C identifies the erosion potentials of each map unit within the Project area. The majority of the soils within the Project area have low erosion potential. Various areas are characterized by steep slopes (slopes greater than 8 percent) and are indicated as such in Exhibit C.

Refer to Section 14.6− Erosion and Sedimentation of this document for more information on erosion and sedimentation construction impacts and mitigation measures implemented by Dakota Access.

Restrictive Soil Layers/Shallow Bedrock

Introducing stones or rocks to surface layers may reduce the capacity of the soil to retain moisture, resulting in a reduction of soil productivity. Additionally, areas with shallow depth to bedrock (less than 5 feet) are identified as areas that have potential to introduce rock to topsoil. No shallow bedrock was identified within the Project area; however shallow Natric was identified through desktop analysis and field surveys. Natric is a subsoil layer with a high concentration of sodium salts. These layers limit the growth of most plant species. Soil series within the Project area with shallow Natric (less than 18 inches) were identified in Exhibit C. These areas may have a lower revegetation potential as a result of the high sodium concentrations within the Natric. Dakota Access has retained an agricultural consultant to develop specific mitigation measures for work in these areas.

Revegetation

The majority of soils impacted by the Project have moderate to high revegetation potential. Soils with low revegetation potential typically have high compaction and/or erosion potential, have slopes greater than 8 percent, and are not classified as prime farmland. Detailed information regarding revegetation potential for each map unit crossed by the Project is provided in Exhibit C.

Successful restoration and revegetation of the Project workspaces are important for landowner relations, maintaining productivity and protecting the underlying soil from potential damage. Fertility and erosion are generally the two main factors that would limit the re-growth of vegetation, but these can be mitigated through the application of fertilizers and/or seeding nets. Restoration and revegetation growth specifications will follow the SWPPP (Exhibit D).

14.6 EROSION AND SEDIMENTATION

As previously stated in Section 14.5− Soils, and detailed in the soils table in Exhibit C, the majority of the soils within the Project area have low erosion potential. Some areas crossed by the Project are characterized by steep slopes (slopes greater than 8 percent) and are indicated as such in Exhibit C. Clearing, grading, and equipment movement has the potential to accelerate the erosion process and, without adequate protection, result in discharge of sediment to waterbodies and wetlands. Soil loss due to erosion could also reduce soil fertility and impair revegetation. To minimize or avoid potential erosion impacts, Dakota Access will utilize erosion and sedimentation control devices as provided in the Project-specific SWPPP (Exhibit D).

Environmental Inspectors will be retained during construction, by Dakota Access, to oversee and report on construction compliance. The effectiveness of revegetation and permanent erosion control devices will be monitored by Dakota Access' operating personnel during the long-term operation and maintenance of the Project Facilities.

14.7 SEISMIC AND SUBSIDENCE

Seismic hazards include earthquakes, surface faulting, and soil liquefaction. According to the USGS Seismic Hazards maps for the U.S., the Project is situated in an area of very low seismic probability. Based on historical seismic activity in the area, the USGS (2014) estimates that the 500-year earthquake (an earthquake with a 10 percent probability of occurring within any 50-year interval) would result in peak ground accelerations of one percent gravity (g) to two percent g. Damage to buildings and other structures is not likely to occur at ground accelerations of less than 10 percent g (USGS, 2007). Soil liquefaction is a condition that typically occurs when loose, saturated soil is subjected to vibration or shockwaves, typically from a seismic event. The low probability of a seismic event occurring within the Project area makes the occurrence of soil liquefaction unlikely.

Karst terrain results from the dissolution of highly soluble bedrock such as limestone and dolomite. Land subsidence is the sinking of the Earth's surface, either gradually or sudden, due to the subsurface movements of materials such as water or soil. Areas with karst terrain are more susceptible to subsidence events (Galloway et al., 2005). Karst occurs in approximately 47.5 miles of the Project ROW. Potential karst is present from MP 316.5 to MP 348.3, as well as, MP 454.8 to MP B15.7. Karst in this area is described as fissures, tubes and caves generally less than 1,000 feet long; 50 feet or less vertical extent. Found in gently dipping to flat-lying beds of carbonate rock beneath an overburden of non-carbonate material 10 feet to 200 feet thick (USGS, 2004b).

Slope instability occurs when unconsolidated soils and sediments located on steep slopes become saturated, usually from a flooding event. Only one geologic formation is known to be susceptible to landslides in the Project area, the Pierre Shale. Approximately 189 miles of the Project area is located in Pierre Shale (Table 14.7-1). The region is characterized as flat and level, gently rolling, and hummocky in some areas (USGS, 2013a). The areas of moderate and high incidence of landslides or slope instability are confined mostly to the valley walls of the Missouri River and to its principal tributaries. The Project lies in an area of low incidence of landslide (USGS, 2013b).

Table 14.7-1
Areas of Pierre Shale Identified

Geologic Formation/ Unit	Facility	Begin Milepost	End Milepost	Total
Pierre Shale	Dakota Access Pipeline	210.0	317.2	107.2
		318.0	325.0	7.0
		325.2	326.0	0.8
		327.1	328.3	1.2
		329.2	331.9	2.7
		333.3	334.9	1.6
		A 2.2	A 4.0	1.8
		A 4.9	A 5.7	0.8
		343.5	346.0	2.5
		346.2	352.5	6.3
		354.5	357.7	3.2
		359.6	413.2	53.6
Project Total				**188.7**

Source: SDGS, 2004b

14.8 GEOLOGICAL PROJECT CONSTRAINTS

As stated previously in Effect on Physical Environment Sections 14.5− Soils and 14.7− Seismic and Subsidence, shallow bedrock was not identified, and the Project is located within an area of low seismic probability and low incidence of landslide. If shallow bedrock or boulders are encountered during construction that cannot be economically excavated from the ROW by an excavator or rock trencher, blasting may need to be utilized to assist in ditch excavation. In the unlikely event blasting is necessary; Dakota Access has developed a Blast Plan (Exhibit D) for the Project which outlines best management practices (BMPs) to minimize potential impacts due to blasting.

As outlined in Section 14.7− Seismic and Subsidence, desktop studies have identified a potential for karst geology along certain portions of the route. Dakota Access will conduct pre-construction training to educate personnel on the identification of karst features during excavation. If karst features are identified along the route, Dakota Access will take steps to ensure the integrity and safety of the pipeline, which may include realignment or specialized construction techniques.

15.0 (20:10:22:15) HYDROLOGY

The following sections include information on the hydrology of the Project area including drainage patterns, water uses, and hydrostatic testing.

15.1 DRAINAGE PATTERNS

The pipeline is a below ground facility and therefore will not interrupt drainage patterns within the Project area. The pump station in Spink County is the only aboveground facility of any significance to potentially interfere with drainage patterns. A map of the water drainage patterns at the pump station is included in Exhibit A4.

15.2 WATER USES

Water uses identified within the Project area are discussed below and illustrated in Exhibit A4; including the National Hydrography Dataset, USFWS Topeka shiner population range data, Zone A Wellhead Protection and Source Water areas, and rural water districts. In addition, Exhibit A4 includes wetlands identified within the Project area. Wetlands are discussed throughout Section 17.0− Effect on Aquatic Ecosystems. Additional state identified water uses are discussed in greater detail within Aquatic Ecosystems Section 17.2− Waterbodies, Section 20.0− Water Quality, and outlined in the waterbodies crossing table in Exhibit C.

Consultation with the SDDENR during the Project fatal flaws analysis identified Zone A Wellhead Protection and Source Water areas within Minnehaha County. These areas define the boundaries in which the land area contributes water to a well. These protection areas are in place to protect the quality of local drinking water (SDDENR, 2014a). The baseline centerline crossed/clipped two of these areas; however, through the reroute process Dakota Access has successfully avoided crossing these protected areas. The Zone A Wellhead Protection and Source Water areas along with the proposed pipeline route are shown in Exhibit A4.

The South Dakota Association of Rural Water Systems supports water uses including clean drinking water and water for local agriculture and industries. These water uses are

managed throughout the state by districts based on region. The Project crosses seven rural water systems within South Dakota including WEB, Mid Dakota, Kingbrook, Minnehaha, Lincoln, South Lincoln, and the Lewis and Clark system which overlaps the majority of these water districts that are located on the eastern border of the state, and continues into Iowa. Table 15.2-1 below lists the rural water systems crossed and the approximate miles that are crossed by the Project. Dakota Access is in discussions with the rural water systems regarding appropriate methods and measures for crossing their respective lines.

Table 15.2-1
South Dakota Rural Water Systems Crossed by the Project

Name	Approximate Miles Crossed
WEB	114.5
Mid Dakota	47.0
Kingbrook	50.0
Minnehaha	25.7
Lincoln	12.3
South Lincoln	12.8
Lewis and Clark	70.1
Source: South Dakota Rural Water Systems, 2014	

15.3 SURFACE WATER AND GROUNDWATER

Dakota Access may utilize surface waters as a water source for hydrostatic testing. Exact locations of the hydrostatic testing and discharge sites will be determined by the selected contractor, additional information on testing and discharge areas is provided in Hydrology Section 15.5− Discharge Water. Additional information on surface waters within the Project area is included in Sections 17.0− Effect on Aquatic Ecosystems and 20.0− Water Quality.

15.4 AQUIFERS

Dakota Access anticipates utilizing surface water for hydrostatic testing purposes. Groundwater is not currently proposed for use during construction and operation of the Project.

15.5 DISCHARGE WATER

Two types of discharges will occur during Project construction; hydrostatic testing and trench dewatering. This section discusses the process for each type and mitigation measures to avoid adverse impacts to hydrology in the Project area.

Hydrostatic testing will be conducted to verify the integrity of the newly installed pipeline, and will be conducted in accordance with the requirements of USDOT pipeline safety regulations (49 Code of Federal Regulations [CFR] Part 192), Dakota Access testing specifications, and applicable permits, including surface water withdrawal and National Pollutant Discharge Elimination System permits for hydrostatic test waters.

Exact locations of the hydrostatic testing withdrawal and discharge sites will be coordinated with the selected contractor. Dakota Access anticipates utilizing surface waters for hydrostatic testing purposes and discharge will ideally occur within well-

vegetated, non-forested upland areas along Dakota Access's ROW. The test water will go through an energy dissipating discharge device to minimize erosion or siltation, and will be monitored at all times. To minimize erosion, discharge procedures will allow dual-action dissipation, one from the dissipation device itself and the other from the upland vegetation at the discharge site. The test water will be discharged through the energy-dissipation device at approximately 1,000-3,000 gallons per minute. The discharges will be monitored at all times and the discharge rates adjusted, if necessary, to minimize erosion.

Water is anticipated to infiltrate into the ground within close proximity to the selected discharge location, and no significant water quality impacts are anticipated as a result of the discharge. Since discharge water is anticipated to be absorbed into the soil, impacts to adjacent private property owners are not anticipated. Dakota Access will use earthen berms, hay bales or silt fence to help direct and maintain water on existing landowner's property. Since the hydrostatic test is for new pipe, suspended solids, oil, grease, and other pollutants are not anticipated.

Dakota Access will develop a hydrostatic test plan, following completion of design, and in coordination with the selected contractor.

Trench dewatering will occur on an intermittent basis along the Project ROW dependent on site conditions and weather during the construction period. During construction, open trenches may accumulate water from groundwater seepage or precipitation. Under these circumstances, trench dewatering will be used to pump accumulated water from the trench, away from nearby waterbodies, and into vegetated upland areas. Water pumped out of trenches will be discharged utilizing applicable BMPs to reduce the rate of water flow and prevent scouring from runoff. Based on the implementation of these measures, no impacts to local hydrology are anticipated.

15.6 DEEP WELL INJECTION

Dakota Access does not anticipate utilization of deep well injection for this Project.

16.0 (20:10:22:16) EFFECT ON TERRESTRIAL ECOSYSTEMS

The Project area crosses the Great Plains Steppe Province and the Prairie Parkland (Temperate) Province ecoregions (USDA, 2014a). The western part of the Project area in South Dakota is located in the Great Plains Steppe Province and is characterized by rolling, flat plains. Elevations slope from approximately 2,500 feet from the west to 1,000 feet in the eastern section of this ecoregion. The majority of this region is made up of young glacial drifts and dissected till plains. Vegetation is mostly comprised of short and tallgrass prairie with not much woody vegetation. However, there are some scattered areas of eastern cottonwood (*Populus deltoids*) forested floodplains within this prairie dominated ecoregion (USDA, 2014b).

Historically, American bison (*Bison bison*) roamed this ecoregion. Presently, wildlife species that are common to the Great Plains Steppe Province include coyote (*Canis latrans*), pronghorn antelope (*Antilocapra americana*), cottontail rabbit (*Sylvilagus* sp.), jackrabbit (*Lepus* sp.), American badger (*Taxidea taxus*), mourning dove (*Zenaida macroura*), and northern bobwhite (*Colinus virginianus*) (USDA, 2014b).

The eastern part of the Project area within South Dakota is located in the Prairie Parkland (Temperate) Province ecoregion, which is characterized by gentle rolling plains, with steep valley bluffs. Elevations within this ecoregion can range from 1,000 to 2,000 feet, with some areas being relatively flat and others having high hills or bluffs. Vegetation is a mixture of mostly bluestem (*Andropogon* sp.) dominated tall grass prairie, and stands of deciduous forest. The forested areas are likely a mixture of eastern cottonwood, elm (*Ulmus* sp.), oak (*Quercus* sp.), and hickory (*Cary* sp.) tree species (USDA, 2014a).

Wildlife species common to the Prairie Parkland (Temperate) Province include mink (*Mustela vison)*, North American river otter (*Lontra canadensis*), thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), belted kingfisher (*Ceryle alcyon*), and mourning dove (USDA, 2014a).

16.1 VEGETATION

Vegetation community types occurring along the Project route were identified, described, and delineated based on field activities and aerial photography. During field activities, vegetation communities were described as part of USACE wetland delineations and classification of land uses. The Project route crosses six terrestrial vegetation community types in South Dakota including pastureland/rangeland, native grassland, hayland, row-crop agriculture, residences and farmsteads, and ROW corridors (Table 16.1-1). The predominant vegetation communities crossed are row-crop agriculture and pastureland/rangeland.

Vegetation communities generally describe land use types classified in Section 18.0−Land Use. However, some land uses were grouped to describe their vegetation (e.g., rural residential with residential). Therefore, the acres disturbed for vegetation communities will be slightly different than the corresponding land use types provided in Section 18.0− Land Use.

Table 16.1-1
Vegetative Communities Crossed by the Project

Counties Crossed (North to South)	Vegetation Communities (acres)					
	Pastureland / Rangeland	Native Grassland	Hayland	Row-Crop Agriculture	Residences & Farmsteads	Right of Way Corridors
Campbell	222.3	30.1	102.4	189.0	1.5	15.5
McPherson	8.4	0.0	2.9	107.9	2.7	3.8
Edmunds	45.1	0.0	56.5	593.0	0.2	12.8
Faulk	73.4	0.0	47.2	420.2	4.0	12.7
Spink	182.5	0.0	42.7	461.7	2.1	19.3
Beadle	154.7	0.0	24.5	352.5	2.8	12.0
Kingsbury	73.4	0.0	29.7	303.0	1.2	9.3
Miner	23.2	0.0	0.7	242.0	9.3	6.9
Lake	59.6	0.0	26.3	268.0	1.0	6.8
McCook	2.6	0.0	4.3	19.6	0.1	0.7
Minnehaha	90.4	0.0	21.9	375.2	0.3	16.1
Turner	6.5	0.0	5.0	28.0	2.4	0.9
Lincoln	27.4	10.8	5.6	403.0	2.6	11.3

Table 16.1-1
Vegetative Communities Crossed by the Project

Counties Crossed (North to South)	Vegetation Communities (acres)					
	Pastureland / Rangeland	Native Grassland	Hayland	Row-Crop Agriculture	Residences & Farmsteads	Right of Way Corridors
State Total	969.3	41.0	369.5	3763.1	30.0	128.1

Pastureland/Rangeland

The pastureland/rangeland vegetative community is primarily located in the northern portion of the Project in South Dakota. This includes lands that may have been plowed at some time in the past and replanted to non-native pasture grasses. The primary land use is grazing by livestock. This plant community has a high to moderate percent canopy cover of non-native grasses. Native grasses and forbs may be present but are not dominant and have low canopy cover. The Pastureland/rangeland community is composed of mixed grass and tall grass prairie community types. The primary non-native grasses include smooth brome (*Bromus inermis*) and Kentucky bluegrass (*Poa pratensis*). These two species also have the greatest percent canopy cover. Other common introduced species along the route are crested wheatgrass (*Agropyron cristatum*) and yellow sweetclover (*Melitotus officinalis*). The native species that are common along the route are reed canarygrass (*Phalaris arundinacea*), western wheatgrass (*Pascopyrum smithii*), curlycup gumweed (*Grindelia squarrosa*), green needlegrass (*Nassella viridula*), and big bluestem (*Andropogon gerardii*).

Native Grassland

The native grassland vegetative community includes grassland dominated by native mixed grass and tall grass species. Non-native plant species may be present but in low quantities. This land use includes undisturbed grasslands that may have been plowed at some time in the past. It also includes restored grasslands dominated by native grass species. Native grasslands were only identified in Campbell and Lincoln counties. The primary land use is grazing by livestock and wildlife habitat. The primary native species are big bluestem (*Andropogon gerardii*), green needlegrass, western wheatgrass, and porcupinegrass (*Hesperostipa spartea*). The non-native Kentucky bluegrass is also present.

Hayland

The hayland plant community is land that has been cropped for hay forage production. It is a species-poor plant community generally consisting of one to five species of non-native forage grasses and forbs. Haylands are found throughout the Project area. Dominant species include alfalfa (*Medicago sativa*), smooth brome, and Kentucky bluegrass.

Row-Crop Agriculture

This community type is characterized by annual herbaceous vegetation planted for the production of human consumption, animal feed, biofuel, or other specific purposes. Row-crop agriculture accounts for the majority (69 percent) of the Project route. Along

the South Dakota Project route the primary row-crops are soybeans and corn. Wheat and sorghum are present less frequently.

Residences and Farmsteads

This vegetation community describes the rural residences and farmsteads, and suburban residential land uses (as classified in Section 18.0−Land Use). These land uses may include farmsteads and outbuildings (including abandoned farmsteads), farm windbreaks and shelterbelts, and suburban residential yards. These areas are generally small in size and account for a small portion of the Project area. These areas have often been planted with a mixture of non-native grasses and forbs used for agricultural uses such as forage production. The most common tree species in windbreaks and shelterbelts are Siberian elm (*Ulmus pumila*) and green ash (*Fraxinus pennsylvanica*).

Right-of-Way Corridors

ROW corridor describes the vegetation community along public, commercial, and industrial land uses (as classified in Section 18.0−Land Use). These are road and railroad ROWs including the vegetated borrow ditches. The areas crossed by the Project were identified through field and desktop land-use classification. These areas are generally small in size but occur frequently because of the section line road system in South Dakota. The ROWs consist primarily of non-native planted vegetation including smooth brome and Kentucky bluegrass. If native species are present, they are most commonly reed canarygrass and prairie cordgrass (*Spartina pectinata*) along roadside ditches. Many of the roadside ROWs are used and baled for hay production. Noxious weeds are often present in trace amounts. Field bindweed (*Convolvulus arvensis*) and Canada thistle (*Cirsium arvense*) are the most common noxious weeds in this land use.

In addition to collecting data on the vegetative communities described above, Dakota Access identified and collected data on areas of noxious weeds that were encountered along the proposed pipeline route. Noxious weed species and locations within the Project area are described in detail below.

Noxious Weeds

Some introduced plants are aggressive, invasive species that can alter plant community composition, impact rangeland and cropland productivity, and decrease wildlife habitat quality. When a plant species is known to cause environmental and economic impacts, it is listed as a federal, state, and/or county noxious weed. A ‘noxious weed’ is defined as a plant of foreign origin that can directly or indirectly injure agriculture (crops, pasture, and rangeland), waterways (including navigation), wildlife, or public health. The Federal Noxious Weed list, determined by rule of the USDA under the Federal Noxious Weed Act of 1974 (Title 7, Chapter 61), is a combination of aquatic/wetland, parasitic, and terrestrial plant species that are of foreign origin and not widely prevalent within the United States. No federally listed noxious weeds were documented within the Project route.

The South Dakota state noxious weed list is found in South Dakota Weed (Chapter 38-22). There are currently seven noxious weeds on the state list. Under the law, it is a landowner’s legal responsibility to manage noxious weeds on their lands. Local county

governments have the responsibility for the implementation and enforcement of weed management. In addition to state listed noxious weeds, South Dakota counties have noxious weed lists for species that are locally problematic. Table 16.1-2 lists the state and county listed noxious weeds in South Dakota.

Table 16.1-2
2014 South Dakota State and County Noxious Weeds

Latin Name	Common Name	State	County
Acroptilon repens	Russian knapweed	X	
Arctium minus	*burdock		X
Artemisia absinthium	*absinth wormwood		X
Cardaria draba	hoary cress / whitetop	X	
Carduus acanthoides	*plumeless thistle		X
Carduus nutans	*musk thistle		X
Centaurea diffusa	diffuse knapweed		X
Centaurea maculosa	spotted knapweed		X
Cichorium intybus	chicory		X
Cirsium arvense	*Canada thistle	X	
Cirsium vulgare	*bull thistle		X
Conium maculatum	*poison hemlock		X
Convolvulus arvensis	*field bindweed		X
Cynoglossum officinale	houndstongue		X
Euphorbia esula	*leafy spurge	X	
Hyoscyamus niger	black henbane		X
Hypericum perforatum	St. Johnswort		X
Leucanthemum vulgare	oxeye daisy		X
Linaria dalmatica	Dalmatian toadflax		X
Linaria vulgaris	*yellow toadflax		X
Lythrum spp.	purple loosestrife	X	
Onopordum acanthium	Scotch thistle		X
Phragmites australis	**Phragmites* / common reed		X
Polygonum sachalinese	giant knotweed		X
Potentilla recta	sulfur cinquefoil		X
Sonchus arvensis	*perennial sowthistle	X	
Tamarix spp.	saltcedar	X	
Tanacetum vulgare	common tansy		X
Tribulus terrestris	puncturevine		X
Verbascum thapsus	common mullein		X

Source: South Dakota Department of Agriculture, 2014
* Noxious weeds identified to date within the Project area.

Dakota Access is collecting noxious weed species locations, and the size and percent canopy cover of infestations during field surveys along the Project route. To date, a total of 12 species of state and county noxious weeds were documented within the Project area

(Table 16.1-2). The overall percentage of canopy cover was low (3.4 percent) within areas where noxious weeds were identified during field surveys. Canada thistle, field bindweed, and absinth wormwood (*Atemisia absinthium*) are common noxious weeds surveyed along the proposed route.

16.1.1 Impacts and Mitigation Measures

Both temporary and permanent impacts to vegetation may occur as a result of the Project. Row-crop agriculture and haylands will be temporarily disturbed and removed from production during construction. However, agricultural production will resume during the growing season following completion of the pipeline construction. Dakota Access will restore row-crop agriculture and haylands to preconstruction conditions as soon as practicable following construction in accordance with the Agricultural Impact Mitigation Plan (AIMP) (Exhibit D) and landowner agreements. Landowners will be compensated for crop losses, short term reduced yields, and other damages resulting from the pipeline construction.

The proposed Project area includes limited areas of residences and farmsteads, including windbreaks. The 50-foot pipeline permanent ROW will be kept clear of trees, to allow for pipeline inspection and maintenance. Windbreaks will not be replanted within the permanent pipeline ROW, because of the requirements for aerial patrols. Further, any trees and/or shrubs along the permanent ROW that are cleared during construction will not be replanted. Landowners will be compensated for loss to landscaping, timber, etc. on areas impacted by the project. Disturbed areas outside the permanent ROW will be revegetated with a recommended seed-mix and natural succession will allow the vegetation to revert to preconstruction types.

The proposed pipeline route crosses grasslands and pastureland/rangeland that are primarily used for grazing. This grass-dominated land cover controls water runoff and sediment from directly entering groundwater, nearby lakes, rivers ponds and streams while contributing to wildlife habitat and livestock forage. Dakota Access will restore all grasslands as near to pre-construction conditions as practicable. Where conservation programs are in place, Dakota Access will work in accordance with NRCS and Farm Service Agency requirements for reclamation.

To minimize potential impacts, Dakota Access will incorporate topsoil segregation during construction of the pipeline. Typically, topsoil segregation is conducted within agriculture, improved pasture, and residential areas. The depth of the topsoil to be stripped will be a maximum depth of 12 inches or actual depth of top soil if less than 12 inches or as agreed upon with the landowner. Unless the landowner or land management agency requests otherwise, topsoil will be stripped from over the pipeline trench and the adjacent subsoil storage area. Segregated topsoil will be returned following backfilling of the subsoil, ensuring preservation of topsoil within the construction area. This practice preserves the seed bank within the topsoil and encourages revegation within the ROW.

Dakota Access will monitor revegetation success along the pipeline ROW in accordance with applicable requirements. Reclamation and revegetation of grasslands and pastureland/rangeland may include soil conditioning such as de-compaction when reseeding as necessary to improve vegetative re-growth. Seed mixes will be developed based on data from pre-disturbance field surveys and with input from the local NRCS.

Noxious Weeds

Construction activities result in surface disturbance that may contribute to the spread of noxious weeds. Weed species are fast-growing and may displace desired species and inhibit the establishment of native grasses, forbs, and shrubs. Noxious weeds have the potential to increase in disturbed areas along the ROW where construction occurs. After construction is completed, disturbed areas will be restored. Operation and maintenance traffic will typically be limited to the locations of the aboveground facilities. Cropland will be returned to production and agricultural weed management will resume. Upland areas will be reseeded with desirable seed-mixes.

Dakota Access will consult with the South Dakota Department of Agriculture on noxious weeds within the Project area. In order to mitigate the spread of any noxious weeds, Dakota Access will likely implement BMPs and weed control practices during construction and operation. Mitigation measures may include:

- Treating known noxious weed infestations prior to ground disturbance.
- Immediately reseeding following construction.
- Using weed-free seed in reclamation activities.
- Using weed-free erosion control materials.

Operation and maintenance activities should not exacerbate noxious weed conditions since disturbances will be infrequent and isolated.

16.2 WILDLIFE

The Project area provides foraging and sheltering habitat for many species of mammals, raptors, and songbirds such as whitetail deer (*Odocoileus virginianus*), thirteen-lined ground squirrel, white-footed mouse (*Peromyscus leucopus*), white-tailed jackrabbit (*Lepus townsendii*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), great-horned owl (*Bubo virginianus*), burrowing owl (*Speotyto cunicularia*), wild turkey (*Meleagris gallopavo*), mourning dove, loggerhead shrike (*Lanius ludovicianus*), black-capped chickadee (*Parus atricapillus*), eastern bluebird (*Sialia sialis*), and American robin (*Turdus migratorius*). In addition to foraging and sheltering habitat, the pastureland/rangeland, native grassland and hayland vegetation communities within the Project area may provide suitable habitat for ground nesting birds such as the ring-necked pheasant (*Phasianus colchicus*) and common nighthawk (*Chordeiles minor*).

Highly disturbed areas (i.e., residences and farmsteads and ROW corridors) are likely to have a greater abundance of species such as striped skunk (*Mephitis mephitis*), eastern fox squirrel (*Sciurus niger*), barn swallow (*Hirundo rustica*), house wren (*Troglodytes aedon*), and common grackle (*Quiscalus quiscula*).

Many of these agricultural areas also contain aquatic habitats such as wetlands or prairie potholes that provide foraging, sheltering, and nesting habitat for migratory species such as shorebirds and waterfowl. These habitat types and wildlife that may utilize these aquatic habitats within the Project area are discussed throughout Section 17.0− Effect on Aquatic Ecosystems.

16.2.1 Impacts and Mitigation Measures

Construction of the pipeline will be short-term and may result in temporary impacts to wildlife. Given the large percentage of agricultural development along the Project ROW, existing species that may utilize the Project area are used to seasonal vegetation impacts. Displacement of species may occur during increased human presence for the construction period. The Project area will be returned to pre-construction contours and land uses after pipeline construction. There is very little forested habitat along the project ROW, and where impacts occur, they are typically associated with residences and shelterbelts; many of which are comprised of fast growing non-native tree species.

The pastureland/rangeland, haylands, and native grasslands located within the Project area may provide suitable habitat for ground nesting species. Typically, bird nesting season is April 15 - August 15. The current Project schedule estimates that construction within South Dakota will commence in February 2016, and restoration activities will continue through December 2016. Since construction will be underway prior to nesting season, it is anticipated that nesting birds would avoid the Project area; therefore, impacts to ground nesting birds is not anticipated. Few forested areas are crossed by the Project due to the predominance of agricultural practices within the region, therefore no significant impacts to tree nesting species is anticipated. Potential impacts to raptors are discussed further in the Effect on Terrestrial Ecosystem Section 16.3− Sensitive, Threatened, and Endangered Species below.

16.3 SENSITIVE, THREATENED AND ENDANGERED SPECIES

A comprehensive list of all federal and state listed species within the counties crossed by the Project, including habitat assessments and determinations of impact or effect on the species is included in Exhibit C. This section reflects terrestrial species with the potential to occur within two miles of the Project area as determined by the information and responses received from state and federal agencies. Early coordination and informal consultation with the USFWS, the South Dakota Natural Heritage Program (SDNHP), and South Dakota Game, Fish and Parks (SDGFP) was initiated in 2014. Species occurrence records and designated critical habitat for listed species were obtained. The terrestrial sensitive, threatened and endangered species information will be updated throughout the pre-construction and construction period based on continued consultations.

Information for terrestrial sensitive, threatened and endangered species was used to identify potential habitat along the pipeline corridor. Based on documented habitat requirements, the Project ROW has the potential to support two protected species; the bald eagle (*Haliaeetus leucocephalus*) and the western prairie fringed orchid (*Platanthera praeclara*). The bald eagle is protected under the Golden and Bald Eagle Protection Act, and the western prairie fringed orchid is listed as federally threatened. Baseline surveys were conducted from September through November 2014, and no occurrences have been documented to date. Surveys for raptor and bald eagle nests occurred during the baseline surveys. No nests were identified within the survey corridor; therefore, no impacts to raptors are anticipated. Pending final results of field surveys and input from resource agencies, appropriate mitigation and protection measures will be implemented to minimize potential impacts.

While outside of the field survey corridor, a known bald eagle nest has been documented by the SDNHP approximately one mile from the Project workspace. No other threatened, or endangered terrestrial species or their critical habitat has been reported within two miles of the Project.

16.3.1 Impacts and Mitigation Measures

Based on current survey data, Dakota Access has not identified a potential effect on listed terrestrial species. As part of the Project's permitting process, Dakota Access will continue consulting with the resource agencies to obtain concurrence with this determination prior to initiating construction.

17.0 (20:10:22:17) EFFECT ON AQUATIC ECOSYSTEMS

This section describes the aquatic habitats that are crossed by the Project; waterbodies and wetlands. Also described within this section are fisheries that may be recreationally or commercially important, and special status species that predominantly utilize aquatic habitats within the Project area.

17.1 WATERBODIES

Dakota Access has identified 279 waterbody crossings located within the Project footprint. Of these, 10 are perennial, 105 are intermittent, 139 are ephemeral streams, and 25 are ponds (open water). The MP, waterbody name, state water classification, and flow regime for surface waters crossed or otherwise impacted by the Project can be found in Exhibit C. According to the South Dakota *Water Quality Standards* (Administrative Rules of South Dakota [ARSD] 74:51:01), South Dakota classifies fisheries in five beneficial use categories, including: coldwater permanent fish life propagation waters, coldwater marginal fish life propagation waters, warmwater permanent fish life propagation waters, warmwater semipermanent fish life propagation waters, and warmwater marginal fish life propagation waters.

South Dakota further categorizes these fishery beneficial use classifications as either high- or low-quality. High-quality fishery waters are those that have a beneficial use of coldwater permanent fish life propagation, coldwater marginal fish life propagation, or warmwater permanent fish life propagation. Low-quality fishery waters are those that have a beneficial use of warmwater semipermanent fish life propagation or warmwater marginal fish life propagation (SDDENR, 1998).

The Project does not cross any waterbodies categorized as high-quality fisheries within South Dakota. A total of three waterbodies crossed by the Project are categorized as low-quality, and have warmwater fishery classifications. The three warmwater fisheries waterbodies are Turtle Creek (warmwater marginal), James River (warmwater semipermanent), and Big Sioux River (warmwater semipermanent) (ARSD 74:51:01, 2014).

One of the many objectives of the SDGFP is to ensure that fisheries and aquatic resources are available and safe for public uses. To maintain aquatic resource quality, the SDGFP has developed Fisheries Management Area Strategic Plans for the different regions of the state. These plans aim to protect water quality, identify critical habitat, and improve fishing opportunities by better access and stocking (SDGFP, 2014a). The Project falls

within the East River Fisheries Management Area. The majority of the waterbodies stocked within this region are lakes and ponds. The Project does not cross any lakes or ponds listed as stocked by the SDGFP (SDGFP, 2014b). Representative game fish that occur within the Project area in South Dakota include a variety of warm water species such as a variety of catfish (including *Ameiurus melas* and *Ameiurus natalis*), sauger (*Sander canadensis*), walleye (*Sander vitreus*), and white bass (*Morone chrysops*). Typical non-game species include common shiner (*Luxilus cornutus*), white sucker (*Catostomus commersonii*), and bigmouth buffalo (*Ictiobus cyprinellus*) (SDGFP, 2011).

17.1.1 Impacts and Mitigation Measures

Impacts to waterbodies associated with the Project will be limited to the construction phase. Temporary, short-term impacts to these waterbodies may cause increased sedimentation and turbidity; introduction of water pollutants; or entrainment of fish. To reduce the possibility of potential impacts from a potential release, Dakota Access will implement the Spill Prevention, Containment, and Countermeasures Plan (Exhibit D). No permanent long-term effects on water quality or fish communities are anticipated to occur as a result of the construction or operation of the pipeline.

While the majority of waterbodies along the Project ROW will be conventional open-cut crossings, Dakota Access will minimize potential impacts by expediting the time spent through these crossings, utilizing specialized crossing methods and implementing BMPs, where necessary. Construction methods utilized at waterbody crossings are highly dependent on the characteristics of the waterbody encountered, environmental constraints, the underlying geology, and other design factors. Details on the proposed crossing types to be utilized on this Project and additional BMPs are discussed below.

Maintenance activities within the Project area will likely be infrequent, short-term, isolated, and will not affect aquatic biota or their habitat. In the unlikely event of a pipeline release, Dakota Access will initiate its Facilities Response Plan (FRP) to contain and clean up the spill. To minimize impacts to aquatic resources, appropriate remedial measures will be implemented to meet federal and state standards designed to ensure protection of aquatic biota.

Open-Cut

Open-cut crossings are the industry standard for minor and intermediate waterbody crossings where conditions allow. Under this scenario, equipment will operate from the banks of the waterbody to the maximum extent practicable to excavate a trench. Flow will be maintained at all times. Excavated material from the trench will be placed on the bank above the ordinary high water mark for use as backfill. The pipe segment will be prefabricated and weighted, as necessary, to provide negative buoyancy and placed below scour depth. Typical backfill cover requirements will be met, contours will be restored within the waterbody, and the banks will be stabilized via seeding and/or the installation of erosion control matting or riprap. Excess excavated materials will be distributed in an upland area in accordance with applicable regulations.

Impacts to water quality will be minimized through the implementation of BMPs. The pipeline trench will be excavated immediately prior to pipe installation to limit the duration of construction will be expedited to minimize impacts. Excavated materials will

be stored no less than 10 feet from the edge of the waterbody and temporary erosion control devices will be utilized to prevent the sediment from reentering the waterbody.

Flume

The flume crossing method is a specialized open-cut method in which water flow is temporarily directed through one or more flume pipes placed over the excavation area. The use of the flume(s) allows trenching and pipeline installation to occur primarily under dry conditions without significant disruption of water flow.

Dam and Pump

The dam and pump crossing method is similar to the flume crossing method in that it is specialized open-cut method that allows trenching and pipeline installation to occur under relatively dry conditions with minimal impact to water flow. This method involves the temporary installation of dams (consisting of sandbags, bladders, or other impervious materials) upstream and downstream of the proposed crossing. Pumps are then used to dewater the excavation area and to transport the water flow around the construction work area.

Horizontal Directional Drill

The HDD crossing method will typically be utilized at waterbody crossings greater than 100 feet wide and/or where required to avoid impacts to sensitive resources. The HDD method allows for construction across a waterbody or road crossing without the excavation of a trench, by drilling a hole significantly below conventional pipeline depth, and pulling the pipeline through the pre-drilled hole. Dakota Access has prepared a HDD Contingency Plan (Exhibit D) and will utilize HDDs at several locations to avoid direct impacts to resources, such as wetlands and waterbodies, and/or to avoid areas in which constructability by conventional means is not feasible. HDD waterbody crossings are listed in Table 17.1-1.

Table 17.1-1
Horizontal Directional Drill Locations

County	MP	Waterbody Name	HDD Length
Faulk	309.5	Wetland	1,270
Spink	322.5	Turtle Creek	1,500
Spink	A0.6	Wetland	1,650
Beadle	348.0	James River	3,227
Beadle	358.9	Wetland	1,194
Lincoln	481.5	Big Sioux River	2,350

Depending on the HDD equipment utilized, to help guide the drill bit along the pipeline ROW, electric-grid wires may be laid along the predetermined HDD route. In thickly vegetated areas, a small path may be cut to accommodate laying the electric-grid guide wires (no large diameter vegetation will be cleared for this purpose). Once the electric grid guide wires are installed, the directional drilling rig will drill a small diameter pilot hole along the prescribed profile.

Following the completion of the pilot hole, reaming tools will be utilized to enlarge the hole to accommodate the pipeline diameter. The reaming tools will be attached to the drill string at the exit point and will then be rotated and drawn back to incrementally enlarge the pilot hole. During this process, drilling mud consisting of bentonite clay and water will be continuously pumped into the pilot hole to remove cuttings and maintain the integrity of the hole. When the hole has been sufficiently enlarged, a prefabricated segment of pipe will be attached behind the reaming tool on the exit side of the crossing and pulled back through the drill hole towards the drill rig.

17.2 WETLANDS

Wetlands are limited in extent to depression features (e.g., prairie potholes) and riparian areas. They are intermittently located along the Project ROW and have been identified based on current field data and desktop analysis for areas without access. Wetlands, as defined by the USACE, have hydrophytic vegetation, hydric soils, and hydrology present (USACE, 1987). The wetland areas provide important ecological functions such as maintaining water quality, stabilizing stream banks, providing flood control, providing wildlife habitat, and aesthetic values.

Palustrine emergent (PEM) wetlands are the dominant wetland type throughout the Project area (96.8 acres total). Common PEM wetland vegetation includes foxtail barley (*Hordeum jubatum*), reed canarygrass, prairie cordgrass, barnyardgrass (*Echinochloa crusgalli*), white panicle aster (*Symphyotrichum lanceolatum*), water smartweed (*Persicaria amphibium*), and broadleaf cattail (*Typha latifolia*).

17.2.1 Impacts and Mitigation Measures

Dakota Access has designed the Project to avoid permanent fill in wetlands. Aboveground facilities have been sited within upland areas resulting in no permanent loss of wetlands for the entire Project. Temporary impacts to wetlands will be limited to the construction phase, although permanent conversion of some palustrine scrub shrub (PSS) to PEM will be necessary to conduct the required pipeline inspections and pipeline integrity. Table 17.2-1 below summarizes all wetlands within the Project area; this includes USACE jurisdictional wetlands and non-jurisdictional wetlands.

Table 17.2-1
Summary of Wetlands Crossed by the Dakota Access Project by County

County	PEM (acres)	PSS (acres)	Total (acres)
Beadle County	12.1	0	**12.1**
Campbell County	3.0	0	**3.0**
Edmunds County	12.8	0	**12.8**
Faulk County	10.4	0	**10.4**
Kingsbury County	7.7	0	**7.7**
Lake County	3.5	0	**3.5**
Lincoln County	6.9	0	**6.9**
McCook County	4.7	0	**4.7**
McPherson County	2.8	0	**2.8**
Miner County	3.0	0	**3.0**

Table 17.2-1
Summary of Wetlands Crossed by the Dakota Access Project by County

County	PEM (acres)	PSS (acres)	Total (acres)
Minnehaha County	8.9	0.9	**9.8**
Spink County	20.5	0	**20.5**
Turner County	0.5	0	**0.5**
Total	**96.8**	**0.9**	**97.7**

During initial routing and through the alternatives evaluation process, Dakota Access has worked and is continuing to avoid and minimize impacts to wetlands. Three wetlands within the Project area will be crossed via HDD (Table 17.1-1), therefore avoiding impacts to these wetlands. Where impacts were unavoidable, Dakota Access will implement BMPs to ensure that the wetland is restored post-construction in accordance with application regulations and permits. These BMPs may include the following:

- Wetland boundaries will be clearly defined and marked prior to initiating construction in the area.
- The minimum construction equipment necessary for pipeline installation will be utilized within wetlands.
- If standing water or saturated soil conditions are present, or if construction equipment will cause ruts or mixing of the topsoil and subsoil, construction equipment operating in wetland areas would be limited to the use of low ground pressure equipment or normal equipment operating from timber equipment mats.
- Limit tree stump removal and grading within wetlands to the area directly over the pipeline, unless required for safe installation.
- Segregate topsoil from the area directly over the trench line in unsaturated soils.
- Use of trench plugs/breakers at wetland boundaries ensures that wetland hydrology is unchanged following construction.
- Pre-construction contours will be restored along the pipeline ROW, allowing wetlands to naturally revegetate.

17.3 WILDLIFE

The majority of the wetlands crossed by the Project are PEM. These prairie pothole type of wetlands provide foraging, sheltering, and nesting habitat for a variety of migratory and resident shorebirds and waterfowl such as American avocet (*Recurvirostra americana*), killdeer (*Charadrius vociferous*), long-billed curlew (*Numenius americanus*), willet (*Tringa semipalmata*), lesser scaup (*Aythya affinis*), redhead (*Aythya americana*), and northern pintail (*Anas acuta*). Amphibians and reptiles that may utilize PEM wetlands include the western chorus frog (*Pseudacris triseriata*), wood frog (*Rana sylvatica*), and Blanding's turtle (*Emydoidea blandingii*).

17.4 SENSITIVE, THREATENED, AND ENDANGERED SPECIES

A comprehensive list of all federal and state listed species within the counties crossed by the Project, including habitat assessments and determinations of impact or effect on the

species is included in Exhibit C. This section reflects aquatic species with the potential to occur within two miles of the Project area as determined by the information and responses received from state and federal agencies. Early coordination and informal consultation with the USFWS, SDNHP, and SDGFP was initiated in 2014. Species occurrence records and designated critical habitat for listed species were obtained.

Information for aquatic sensitive, threatened and endangered species was used to identify potential habitat along the pipeline corridor. Based on documented habitat requirements, the Project ROW has the potential to support five protected species; northern river otter (*Lontra canadensis*), interior least tern (*Sterna antillarum athalassos*), piping plover (*Charadrius melodus*), whooping crane (*Grus americana*), and Topeka shiner (*Notropis topeka*). Baseline surveys were conducted from September through November 2014, and no occurrences of these species have been documented to date. No potential habitat was identified for the interior least tern and piping plover. The only critical habitat areas in South Dakota are for the piping plover, and are located along the Missouri River, which is outside of the Project area. The Project area lacks large river systems and alkali wetlands required by these species. These two species will not be affected by the Project.

Of the identified species, the northern river otter and whooping crane have SDNHP species occurrence records within one mile of the Project. The northern river otter has been documented in the James and Big Sioux Rivers (SDNHP, 2014 and SDGFP, 2014c) within the Project area; however, both of these rivers will be crossed via HDD, therefore potential impacts to the northern river otter will be avoided. The Project area is within the migratory range of the whooping crane; however, this species is highly mobile and would likely avoid construction areas for the vast similar and suitable habitat throughout the area and region, therefore no effect on this species is anticipated.

The USFWS South Dakota Ecological Field Office identified eight waterbodies crossed by the Project that have Topeka shiner occurrences; including the James River, Shue Creek, Pearl Creek, Middle Pearl Creek, Redstone Creek, Rock Creek, East Fork Vermillion River, and Big Sioux River. An additional waterbody, the West Fork Vermillion River, was also identified for occurrence; however, the project crosses in its headwaters where it is an emergent wetland with no perennial flowing water and therefore not suitable habitat for the species. No other aquatic threatened, or endangered aquatic species or their critical habitat has been reported within two miles of the Project. Pending final results of field surveys and input from resource agencies, appropriate mitigation and protection measures will be implemented to minimize potential impacts.

17.4.1 Impacts and Mitigation Measures

Based on current survey data, Dakota Access has identified a potential effect on one listed aquatic species, the Topeka shiner. Stream construction methods and BMPs implemented during waterbody crossings will minimize potential impacts to sensitive species. The James and Big Sioux Rivers will be crossed via HDD, as discussed in Section 17.2− Waterbodies; therefore, impacts to Topeka shiner within both of these rivers will be avoided. Dakota Access will continue to coordinate with the USFWS regarding potential impacts to Topeka shiner within the six suitable waterbodies that will not be crossed via HDD and identify suitable construction and/or mitigation measures.

As part of the Project's permitting process, Dakota Access will continue consulting with the resource agencies to develop mitigative measures to minimize potential impacts prior to initiating construction.

18.0 (20:10:22:18) LAND USE

The proposed pipeline route in South Dakota is 272.3 miles long. The majority of the land crossed by the proposed route is privately owned, except for approximately 135 feet of land is owned by South Dakota Department of Transportation. The Project route does not cross any other state lands, and no federal or county lands are crossed. However, private lands with USFWS wetland/grassland easements managed by the USFWS National Wildlife Refuge System are crossed by the Project. Dakota Access has been and will continue coordinating with the USFWS to avoid and minimize impacts on these crossings. Exhibit A5 illustrates the land uses identified within the Project area.

Baseline surveys and desktop analysis occurred during 2014 to classify land uses along the proposed pipeline route using classifications listed in Section 22:20:10:18 of the South Dakota Administrative Rules. The land use categories documented along the proposed route were land used primarily for row and non-row crops in rotation; irrigated lands; pasturelands and rangelands; haylands; undisturbed native grasslands; rural residences and farmsteads, family farms, and ranches; residential; and public, commercial, and institutional use (Table 18.1-1). Wetlands and waterbodies occurred within all of these land uses except irrigated lands.

18.1 LAND USE MAPS

A map of the land use crossed by the Project is presented in Exhibit A5, and Table 18.1-1 provides a summary of the proposed disturbance by land use. The PUC land use categories (*italic*) were defined as follows for the Project.

a. *Lands used primarily for row and non-row crops in rotation* are agricultural fields that may be tilled but not irrigated. Primary row crops include corn, soybeans, sunflowers, and cereal grains.

b. *Irrigated lands* are agricultural fields irrigated with center pivots, furrows, or flood irrigation received from lateral ditches.

c. *Pasturelands and rangelands* include lands that may have been plowed at some time in the past and replanted to pasture grasses. There is a high to moderate component of non-native grasses.

d. *Haylands* include lands that have grass and alfalfa crops with evidence to suggest hay production such as the presence of bales.

e. *Undisturbed native grasslands* are dominated by native grass species. Non-native plant species may be present but are in low densities. It also includes restored grasslands dominated by native grass species.

f. *Existing and potential extractive nonrenewable resources* include coal, uranium lignite, and oil resources that are in the vicinity of the Project.

g. *Other major industries* include wind power development and energy transfer.

h. *Rural residences and farmsteads, family farms, and ranches* are individual farmsteads and outbuildings, as well as farmstead windbreaks and shelterbelts.

i. *Residential* includes suburban and urban residential areas.

j. *Public, commercial, and institutional use* includes county roads, highways, and railroad ROWs, commercial developments, schools, and churches. This category includes roadway borrow ditches that may be vegetated.

k. *Municipal water supply and water sources for organized rural water systems* include surface water reservoirs and groundwater wells that withdraw water for public water supplies.

l. *Noise sensitive land uses*.

Four land use types were not documented along the proposed route, including existing and potential extractive nonrenewable resources; other major industries; municipal water supply and water sources for organized rural water systems; and noise sensitive land uses.

Table 18.1-1
Land Use Crossed by the Project

Counties Crossed (North to South)	Land Use Disturbed (acres)							
	Lands used primarily for row and non-row crops in rotation	Irrigated lands	Pasturelands and rangelands	Haylands	Undisturbed native grasslands	Rural residences and farmsteads, family farms, and ranches	Residential	Public, commercial and industrial use
Campbell	189.2	0	225.1	102.4	30.2	1.5	0	15.5
McPherson	110.5	0	8.4	2.9	0	2.7	0	3.9
Edmunds	602.0	0	48.9	56.5	0	0.2	0	12.9
Faulk	425.9	0	76.4	49.8	0	2.5	1.4	12.7
Spink	470.6	0	193.7	44.3	0	2.1	0	20.0
Beadle	359.8	2.0	162.0	23.0	0	2.8	0	12.4
Kingsbury	305.3	0	78.7	30.1	0	1.2	0	9.6
Miner	243.3	0	24.6	0.7	0	8.6	1.0	7.4
Lake	269.6	0	62.4	26.4	0	1.0	0	6.9
McCook	21.7	0	4.2	5.5	0	0.1	0	0.7
Minnehaha	378.8	0	95.0	23.2	0	0.0	0.2	17.3
Turner	28.5	0	6.6	5.1	0	2.4	0	0.9
Lincoln	409.8	0	27.9	5.6	11.4	2.0	0.6	11.7
STATE TOTAL	**3,814.8**	**2.0**	**1,014.0**	**375.3**	**41.5**	**27.2**	**3.4**	**132.1**

18.2 DISPLACED HOMES

The Project does not displace any homes.

18.3 EFFECTS ON SURROUNDING LAND USE

Permanent effects on surrounding land uses are not anticipated since the pipeline is primarily a below ground structure with no land use conversion. As designed, Dakota Access is planning to install 31 MLVs, three L/Rs, and one pump station along the pipeline ROW, constituting the only aboveground structures on the Project. Of these, the only significant aboveground facility is the pump station located within Spink County; however, this tract of land will be purchased by Dakota Access for construction and operation of the pump station, and should not affect the adjacent land uses. Land uses that are within the pipeline route should not change from their current use due to construction of the pipeline.

18.4 ANALYSIS ON LAND USES

The primary land use types impacted by the proposed Project are lands used for agriculture. Predominant agricultural land uses within the Project area are as follows: row crop agriculture, pastureland /rangeland, hayland, and irrigated land. These lands are used primarily for production of food, fiber, livestock and fuel crops. The pastureland/rangeland is primarily in the northern portion of the South Dakota route while row-crop agriculture is located throughout the state. A secondary use for many of the land use types is hunting and recreation; this is discussed further within Community Impact Section 23.1− Forecast of Impact on Community. Once installed, the pipeline will be below the surface and will not affect normal agricultural or recreation activities.

The public, commercial, and institutional use are road and railroad ROWs, including the borrow ditches. These areas crossed by the Project total a small percentage of the overall Project land uses (2.2 percent), but occur frequently because of the section line road system in South Dakota.

18.4.1 Impacts and Mitigation Measures

Construction activities will temporarily disturb the land uses within both the construction and permanent ROW. Following construction, these areas will be re-contoured to previous conditions, reseeded and/or return to previous agricultural uses. Drainage systems such as roadway ditches or drainage tile crossed and disturbed by the pipeline during construction will be restored in accordance with permits and landowner agreements.

Dakota Access will take appropriate measures to protect land uses used for livestock production (pastureland/rangeland, undisturbed native prairie, row-crop agriculture) during construction. Project contractors will coordinate with landowners to provide passage for livestock and will provide temporary fencing and gates where required to protect livestock from construction-related hazards. Following construction, fences and gates are rebuilt to original condition.

Direct impacts to the public, commercial, and institutional land use will be minimized through construction design measures. Most roadways will be bored underneath during construction eliminating direct disturbance to the roadway and vegetation. Indirect impacts include temporary road closures or traffic delays during construction. After construction, roadways will resume normal traffic conditions in the Project ROW.

Potential traffic impacts are discussed further within Community Impact Section 23.1− Forecast of Impact on Community.

After construction, impacts to land uses along the pipeline will be negligible. Operations and maintenance activities may be needed but will be isolated and infrequent. As per the negotiated ROW agreements, no structures will be allowed within the permanent ROW, but overall land use will be allowed to revert to pre-construction conditions.

Permanent impacts to land use will occur at the aboveground facilities associated with the Project. The frequency of aboveground facilities is low (31 MLVs, three L/Rs, and one pump station) and the majority of these sites are small in size; permanent impacts to the surrounding land use will be minimal (0.2 percent of the Project footprint).

19.0 (20:10:22:19) LOCAL LAND USE CONTROLS

DAPL will design, construct, operate, and maintain the pipeline, pump stations, and valve stations in compliance with applicable zoning and county permit requirements. DAPL may request variances and/or special use permits, as necessary. DAPL recognizes the existence of South Dakota Codified Law (SDCL) 49-41B-28, regarding local ordinances and their application to the project, and reserves the right to request the Commission to invoke its provisions during the proceedings in this application should the need present itself.

20.0 (20:10:22:20) WATER QUALITY

Dakota Access is permitting the Project through the USACE nationwide permit program for Section 404/10 of the Clean Water Act (CWA) impacts. The nationwide permit program establishes general permits for projects with minimal adverse impacts to jurisdictional waters of the U.S. SDDENR has previously issued Section 401 water quality certification for projects that qualify for nationwide permit coverage, and outlined BMPs for work of this nature.

The CWA, Section 303(c), requires each state to review, establish, and revise water quality standards for all surface waters within the state. To comply with this requirement, the SDDENR has classified surface waters by beneficial uses, as provided in Exhibit C.

All streams in South Dakota are assigned the beneficial uses of irrigation waters, and of fish and wildlife propagation, recreation, and stock watering waters, unless otherwise stated in the ARSD Chapter 74:51:03. State toxic pollutant standards for human health and aquatic life are presented in Exhibit C. Site specific uses for waterbodies and their tributaries are available in ARSD Chapters 74:51:03:07, 74:51:03:18, 74:51:03:20, and 74:51:03:25.

Under Section 303(d) of the CWA, states are required to identify waterbodies that are not attaining their designated use(s) and develop total maximum daily loads (TMDLs), which represent the maximum amount of a given pollutant that the a waterbody can assimilate and still meet its designated use(s). Regulatory programs for water quality standards include default narrative standards, non-degradation provisions, a TMDL regulatory process for impaired waters, and associated minimum water quality requirements for the designated uses of listed surface waterbodies within the state. The SDDENR bases prioritization on many factors.

The highest priority designation, Priority 1, is given to waters with the following criteria:

- Imminent human health problems;
- Waters where TMDL development is expected during the next two years;
- Waters with documented widespread local support for water quality improvement; or
- Waters listed for four or more causes.

Priority 2 waters have the following criteria:

- Waters listed for three or less causes;
- Waters where local support for TMDL development is expected but not documented;
- Waters where impairments are believed to be due largely to natural causes; or
- Waters with no evident local support for water quality improvements.

All of the waterbodies found in Table 18.4-1 below are listed as U.S. Environmental Protection Agency (EPA) 303(d) impaired waterbodies. The three impaired waterbodies do not have TMDLs developed yet (SDDENR, 2014b).

Table 18.4-1
EPA Listed 303(d) Listed Waterbodies

County	Approximate Milepost	Waterbody Name	State Water Quality	Supports Use Designation	Source of Impairment	Priority[1]
Spink	322.4	Turtle Creek	Fish/Wildlife Prop, Rec, Stock	Full Support	N/A	2
			Irrigation Waters	Full Support	N/A	
			Limited Contact Recreation	Nonsupport	Oxygen, Dissolved	
			Warmwater Marginal Fish Life	Nonsupport	Oxygen, Dissolved	
Beadle	348.0	James River	Fish/Wildlife Prop, Rec, Stock	Full Support	N/A	2
			Irrigation Waters	Full Support	N/A	
			Limited Contact Recreation	Nonsupport	Oxygen, Dissolved	
			Warmwater Semipermanent Fish Life	Nonsupport	Oxygen, Dissolved	
Lincoln	481.6	Big Sioux River	Fish/Wildlife Prop, Rec, Stock	Full Support	N/A	1
			Immersion Recreation	Nonsupport	Escherichia coli; Fecal Coliform	
			Irrigation Waters	Full Support	N/A	
			Limited Contact Recreation	Nonsupport	Escherichia coli; Fecal Coliform	
			Warmwater Semipermanent Fish Life	Nonsupport	Total Suspended Solids	

Source: SDDENR 2014b; U.S. EPA. 2014

Of the three impaired stream segments crossed by the Project, one is impaired for the fish propagation use due to total suspended solids concentrations, and the other two for dissolved oxygen. All of these 303(d) listed impaired waters will be crossed via the HDD method; therefore, no impacts to these waterbodies are anticipated.

The general discharge permit for hydrostatic test water discharges will impose pollutant limits on those discharges that will be protective of the designated uses of the receiving waterbodies. No discharges to these waters will occur. In addition, construction methods for stream crossings (See Effect on Aquatic Ecosystems Section− 17.1 Waterbodies) should protect those waterbodies from exceedances of water quality standards.

Maintenance activities impacts to water quality or its uses are anticipated to be negligible, as Project-related disturbances will be isolated, short-term, and infrequent.

21.0 (20:10:22:21) AIR QUALITY

Air quality impacts along the pipeline include potential air emissions during both construction and operation of the pipeline. Dakota Access will comply with all federal and state air quality regulations that are applicable to the proposed facilities along the pipeline and will take necessary steps to ensure that they do not cause an exceedance of any air quality standard. Potential sources of air emissions have been identified and air quality permitting requirements for proposed facilities will be fully assessed to identify any air permits that will need to be obtained from SDDENR.

One proposed pump station is the only facility along the pipeline; however, if the potential to emit is below 25 tons per year of each of the relevant criteria pollutants, a source is exempt from obtaining either a construction or operating permit in South Dakota. Emissions from the pump station are anticipated to be well below this threshold. Therefore, Dakota Access anticipates that no permit will be required.

Potential sources of emissions along the proposed pipeline route can be classified as one of three types: stationary, mobile, or fugitive. These types of sources will be different during construction and operation. Potential emissions during construction include both mobile source and fugitive emissions. Mobile sources of emissions are the tailpipe emissions from employee commuter vehicles and construction equipment to be used during construction of the pipeline, pump station, and other ancillary facilities. No permitting is required for mobile sources.

Fugitive sources of emissions include particulate emissions from paved and unpaved roadways and the particulate emissions from soil disturbance during construction activities. Fugitive particulate emissions from roadways consist of heavier particles and tend to settle out of the atmosphere by gravity within a few hundred yards. Therefore, these fugitive particulate emissions will be limited to the immediate vicinity of the Project; impacts to the surrounding region will be negligible.

The quantity of fugitive dust emissions from soil-disturbance activities will depend on the moisture content and texture of the soils that will be disturbed, the type of construction equipment utilized, and the frequency and duration of precipitation events. The majority of pipeline construction activities will pass by a specific location within a 30-day period;

therefore, fugitive dust emissions during construction will be restricted to the brief construction period along each segment of the Project route, with construction impacts diminishing once construction activities end and after disturbed areas are reclaimed. Dakota Access will limit dust impacts in residential and commercial areas adjacent to pipeline construction by utilizing dust minimization techniques, such as minimizing exposed soil areas, reducing vehicle driving speeds, and watering the ROW as needed.

Potential emissions during operations include stationary source and fugitive emissions at the pipeline pump station. Since the proposed pump station on the Project is to be electrically driven, the pump will not be a potential source of stationary emissions. While the pump station will include a back-up power supply for critical equipment, the station will not have an emergency generator engine or other combustion source. Therefore, the pump will not require an air permit. The purpose of the surge tank will be to store product, if necessary, during an upset condition that occurs along the pipeline. At times when product is stored in the tank, the tank will be a potential source of volatile organic compound (VOC) emissions. Since the tank will be used only during upset conditions, both the annual throughput and resulting emissions will be low. Therefore, Dakota Access anticipates that an air permit will not be required for this tank.

Operational emissions consist of fugitive emissions such as VOCs released during pigging operations; additionally at the pump station meter-proving operations and minor leaks or programmed releases of volatile constituents contained in pipeline products from pipeline components such as valves, pumps, flanges, and connections. Emissions of VOCs from these sources are anticipated to be very low and therefore requiring an air permit is not anticipated.

22.0 (20:10:22:22) TIME SCHEDULE

Dakota Access anticipates starting construction within South Dakota in 2015 as soon as applicable permits and approvals have been issued. Commissioning of the facilities should occur in August 2016 for in-service in October. Restoration activities will continue as necessary to ensure proper restoration of the disturbed areas.

23.0 (20:10:22:23) COMMUNITY IMPACT

The following information identifies the effects of construction and operation of the Project on the community, taxes, agriculture, population, transportation, and cultural resources.

23.1 FORECAST OF IMPACT ON COMMUNITY

The following discussion includes potential impacts on commercial and industrial sectors, housing, land values, labor market, health facilities, energy, sewage and water, solid waste management facilities, fire protection, law enforcement, recreational facilities, schools, transportation facilities, and other community and government facilities or services.

Commercial and Industrial Sectors

The local economies are anticipated to benefit from temporary hiring of local employees and from the influx of non-local construction workers. The South Dakota portion of the Project area is anticipated to cost $820 million, approximately $486 million of this total (59 percent) will result in direct spending in the South Dakota economy. Economic benefits to local commercial businesses are anticipated to increase through the sales of food, lodging, services, and goods that will be generated by the temporary non-local work force. Dakota Access will purchase goods, including construction materials and other supplies for the Project from local businesses. Local purchases for construction will include consumables, fuel, equipment maintenance, equipment rental, space leasing, miscellaneous construction-related materials such as office supplies, and some medical/dental needs. The direct spending within the state will cause indirect and induced spending of $168 million and $186 million. The total impact on the South Dakota economy will be $836 million increase in production and sales.

This increase in consumer demand can temporarily boost the local economies through hiring of additional temporary employees or longer work hours for the existing employed work force. The Project will not result in operation impacts to the commercial sector. Construction and operation impacts to the industrial sector are not anticipated.

Housing

It is expected that most non-local Project workers will use temporary housing, such as rental units, hotels, motels, campgrounds, and recreational vehicle parks. In the South Dakota counties that the pipeline corridor crosses, there are approximately 2,500 available rental units, 4,700 motel rooms, and 1,900 campground/recreational vehicle spaces. These accommodations are all within approximately 10 to 40 miles of the pipeline corridor. During the construction months between February and August 2016, it is estimated that up to approximately 1,448 pipeline construction personnel will be in South Dakota. It is anticipated that most of the temporary workers will seek housing in the more populated, service-oriented towns located within a reasonable commuting distance to the work site.

Dakota Access seeks to recruit local candidates to fill permanent positions to operate and maintain the project. This is often accomplished by advertising in local papers and attending area job fairs to attract employees. Using local personnel is part of our commitment to being a good neighbor along the project and in the area. It is anticipated that 12 permanent employees will be hired in South Dakota. Due to the low number of anticipated permanent employees, long-term impacts to housing will be negligible.

Land Values

The Project will be constructed in predominantly rural, agricultural areas. Property values are not usually affected by the installation or presence of a pipeline in rural areas. Dakota Access will acquire pipeline ROW easements from landowners and will provide landowners with monetary compensation for the conveyance of easements. Construction activities will create short-term impacts to land and property, including drainage tiles, irrigation systems, and fences. Any damage to land or property as a result of Project

construction will be corrected by Dakota Access, through direct repair of damages, and/or compensation to the landowner.

Few land use restrictions will be put into place for the duration of the pipeline's operation. These are largely limited to restrictions on the placement of dwellings or other structures on the permanent pipeline ROW for the duration of the ROW easement. The 50-foot-wide operational ROW will be maintained in an open condition for the life of the pipeline facilities.

Labor Market

Approximately 724 construction personnel (Dakota Access employees, contractor employees, construction inspection staff, and environmental inspection staff) are anticipated to be associated with each construction spread. The current construction plan involves two large construction spreads in 2016 in South Dakota, for a total of 1,448 construction personnel. Project construction will result in more than 7,100 additional job-years of employment with an approximate $303 million increase in labor income. The pipeline will be constructed utilizing organized labor from local union halls whose geographic jurisdictions include South Dakota for the United Association, Teamsters, Operators, and Laborers. Each of these labor unions has requirements for joining their unions and also provides training and apprenticeship programs for new members.

Dakota Access expects that its construction contractors will hire temporary construction personnel from the local communities where possible. It is estimated that up to 50 percent of the total construction work force could be hired locally, with the remaining portion consisting of non-local personnel. The number of construction workers that will be hired locally will vary by contractor and by the availability of residents who are specifically trained and available for pipeline construction employment.

Once the pipeline has been built, the yearly operations and maintenance spending will add 12 permanent jobs with $2 million in labor income. The total number of permanent employees will not result in significant additions to the total work force of the region. The net economic effect on local communities should be positive for the duration of the construction period. Construction of the Project will result in short-term benefits to the local communities.

Health Facilities

Local healthcare facilities will provide healthcare services to Dakota Access workers during the construction and operation phases of the Project. Dakota Access' health and safety policies and procedures should limit the utilization of local health facilities during the temporary influx of non-local construction workers during Project construction. Due to the limited number of permanent employees required for operations, no effect on health services and facilities are anticipated during operation of the Project.

Energy

Temporary short-term use of power will be through existing facilities and is anticipated to be minimal.

Sewage and Water

Although there will be an influx of temporary construction workers, it is not anticipated that workers will overtax sewage and water facilities during construction. Existing (hotels, offices, etc.) and portable facilities (along the ROW) and the local communities should not see any impact on their public utilities as a result of the Project. No significant effects from operation of the Project are anticipated.

Solid Waste Management

There will be increased utilization of solid waste management facilities due to the pipeline construction offices and influx of temporary construction workers utilizing local lodging and services, and solid wastes from pipeline construction. Construction of the Project will generate non-hazardous pipeline construction wastes including human waste, trash, pipe banding and spacers, waste from coating products, welding rods, timber skids, cleared vegetation, stumps, rock and all other miscellaneous construction debris. All waste, which contains (or at any time contained) oil, grease, solvents, or other petroleum products will be segregated for handling and disposed of in accordance with federal and state regulations.

All trash will be removed from the construction ROW on a daily basis unless otherwise approved or directed by Dakota Access. Minor vegetation, rock and other natural debris will be removed from the construction ROW by the completion of clean-up. All trash and wastes will be removed from every construction area when work is completed at each location. All waste materials will be disposed at licensed waste disposal facilities.

All drill cuttings and drilling mud will be disposed at an approved location. Disposal options may include spreading over the construction ROW in an upland location approved by Dakota Access, hauling to an approved licensed landfill, or other site approved by Dakota Access and in accordance with applicable regulations. Human wastes will be handled and disposed of exclusively by means of portable self-contained toilets during all construction operations. Wastes from these units shall be collected by a licensed contractor for disposal only at licensed and approved facilities.

Due to the above reasons, significant impacts to solid waste management during construction are not anticipated. In addition, solid waste operational impacts associated with this Project are not anticipated.

Fire Protection and Law Enforcement

Law enforcement agencies in the communities adjacent to the Project should not experience a significant impact from the pipeline workers. All employees and contractors must abide by all federal, state and local laws. If any infractions occur, the employees or contractors will be subject to termination. Local law enforcement agencies should have adequate full- and part-time law enforcement officers to accommodate the additional labor personnel as a result of the Project, although the Project can result in a minor short-term increase in workloads for those agencies.

During construction, response times to highway, or construction related accidents may be prolonged given communication, dispatch, and travel time considerations. In these areas, it may be necessary for Dakota Access to provide on-site first responder services.

However, Dakota Access will work with the local law enforcement, fire departments, and emergency medical services to coordinate effective emergency response.

During operations, Dakota Access will utilize employees and contractors as emergency responders within its initial response efforts in the event of a pipeline spill. Dakota Access will be consistent with industry practice and in compliance with applicable regulations relating to spill personnel. In the unlikely event of a spill, the usual role of local emergency responders is to notify community members, direct people away from the hazard area, and address potential impacts to the community such as temporary road closings. Local emergency responders typically are trained and capable to execute the roles described above without any additional training or specialized equipment.

Dakota Access will proactively work with emergency response agencies to provide pipeline awareness education and other support. Dakota Access will implement a comprehensive public awareness program, consistent with all company pipelines in the U.S. This program will commence in advance of the Project in-service date (estimated as October 2016). The purpose of the public awareness program is to inform key members of the public of the location of Dakota Access facilities and activities to protect the public from injury, what to do if an emergency occurred, protect or minimize effects on the environment, protect Dakota Access facilities from damage by the public, and provide an opportunity for on-going public awareness.

Dakota Access' public awareness program follows National Preparedness for Response Exercise Program Guidelines developed by the U.S. Coast Guard and adopted by the Pipeline and Hazardous Materials Safety Administration (PHMSA), the Bureau of Ocean Energy Management, Regulation and Enforcement, and the EPA. Participation in this program ensures that Dakota Access meets all federal requirements mandated by Oil Pollution Act of 1990.

Recreation

South Dakota has extensive recreational opportunities including fishing, boating, hunting, hiking, camping, biking, and bird watching. The most heavily used areas will most likely occur where public access exists. Hunting is a popular activity throughout the state. The SDGFP manages numerous game species including big and small game, and waterfowl. Popular species hunted in South Dakota include whitetail deer, wild turkey (*Meleagris gallopavo*), ring-necked pheasant, bobwhite quail, and duck species such as mallard (*Anas platyrhynchos*) and lesser scaup. The Project does not cross any federal or state owned wildlife lands; however, construction of the Project may temporarily limit access to certain private areas used for recreation. Walk-in access areas are found throughout the State of South Dakota, allowing public hunting access on private lands. The program is managed by the SDGFP. Walk-in access areas available to hunters vary from year to year, as available funds and contracts with landowners vary. Construction of the Project may limit access to these walk-in areas and private lands. In addition, hunting opportunities may be interrupted within the vicinity of construction activities; however, possible access and hunting opportunity impacts will be temporary. No impacts associated with the operation of the Project are anticipated. Hunting is compatible with normal operation of the pipeline.

In addition to hunting, fishing and boating are popular recreation activities within South Dakota. The majority of the State's fishing and boating public access areas are located along big rivers and lakes (SDGFP, 2014d). No impacts or limited access to any fishing or boating areas are anticipated as result of construction or operation of the Project. In the unlikely event an impact should occur, it will be short-term and infrequent, therefore impacts to fishing and boating is not anticipated.

Transportation

Transportation routes to be utilized during construction will be established through consultation with state and local highway agencies as necessary. Those contacts will begin soon and continue through construction. Dakota Access expects to enter into road use agreements with all affected state and local highway agencies.

Dakota Access will seek to have the Commission set a road bond in accordance with SDCL 49-41B-38.

The Department of Commerce and Regulation, Division of Highway Patrol has jurisdiction over the federal and state highway system in South Dakota, and is responsible for issuing transportation-related permits to accommodate construction vehicles and traffic. Dakota Access has initiated contacts with local permitting authorities for the purpose of establishing timelines for road permit approvals.

During construction, traffic on highways and secondary roads will be increased due to the construction activities and due to the influx of construction workers. Hauling of line pipe and most construction equipment will be within state road and bridge weight limits. There will be isolated hauling of equipment that will require special permits for weight and/or width. There may be an increased temporary demand for permits for vehicle load and width limits. The primary impact will be deterioration of gravel or stone surfaced roads requiring grading and/or replenishment of the surface materials. Dakota Access expects to be responsible for repairing damage to roads and restoring them to pre-construction condition or as agreements with the affected agencies dictate.

23.2 FORECAST OF IMPACT ON TAXES

SDCL Chapters 10-13 requires that the Department of Revenue annually determine the assessed value of the pipeline for ad valorem property tax purposes. Assessed value must be determined using the cost, market, and income approaches to appraisal per SDCL Chapter 10-37-9.1.

The increased economic activity that results during construction of the pipeline will generate additional sales, use, gross receipts, and lodging taxes of approximately $36 million for state government, plus $3 million for local governments. Once the pipeline goes into operation South Dakota State and local governments will realize ongoing annual sales, use, and gross receipts of about $197,000. Also, during the first full year of operation the pipeline will generate an estimated $14 million in new property taxes for local governments.

23.3 FORECAST OF IMPACT ON AGRICULTURE

Pastureland and Rangeland

Impacts to pastureland and rangeland areas will result from temporarily clearing vegetation in the ROW. These areas are anticipated to recover in one to three growing seasons after construction is complete. Long-term or permanent impacts are not anticipated, except at aboveground facility locations that will be fenced in and removed from current use. To minimize construction impacts to pastureland and rangeland, the topsoil layer will be stripped to the maximum depth of 12 inches and segregated from the subsoil. Unless requested otherwise, topsoil will be stripped from over the pipeline trench and the adjacent subsoil storage area. Segregated topsoil will be returned following backfilling of the subsoil, ensuring preservation of topsoil within the construction area. Additional measures within the AIMP (Exhibit D) will be implemented to minimize potential impacts to agricultural areas. Dakota Access will reseed disturbed areas with seed mixtures approved by the landowner or local NRCS offices.

Rangeland may be affected during construction by restrictions on livestock movement across construction areas. Once construction is complete and the ROW has been restored, grazing and livestock movement over the permanent ROW may resume. Landowners will be compensated for the temporary loss of land use. Grazing practices should return to normal after vegetation is re-established, therefore permanent impacts are not anticipated.

Access to and work on pastureland and rangeland will be in accordance with all easement agreements and applicable permits and regulations.

Cropland

Permanent impacts on agricultural production are not anticipated since the pipeline will be buried deep enough to allow continued use of the land. Agricultural production across the permanent ROW will be allowed to resume following final clean-up of pipeline construction. Dakota Access will restore all lands equivalent to adjacent off-ROW lands and will provide compensation for crop loss, diminished productivity, and other damages to farmland. Reclamation and revegetation of croplands impacted by Project construction will be in accordance with applicable easement agreements. Land will be recontoured to pre-existing conditions as practical and disturbed structures, ditches, bridges, culverts, fences, and slopes will be restored. Measures within the AIMP (Exhibit D) will be implemented to minimize potential impacts to agricultural areas.

Access to and work on croplands will be in accordance with all applicable permits and regulations.

23.4 FORECAST OF IMPACT ON POPULATION

Construction of the Project in South Dakota is proposed to commence by February 2016, with an in-service in October 2016 and restoration activities to continue through December 2016. Approximately 1,448 construction personnel at peak construction are anticipated for the pipeline construction spreads in South Dakota. It is estimated that up to approximately 50 percent of the total construction work force could be hired locally. The Project construction period will be relatively short in any given area and most non-local

workers will not be accompanied by their families during their employment, therefore should not have impact on local population.

During construction of the Project, there is likely to be a positive impact on income with an estimated $303 million increase in labor income. Once the pipeline has been built, the yearly operations and maintenance spending will add 12 permanent jobs, approximately $2 million in labor income, and approximately $4 million in additional production and sales to the South Dakota economy.

During operations, the small number of potential permanent jobs suggests that the Project will not have long-term impact on income, occupational distribution, or cohesion of the local communities.

23.5 FORECAST OF IMPACT ON TRANSPORTATION

See Section 23.1− Forecast of Impact on Community, Transportation.

23.6 FORECAST OF IMPACT ON CULTURAL RESOURCES

Cultural resources surveys were conducted and will continue for the Project in accordance with Section 106 of the National Historic Preservation Act and the guidelines set forth by the South Dakota State Historical Society. The objective of these investigations was to identify and record the extent and temporal affiliation of archaeological resources within the respective survey areas and to assess their potential eligibility for inclusion in the National Register of Historic Places (NRHP).

In August of 2014, consultation was initiated with the South Dakota State Historic Preservation Office (SHPO), and a scope of work was submitted that detailed the Level III intensive survey plan for the Project. The scope of work included a survey plan for the Pre-construction Notification (PCN) permit areas defined by the lead Federal agency (USACE-Omaha District), provided a tiered survey approach for high and moderate probability areas as delineated through extensive background research, and the survey of any identified NRHP properties to comply with SDCL 1-19A-11.1. To provide additional information to the SHPO, GIS modeling based on environmental factors and known cultural resources was used to create a predictive model for locations of unidentified cultural resources. Survey investigations were tailored to this model where possible in conjunction with landowner access permission.

Prior to initiating fieldwork, literature reviews were conducted for the proposed project route and reroutes. The initial review was undertaken in June 2014 at the South Dakota State Archaeological Resources Center (SDSARC) and online at the Archaeological Resources Management System (ARMS). Subsequent reviews were conducted for reroutes in Minnehaha, Lincoln, and Spink counties in October and December 2014 utilizing SDSARC and ARMS.

No properties listed in the NRHP are located within a 1-mile radius of the Project centerline. The literature reviews identified 166 previous surveys, 98 archaeological sites, 260 historical structures and, six cemeteries within a 1-mile radius of the Project route. The 97 previously recorded archaeological sites consisted of 61 Native American sites, 34 Euro American sites, two sites with both Native American and Euro American components, and one site that did not have an identified component. Six of the archaeological sites and 12 of the historical structures (11 associated with one farmstead;

1 historic railroad) are located within the 400-foot-wide survey corridor. Three of these resources (39SP2003, 39MH2003, and 39LN2013) are eligible for inclusion in the NRHP, but are not located within the proposed Project footprint. One site, previously unassessed, was surveyed and determined to be eligible, but impacts will be avoided via an HDD of an adjacent large waterbody. The remaining sites are outside the project footprint. The Project workspace will also traverse the grade bed for the historic Great Northern Railroad in Spink County. This historic linear resource was recommended as eligible for the NRHP.

Archaeological investigations were conducted from August through November 2014. Fieldwork consisted of pedestrian reconnaissance, shovel test excavation and test unit excavation. The artifacts collected during this survey were washed, analyzed, and catalogued.

The ROW for the proposed Project traverses approximately 272.3 miles in South Dakota. Cultural resource surveys have concentrated on the PCN permit areas and high and medium probability areas. Approximately 157.9 miles (58 percent) of the survey corridor and a pump station have been surveyed for cultural resources. The remaining 114.4 miles of the Project could not be surveyed due to ongoing landowner negotiations as well as the close of the 2014 fall/winter field season. Additional cultural resource surveys for the remaining unsurveyed tracts, reroutes, access roads and ancillary facilities will be forthcoming provided access is available during the 2015 field season. The surveys will follow the same strategy outlined in this summary.

As of November 2014, a total of 38 cultural resources consisting of 36 archaeological sites and two historical structures were documented within the Project footprint. Of these, thirteen sites have been preliminarily determined to be not eligible for inclusion in the NRHP. These sites consist of artifact scatters, isolated finds, or historic sites that do not possess adequate data or integrity to meet NRHP criteria. Seventeen sites currently have an undetermined NRHP eligibility status pending the completion of additional archival research and artifact analysis. Should the additional analysis determine that these unassessed sites meet the criteria for inclusion in the NRHP, then avoidance measures will be implemented on a case-by-case basis in consultation with the SHPO. The remaining eight sites consisting of one newly recorded prehistoric stone circle, one revisited prehistoric campsite (29LN0021), five historic railroads/railroad beds, and one circa 1940s Works Progress Administration (WPA) bridge have been recommended as eligible for inclusion in the NRHP. Reroutes have been evaluated to avoid impacts for the newly recorded prehistoric stone circle in Beadle County. Additionally, site 29LN0021 will be avoided by HDD and the NRHP-eligible WPA bridge will be avoided by boring under the public roadway.

In South Dakota, all railroads are considered eligible for inclusion in the NRHP under Criterion A for their broad contribution to the development of the history of South Dakota. The rails and ties have been removed from each of the sites documented. Upon consultation with the SHPO via email dated September 24, 2014, it was determined that a construction trench could be excavated across the bed, but the bed must be reconstructed at the conclusion of construction. Photographic documentation and a brief context for each of these sites was determined to be an appropriate mitigation measure for the portion

of the railroad beds impacted by the project. Dakota Access will comply with the excavation and restoration of these beds; therefore the impact would be negligible.

Reports detailing the results of the comprehensive field investigations will be prepared in accordance with the SHPO Guidelines, including all relevant archaeological site, architectural resource, cemetery, and historic property inventory forms. Background and context overviews; results of the archaeological, and architectural; and recommendations for additional investigations to determine NHRP eligibility and/or avoidance measures will be included. Should potentially eligible or eligible resources not be avoided, a work plan will be submitted for SHPO comment and approval prior to testing or mitigation measures. An Unanticipated Discovery Plan will also be submitted for SHPO approval.

The Project does not cross any federal or state-owned parks, recreation areas, or wildlife management areas within South Dakota. An analysis of natural or scenic areas within the Project corridor included designated scenic outlooks, viewing areas, recreational trail areas, preserves, and byways. No designated natural or scenic areas were identified along the route; therefore impacts to any designated natural or scenic areas are not anticipated from Project construction and operation (Federal Highway Administration, 2014; National Park Service, 2010, 2014a, 2014b; USFWS, 2014).

23.7 REDUCING NEGATIVE IMPACTS ON THE COMMUNITY

The U.S. has the world's largest petroleum pipelines network. Pipelines are the safest, most reliable, and efficient mode of transporting large volumes of crude oil. Pipeline transportation of crude oil involves some risk to the public despite its excellent safety record. The risks include the potential for fire and exposure from the ingestion or inhalation of crude oil or its constituents.

Compliance with federal regulations, the location of valves, spill containment measures, and the FRP will minimize adverse effects to public safety and to the environment. PHMSA promulgates and enforces federal pipeline safety standards for hazardous liquids pipelines at 49 CFR Parts 194 and 195. These regulations are intended to ensure public protection and to prevent accidents and failures. 49 CFR Part 195 specifically addresses petroleum pipeline safety issues and specifies material selection, qualification, minimum design requirements; and protection from internal, external, and atmospheric corrosion. As noted, PHMSA administers the national regulatory program to ensure safe transportation of crude oil and other hazardous materials by pipelines. PHMSA develops safety regulations and risk management approaches to encompass safety in pipeline design, construction, testing, operation, maintenance, and pipeline facilities emergency response.

Dakota Access has asked for no waivers from PHMSA for the construction and operation of the pipeline. Dakota Access will meet or exceed all federal laws and regulations.

PHMSA prescribes pipeline design and operational requirements that limit the risk of accidental crude oil releases from pipelines. Over the operational life of the proposed pipeline, there will be a very low likelihood of a crude oil release (leak or spill) from the pipeline that could enter surface water resources and drinking water supplies. A Project-specific FRP to PHMSA for approval and will be submitted prior to operation.

Third-party excavation damage and corrosion are the major causes of pipeline releases. Specific preventative measures with respect to both of these issues will be implemented to include:

- High strength steel;
- Cathodic protection;
- Leak detection;
- Installation of signage;
- Public awareness and damage prevention programs;
- Participation in South Dakota One Call Program; and
- Aerial inspections

To mitigate risk from external corrosion, the pipe will be coated with fusion bonded epoxy (FBE). For HDD or thrust-boring operations, an additional topcoat of plant-applied abrasion resistant overcoat will be applied to protect the primary FBE coating from damage.

In addition to these coatings, measures will be implemented to reduce corrosion potential, including an impressed cathodic protection system, tariff specifications that limit sediment and water content. Further, the entire pipeline and all appurtenances will be protected from corrosion by an impressed current cathodic protection system. The pipeline and aboveground facilities, including the pump station as a single unit, will be secured through electrical interconnect and cathodic protection. The criteria for cathodic protection that will be used for this pipeline will correspond with the requirements of 49 CFR Part 195 Subpart H and National Association of Corrosion Engineers Recommended Practice 0169.

Valves aid in minimizing the amount of material that could be released into the environment in the unlikely event of a spill. Isolation valves will be controlled remotely. The placement of valves also involved consideration of the following factors:

- Leak detection and pipeline shutdown capabilities;
- Physical properties of crude oil transported;
- Potential spill volumes and rates of release;
- Elevation profile and runoff potential;
- Proximity to power sources;
- Environmental fate and transport of a spill; and
- Proximity and transport routes to sensitive resources, particularly HCAs.

In the event that a leak is confirmed through verification, pump station shutdown will be initiated within a predetermined amount of time to effectuate. Next, the remotely controlled isolation valves, which are operable from the Central Control Room (CCR), will be closed. The valves have a closure time of no greater than three minutes. The location of valves, spill containment measures, and the FRP will minimize adverse effects to public safety and to the environment.

Federal regulations specify conventions for assessing, evaluating, repairing, and validating the integrity of hazardous liquid pipeline segments that could affect HCAs. As defined by 49 CFR Section 195.450, HCAs are high population areas (urbanized area that contains 50,000 or more people and that has a density of at least 1,000 people per square mile), other populated areas (a place that contains a concentrated population), unusually sensitive areas as defined by 49 CFR Section 195.6 (ecologically sensitive and public drinking water resources), and commercially navigable waterways. Segments of the pipeline that have the potential to affect HCAs are subject to a higher level of operational regulations.

Response plans and strategies cannot be put in place until further in the construction process and after permitting is concluded, due to the calculations required based on the as built project. In all cases those plans and strategies will be consistent with the requirements of 49 CFR Parts 194 and 195, and with state law on the topic. Response plans and strategies for identified HCAs will be developed using GIS technology to determine and model the movement and fate of potential oil spills. The movement and fate model will generate the predicted geographic extent of potential oil spills and will be used to facilitate the development of spill response plans and strategies in advance of pipeline operations.

Response strategies will be identified in the FRP and will be selected based on site-specific conditions and circumstances. For example, pre-planning for a crude oil spill reaching a specific waterbody will include the following information:

- Boat access locations will be pre-selected at strategically accessible points along the stream or water surface from the potential point of entry of the oil spill plume to the maximum estimated downstream travel distance. Similarly, equipment access locations are pre-selected to ensure resources are available to meet these requirements.
- Downstream at-risk resources are identified based upon the potential point of entry of the oil spill plume and the estimated downstream travel distance. Once this analysis has been completed, site-specific plans and objectives with respect to booming and other counter measures are determined.
- Boom deployment locations, priorities and objectives are established based on access, the extent of the resource, the identification of at-risk resources, and other site-specific considerations, including the efficacy of various boom deployment techniques (e.g., diversion, collection, and cascading).

The above information will be incorporated into the Oil Spill Response Plan (OSRP). The OSRP will be similar in content to the ERP, but will contain Project-specific information. The Project-specific OSRP cannot be finalized until the Project route has been finalized through the USACE and state-permitting processes. The Project's FRP will be completed and filed with PHMSA prior to commencing line fill operations. Coordination with state and local officials to ensure coordination with local and state offices of disaster services as the Plan is further developed.

The specific locations of emergency responders will be determined upon conclusion of the pipeline detailed design and the completion of the FRP. Emergency responders will be consistent with industry practice and in compliance with the applicable regulations,

including 49 CFR Parts 194 and 195. Response time to transfer additional resources to a potential leak site will follow an escalating or tier system.

Consistent with industry practice and in compliance with the applicable regulations, including 49 CFR Parts 194 and 195, the types and amount of emergency response equipment based on worst-case discharge volumes that will be pre-position for access will be determined upon conclusion of the pipeline detailed design and the completion of the FRP (Oil Spill Response Plan), but prior to commencing line fill. This plan will be completed in the first quarter of 2016 and submitted to the USDOT PHMSA prior to commencing operations.

Emergency procedures will require CCR operators to shut down the pipeline immediately if abnormal conditions or a leak alarm cannot be positively ruled out as a leak. In the event of a pressure loss, CCR operators will not attempt to re-establish line pressure without having first verified the cause of the loss in conjunction with the field person(s) responsible (i.e., the "Qualified Individual" under 49 CFR Section 194.5). Accordingly, line pressure will only be re-established after appropriate inspection, field verification and receipt of approval to proceed with pipeline pressurization from the Qualified Individual.

Additional procedures then require the notification of field, technical and management personnel. These personnel will assume responsibility and control of the incident, in conjunction with the Qualified Individual, as well as provide further direction with respect to additional investigations and the resumption of pipeline operations. Response organization will follow the industry accepted Incident Command System and will typically consist of personnel both on site and within an established remote or local Emergency Support Center (ESC).

Response efforts are first directed to preventing or limiting any further contamination, once any concerns with respect to health and safety of the responders have been addressed. This is typically accomplished primarily with containment booms and berms. The Incident Commander assumes responsibility for requesting additional resources in terms of personnel, equipment and materials and selecting the appropriate locations for construction of berms and deployment of booms as well as communicating any additional resource requirements to the ESC Manager.

For land-based spills, containment strategies will include confining the affected site to as small an area as possible; preventing any spilled product from migrating; preventing any spilled product from reaching waterways or waterbodies; and blocking any culverts, manholes, or other possible means for further product migration. With the approval of authorities having jurisdiction, activities such as digging ditches and building berms (e.g., earth, snow, ice, or sorbent materials) will be undertaken on the down slope of the spill site for containment purposes. In some cases it may be possible to use a combination of ditches and berms to divert the overland flow of spilled product to a collection point.

To contain the spilled product within a waterway, efforts are typically directed toward the deployment of containment booms or weirs as close as practical and safe downstream of the of the spill location. With the approval of the authorities having jurisdiction, the Incident Commander assumes responsibility for selecting a suitable location for the

deployment of containment booms, based upon the waterway site-specific conditions to ensure the effectiveness of the containment booms.

Containment strategies in waterbodies include confining the spill as close as possible to the spill source; containing the spill prior to it becoming wider and more difficult to effectively contain; preventing the spilled material from reaching rivers, streams and other water bodies; and protecting sensitive areas in the direction of spill movement.

Crude oil is typically recovered from the surface of water and transferred to containment facilities by a combination of mechanical skimming, vacuum recovery and sorbent materials. While typical methods for the recovery and transfer to containment facilities for crude oil spilled on land include vacuum recovery and sorbent materials.

The cleaning of shorelines and other affected natural or manmade structures is typically performed by traditional methods including, wiping, hot water, and low or high pressure wash down and the use of surfactants and emulsifiers or other agents. Water and other liquids used for wash down purposes for onshore applications are typically contained and collected using a combination of ditches and berms as described above. All site-specific cleaning methods and materials to be utilized are subject to the approval of the authorities having jurisdiction.

Oil laden soils are typically either removed or treated with bioremediation in the event intrusive cleanup techniques are not appropriate. These and other methods of clean up including natural recovery, burning, dispersants, and other chemical usage can be considered in accordance with and at the discretion of the authorities having jurisdiction.

Site restoration activities including the sampling and analysis of the remaining soils and water depend upon site-specific conditions and are coordinated with the various federal, state, and local authorities having jurisdiction.

Pipeline operators are required to develop a written IMP that must include methods to measure the program's effectiveness in assessing and evaluating integrity and protecting HCAs. An IMP will be developed for the entire pipeline including the HCAs.

Dakota Access is required to implement an IMP in accordance with 49 CFR Parts 194 and 195. The overall objective of the IMP is to establish and maintain acceptable levels of integrity and having regard to the environment, public and employee safety, regulatory requirements, delivery reliability, and life cycle cost.

The IMP uses advanced in-line inspection and mitigation technologies applied with a comprehensive risk-based methodology. This, in turn initiates appropriate inspection and mitigation activities, while the results from the inspections for known or suspect pipeline integrity issues are used to develop specific integrity maintenance activities.

The maintenance management process provides the integrated framework for developing annual maintenance, scheduling, execution, and plant integrity plans. A critical feedback loop ensures that results and findings from the execution of maintenance tasks, inspections, and repairs are captured and serve as a trigger for reviewing, revising, and enhancing the IMP and annual maintenance plans.

49 CFR Part 195 also requires pipeline operators to develop and implement public awareness programs consistent with the API's Recommended Practice 1162, Public

Awareness Programs for Pipeline Operators. The purpose of Recommended Practice 1162 is to enhance pipeline safety and security by increasing the public understanding of the role of pipelines in transporting energy, informing the public how to recognize and respond to a pipeline emergency, and notifying the public of whom to contact in an emergency. Recommended Practice 1162 contains provisions for enhancing liaison with emergency responders and public officials.

24.0 (20:10:22:24) EMPLOYMENT ESTIMATES

See Section 23.1 − Forecast of Impact on Community, Labor Market.

25.0 (20:10:22:25) FUTURE ADDITIONS AND MODIFICATIONS

Future additions and modifications are not currently anticipated.

26.0 (20:10:22:26) NATURE OF PROPOSED ENERGY CONVERSION FACILITY

Not applicable to this Project.

27.0 (20:10:22:27) PRODUCTS TO BE PRODUCED

Not applicable to this Project.

28.0 (20:10:22:28) FUEL TYPE USED

Not applicable to this Project.

29.0 (20:10:22:29) PROPOSED PRIMARY AND SECONDARY FUEL SOURCES AND TRANSPORTATION

Not applicable to this Project.

30.0 (20:10:22:30) ALTERNATE ENERGY SOURCES

Not applicable to this Project.

31.0 (20:10:22:31) SOLID OR RADIOACTIVE WASTE

Not applicable to this Project.

32.0 (20:10:22:32) ESTIMATE OF EXPECTED EFFICIENCY

Not applicable to this Project.

33.0 (20:10:22:33) DECOMMISSIONING

Sections 20:10:22:33.01 and 20:10:22:33.02 are not applicable to this Project application. However, if/when decommissioning is necessary it will be done pursuant to applicable federal and state laws at the time of decommissioning.

34.0 (20:10:22:34) TRANSMISSION FACILITY LAYOUT AND CONSTRUCTION

Not applicable to this Project.

35.0 (20:10:22:35) INFORMATION CONCERNING TRANSMISSION FACILITIES

Not applicable to this Project.

36.0 (20:10:22:36) ADDITIONAL INFORMATION IN APPLICATION

Exhibits A, B, C, and D contain Project information referenced throughout this application.

37.0 (20:10:22:37) STATEMENT REQUIRED DESCRIBING GAS OR LIQUID TRANSMISSION LINE STANDARDS OF CONSTRUCTION

The Project is being designed according to USDOT regulations at 49 CFR Part 195, Transportation of Hazardous Liquids by Pipeline; the final design and implementation will meet or exceed all applicable standards.

38.0 (20:10:22:38) GAS OR LIQUID LINE DESCRIPTION

The following section includes information and design specifics of the pipeline.

Pipeline Facilities

The portion of the pipeline in South Dakota is represented from MP 210.1 to MP 481.7. The Project generally will not be co-located with other utility corridor routes in South Dakota due to the lack of existing corridors traversing South Dakota in a northwest to southeast direction.

The pipeline will be constructed of high-strength steel pipe API 5L. The entire pipeline will have a design factor of 0.72. The pipeline will have a nominal 30-inch diameter. Pipe material grade will be X-70 and comply with API 5L-PSL2. Pipe wall thickness will be 0.429 inch (X-70) or 0.625 inch (X-70). To protect against corrosion, Dakota Access will apply an external FBE coating to the pipeline and an impressed cathodic protection system will be used. All material will be manufactured, constructed, and operated in accordance with applicable regulations.

Launcher/Receivers

All pipeline segments will allow the passage of internal inspection devices, which are capable of detecting internal and external anomalies in the pipe such as corrosion, dents, and scratches. Internal inspection of pipelines has been largely responsible for reducing pipeline incident frequencies over the past decade. Pig L/Rs are designed to launch and receive these internal inspection devices. All pig L/Rs and MLVs will be above-ground fabricated settings which will have a design factor of 0.5 and a pipe wall thickness of 0.625 inch (X-70). The L/Rs will be located along the Project as identified in Exhibits A2, A3, and A4.

Pump Station

One pump station is proposed in South Dakota in Spink County (location provided in Project maps provided in Exhibit A4). The pump station site will be acquired in fee from the landowner. The station is approximately nine acres and located on the pipeline route. It will be designed and constructed to meet the requirements of the National Electric Code and API 500. Each station will be fenced and contain three pumps driven by electric

motors, an electrical and controls building, electrical substation, a surge tank, a communications tower, and parking area for station personnel.

Electricity will be used for all pumps, lights, and heating in the buildings; the electricity required will be purchased from local power providers. The station will be fully automated for unmanned operation. Remote start/stop, set point controls, unit monitoring equipment, and station information will be installed at each location. The pipe entering and exiting the pump station will be located below grade; however, some of the piping within the fenced in pump station will be above-ground.

Backup power at the pump stations will consist of batteries to maintain communications between the pump station and the pipeline control center and to provide lighting and power for minor facility procedures if the local utility power supply is disrupted.

The primary communication system is cellular phone, with a self-supporting radio and antenna mast. The secondary communication system is VSAT (Hughes), with a self-supporting satellite dish / mast. Each communication system will relay data from all remotely operated sites to a Central Control Center as part of the pipeline Supervisory Control And Data Acquisition system. At pump stations, L/R, and MLV sites, both a mast to receive signals from the cellular phone and a satellite dish to communicate with the pipeline Central Control Center will be installed.

38.1 DESIGN CAPACITY

A process flow diagram for the South Dakota segment of the Project can be found within Exhibit B.

38.2 CHANGES IN FLOW

The Project is construction of new pipeline; therefore this section is not applicable to this permit application.

38.3 TECHNICAL SPECIFICATIONS

The design of the pipeline system is based on a maximum 1,340 pounds per square inch gauge (psig) discharge pressure at the pump station with some sections exposed to slightly higher pressures due to the combined discharge pressure and hydrostatic head for pipe segments located at elevations lower than relative pump stations. The result is that the maximum operating pressure of the entire pipeline is 1,440 psig to allow a consistent maximum discharge pressure from the Project pump station, optimized for efficiency at nominal flow capacity.

38.4 COMPRESSOR STATIONS

The Project does not include compressor stations.

38.5 STORAGE FACILITIES

The Project does not include storage facilities.

39.0 (20:10:22:39) TESTIMONY AND EXHIBITS

Dakota Access simultaneously with the filing of this application has moved the commission for an order waiving the requirement to file testimony with the application. Dakota Access expects to and will file testimony consistent with any scheduling order

which the commission enters and will provide a host of witnesses to testify at any hearing as to the contents of the application.

40.0 (20:10:22:40) APPLICATION FOR PARTY STATUS

No information requested by the rule to be included within the application.

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DAKOTA ACCESS, LLC

Exhibit A

Project Mapping

Exhibit A1

Project Vicinity Maps

Montana
North Dakota
Minnesota
Michigan
Wisconsin
Michigan
South Dakota
Wyoming
Iowa
Nebraska
Illinois
Indiana
Ohio
Utah
Colorado
Missouri
Kansas
Kentucky

Proposed Route

0 150 300 450 600
Miles

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
Project Vicinity Map
South Dakota

Page 1 of 1	Scale: 1:6,000,000
NAD 83 South Dakota South Ft	Date: Dec 05, 2014

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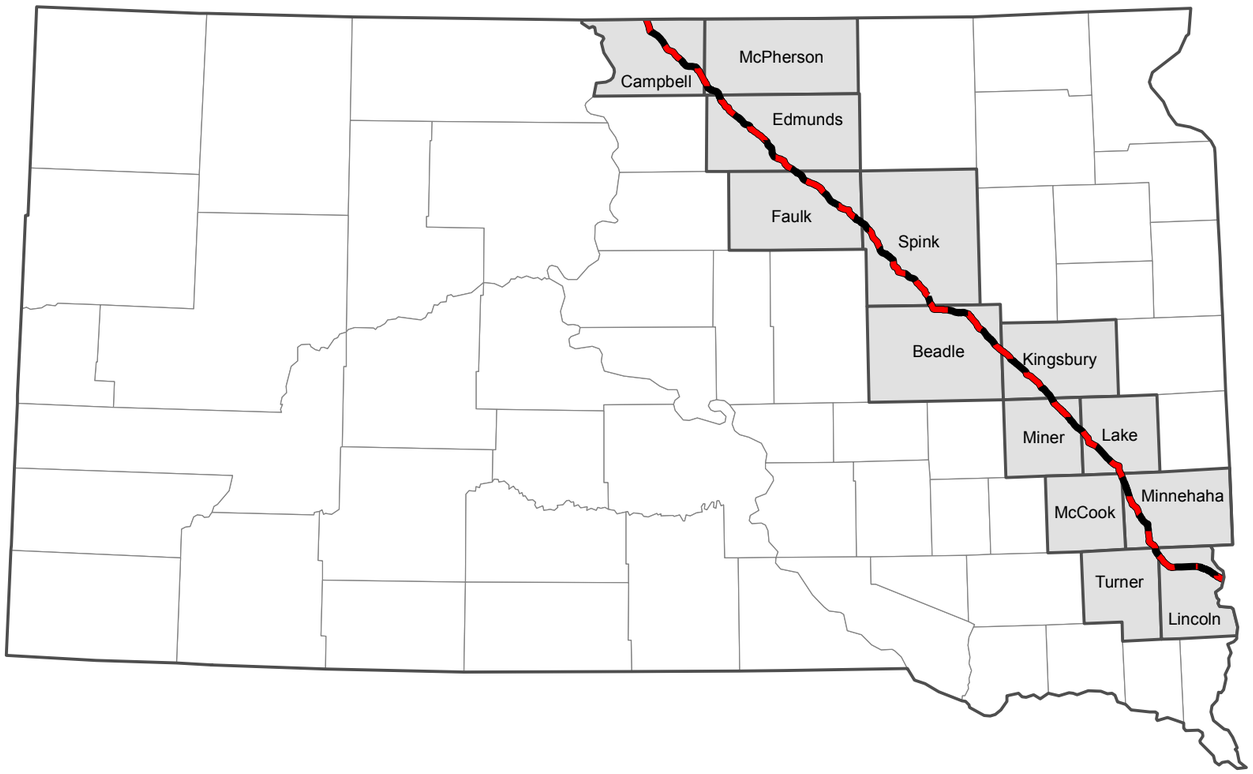

Dakota Access, LLC
Dakota Access Pipeline Projects
South Dakota Vicinity Map

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DAKOTA ACCESS, LLC

Exhibit A

Project Mapping

Exhibit A2

Topographic Maps

North Dakota

MP 210.0
MP 210.5
MP 211.0
MP 211.5
MP 212.0
MP 212.5
MP 213.0
MP 213.5
MP 214.0
MP 214.5
MP 215.0
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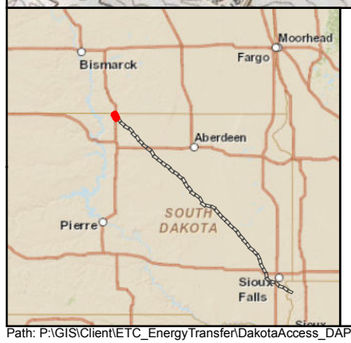

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
General Site/Topographic Map
South Dakota

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NAD 83 South Dakota South Ft	Date: Dec 05, 2014

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

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Page 2 of 49	Scale: 1:24,000
NAD 83 South Dakota South Ft	Date: Dec 05, 2014

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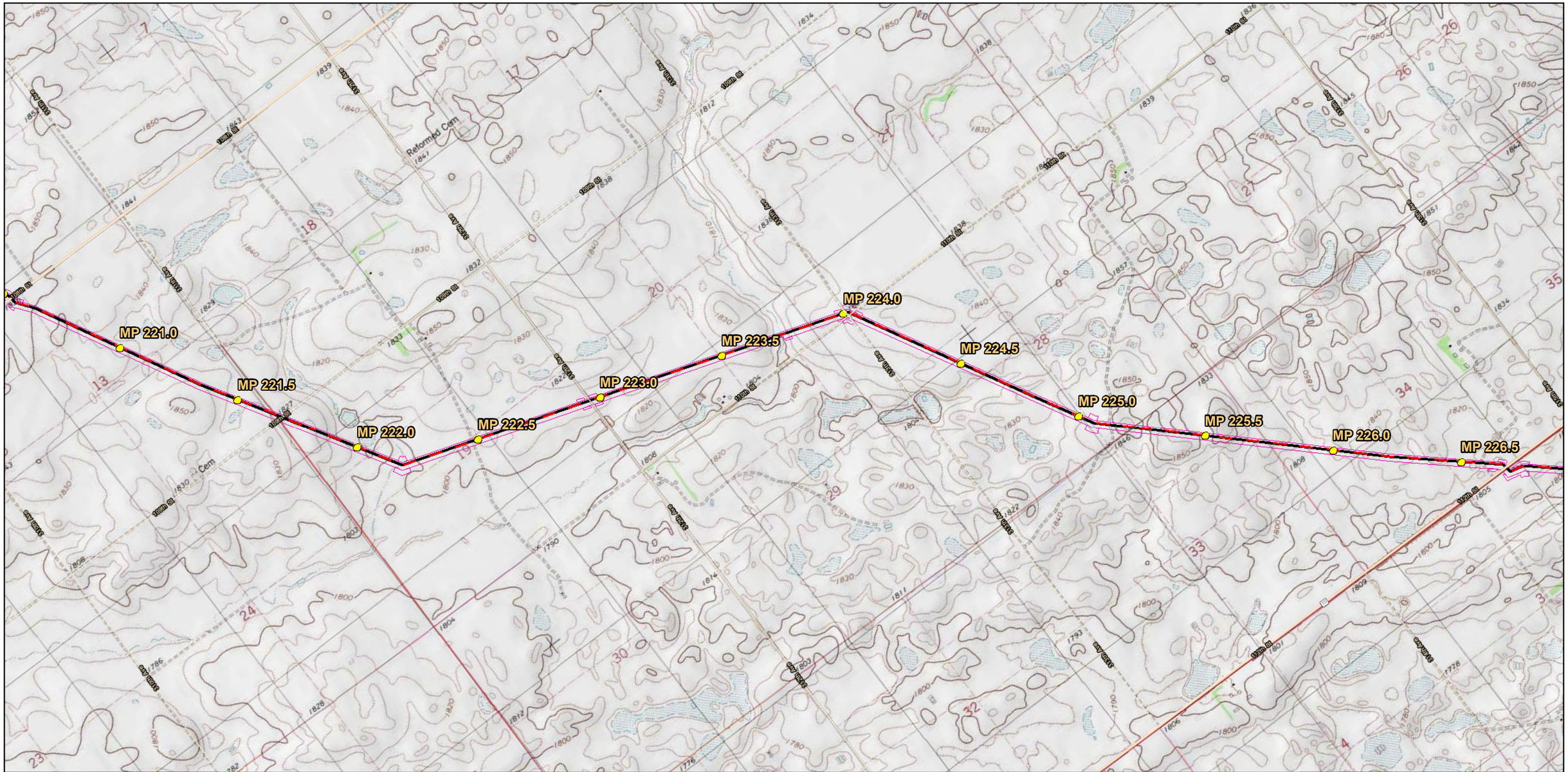

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

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Page 3 of 49	Scale: 1:24,000
NAD 83 South Dakota South Ft	Date: Dec 05, 2014

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Milepost
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Proposed Route
Spink Pump Station
Work Space

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General Site/Topographic Map
South Dakota

Page 4 of 49	Scale: 1:24,000
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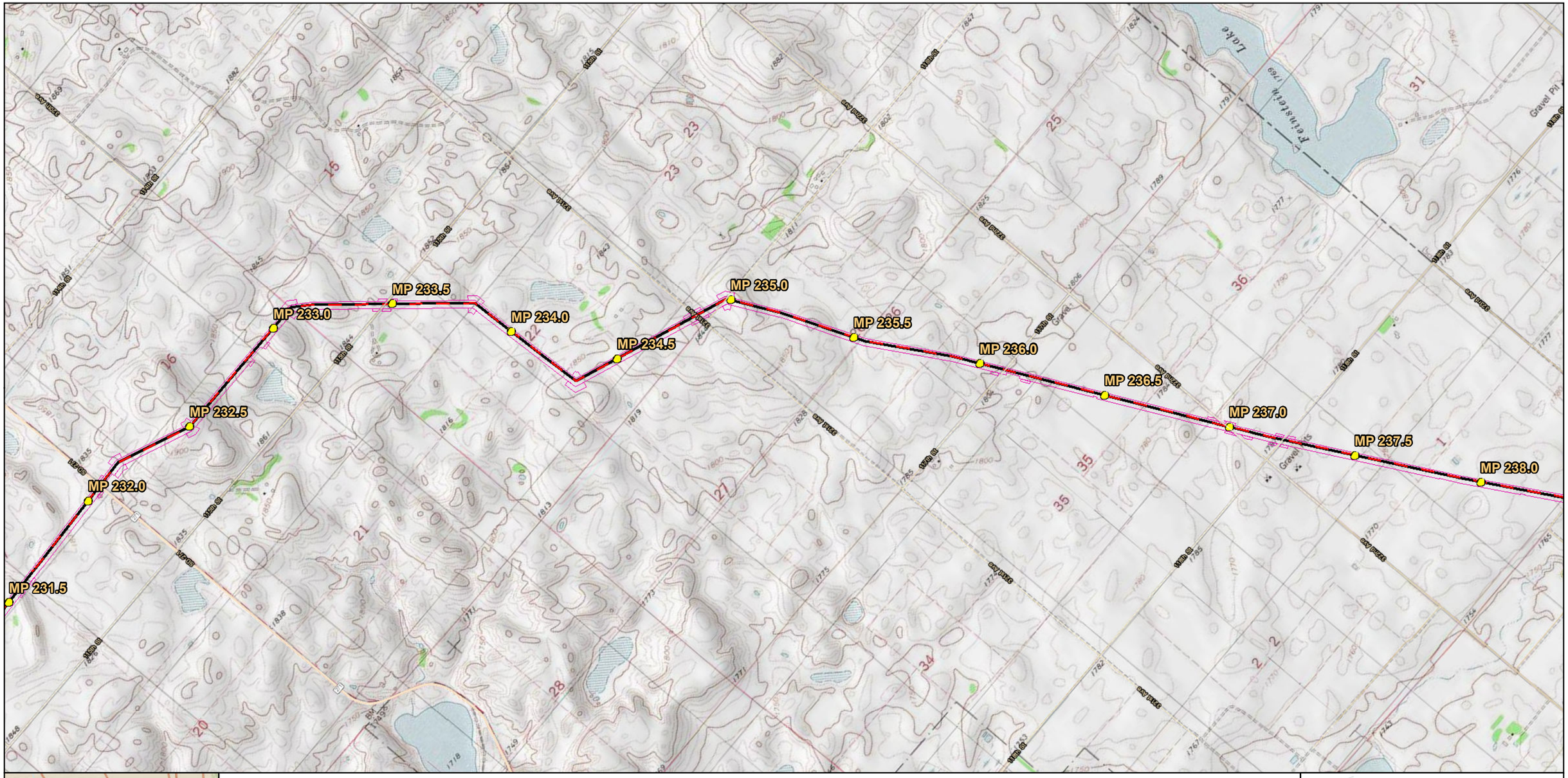
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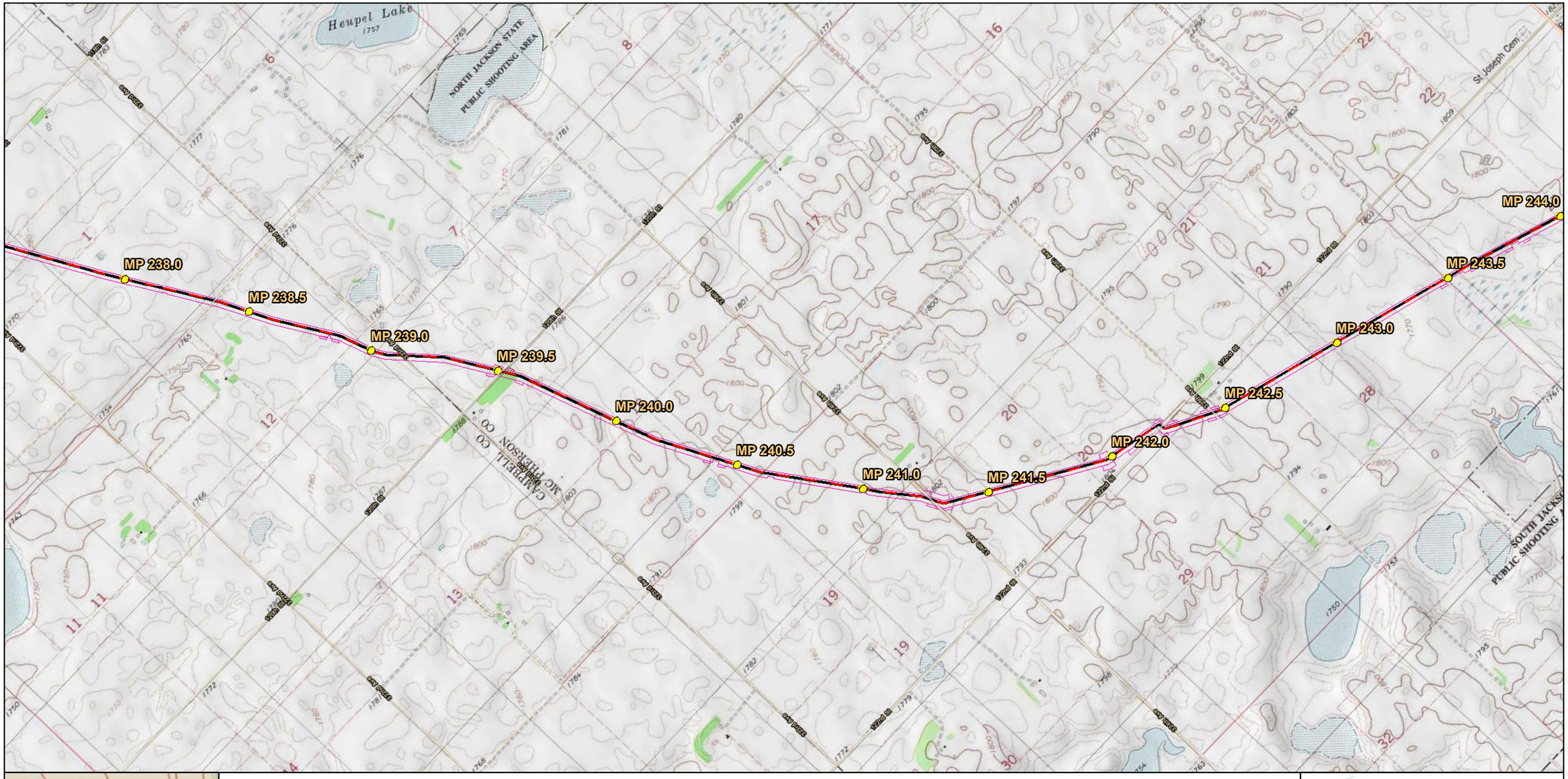

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

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DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
General Site/Topographic Map
South Dakota

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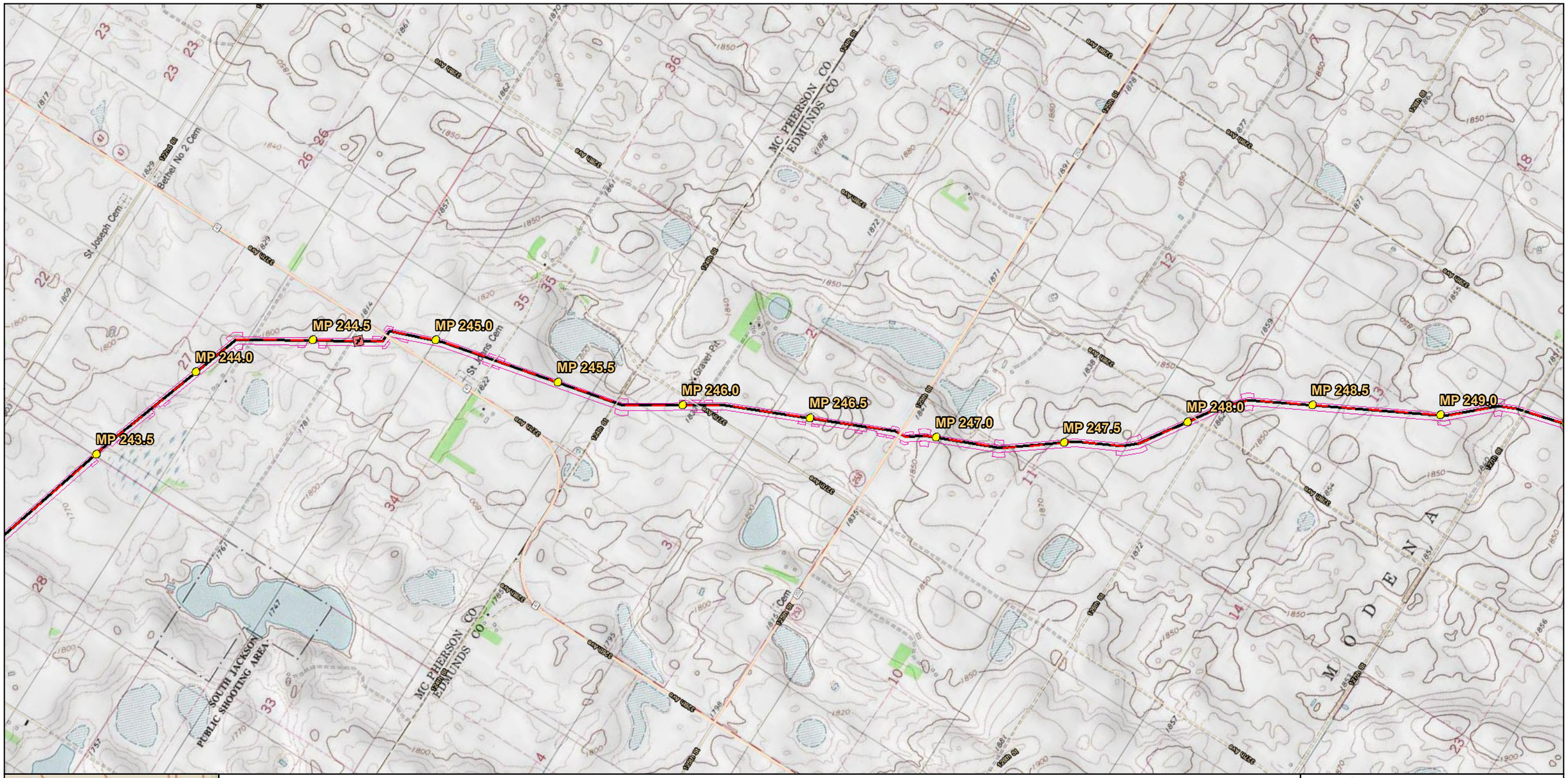

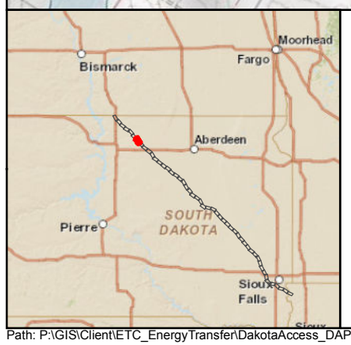

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

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Dakota Access, LLC
Dakota Access Pipeline Project
General Site/Topographic Map
South Dakota

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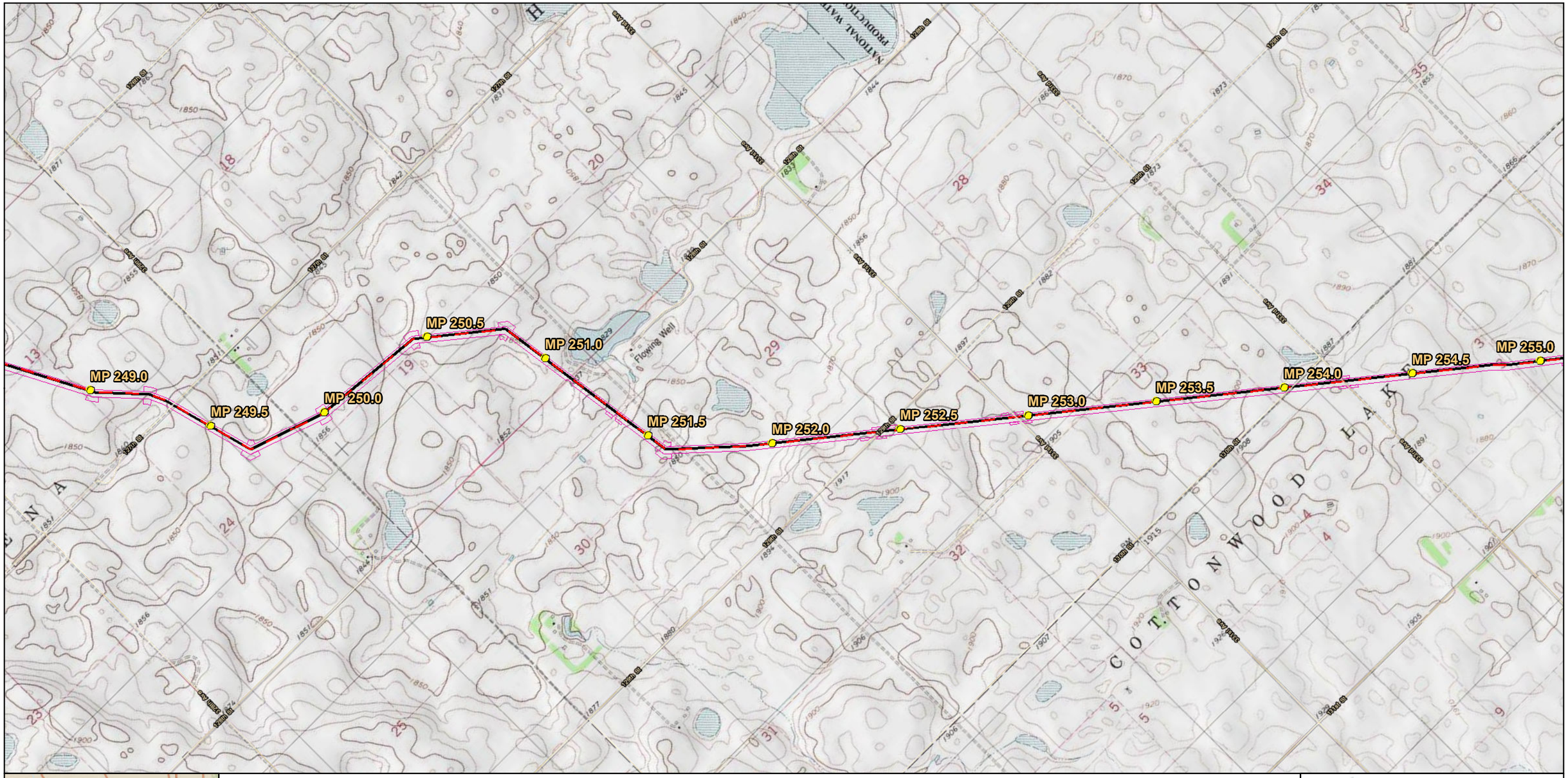

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South Dakota

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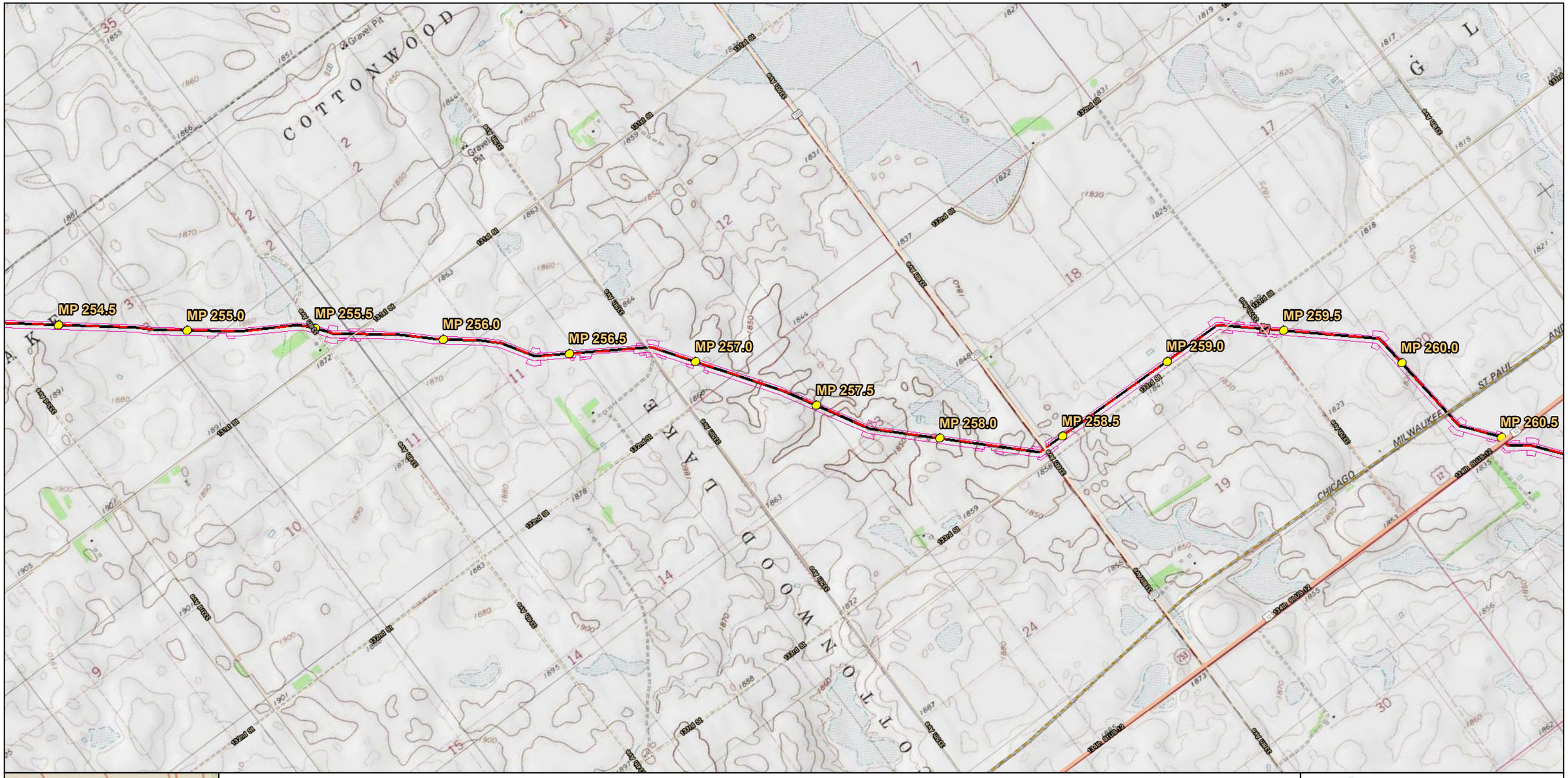

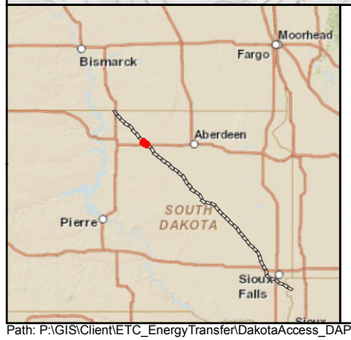

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

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Dakota Access Pipeline Project
General Site/Topographic Map
South Dakota

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Mainline Valve
Proposed Route
Spink Pump Station
Work Space

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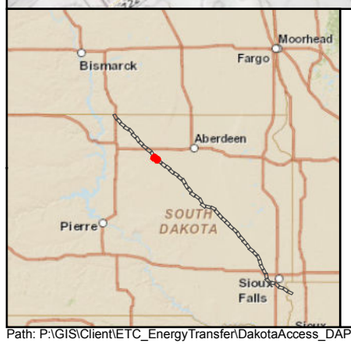

Milepost
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Mainline Valve
Proposed Route
Spink Pump Station
Work Space

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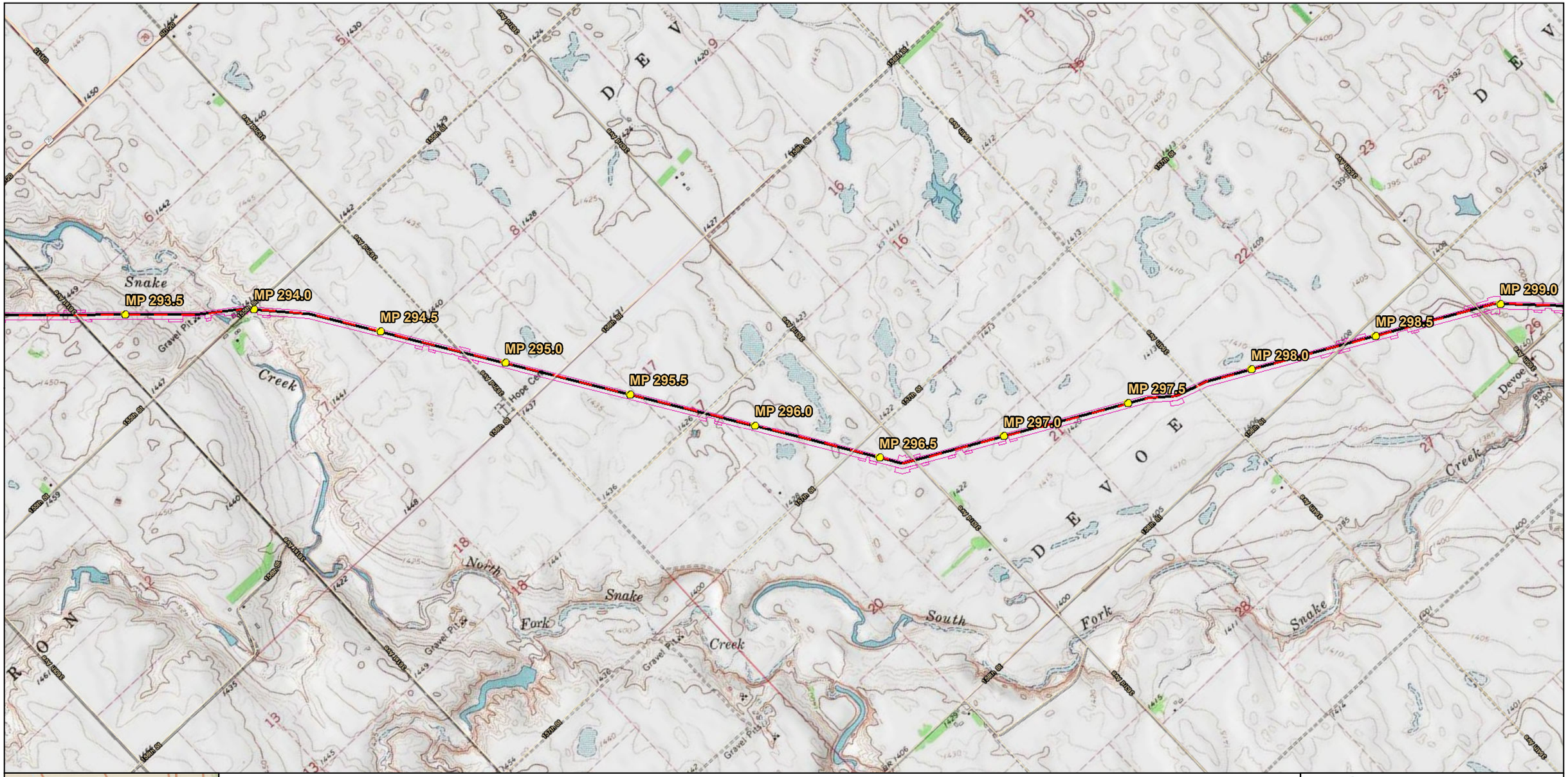
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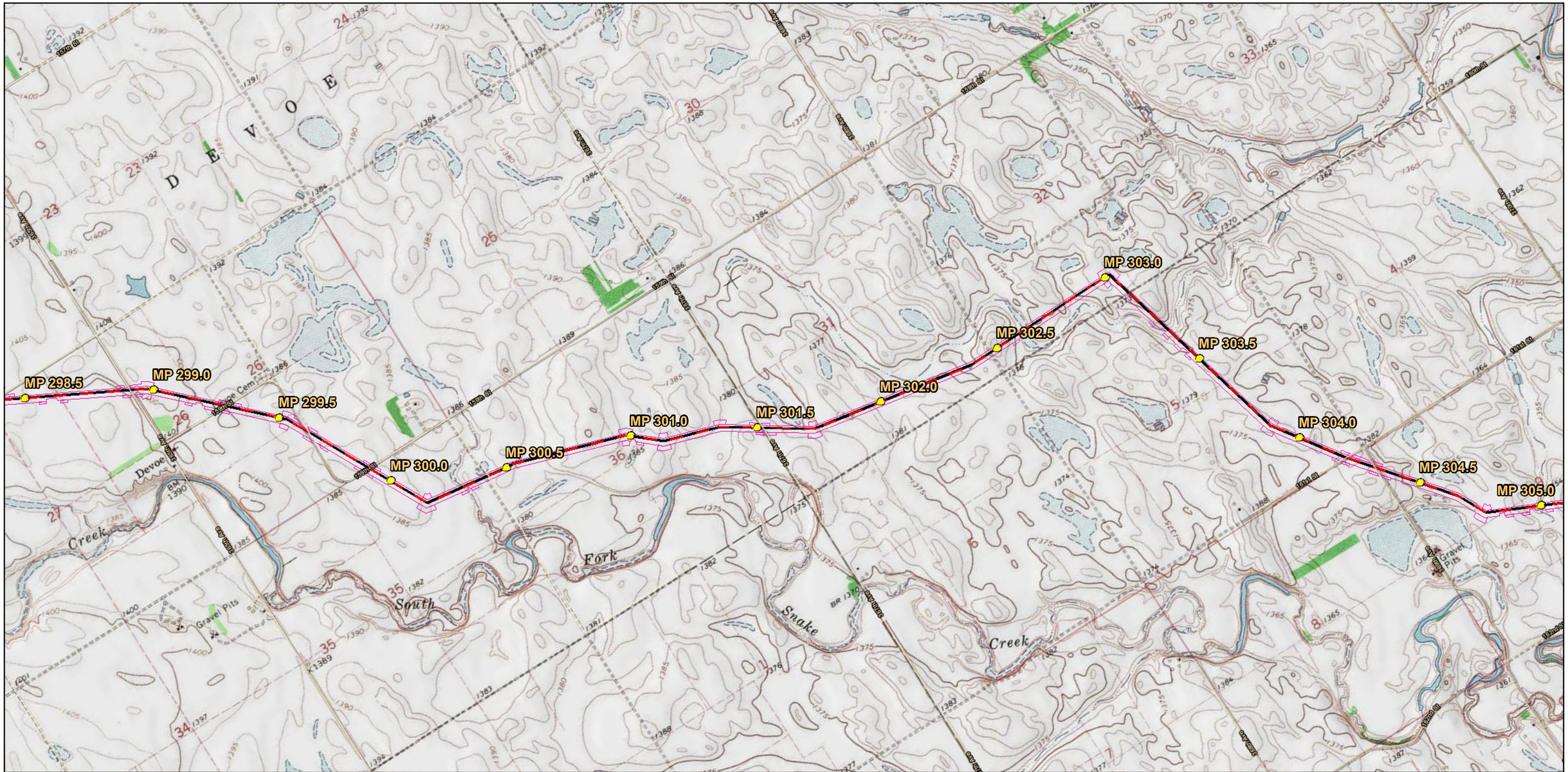

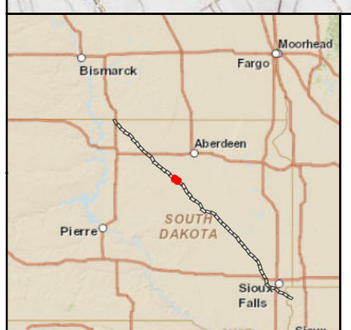

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Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
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General Site/Topographic Map
South Dakota

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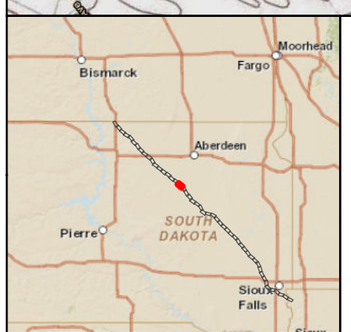

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
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South Dakota

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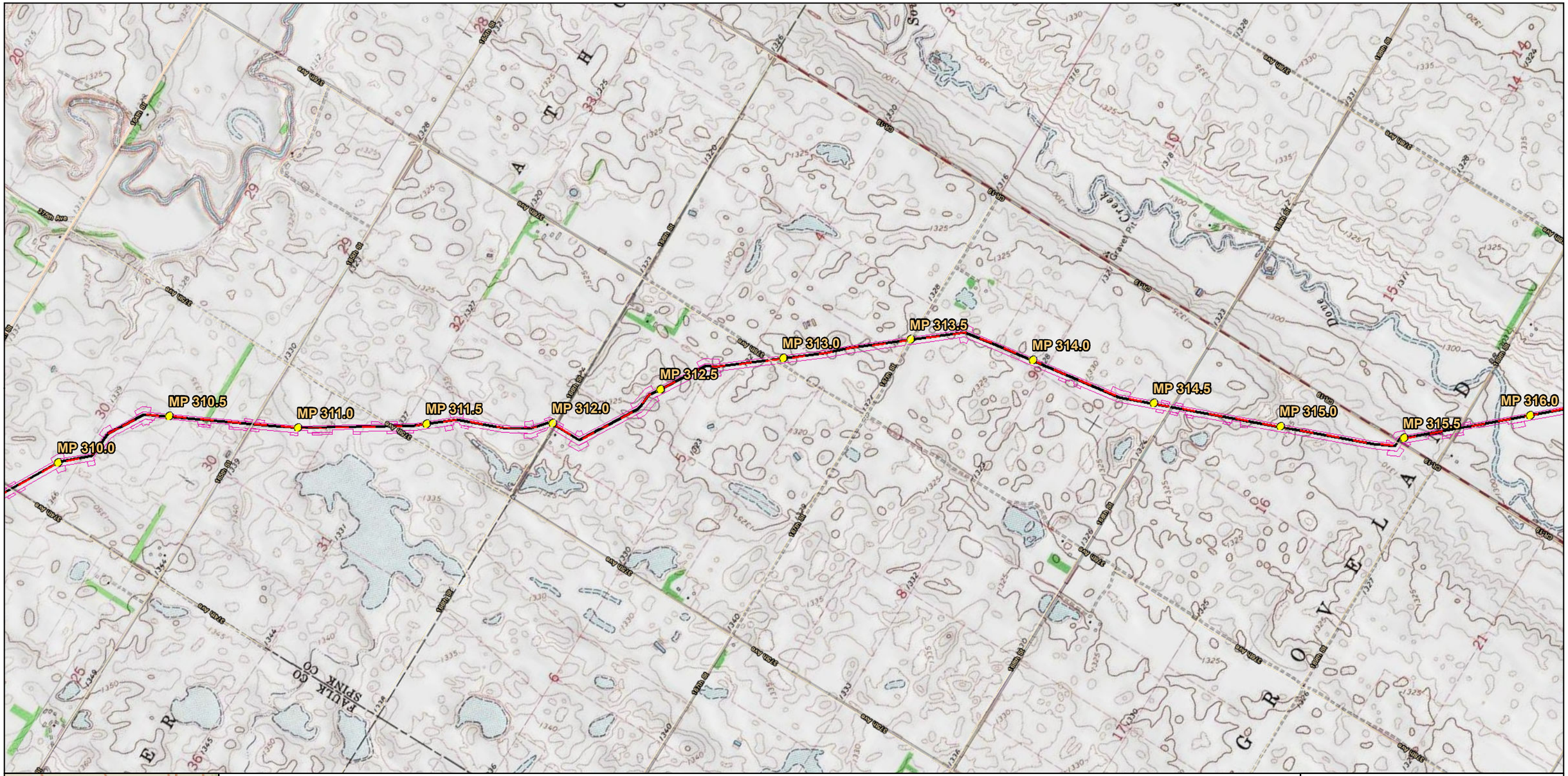

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
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South Dakota

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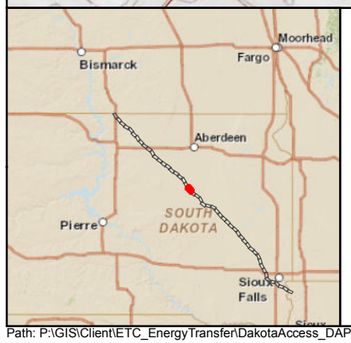
REDFIELD



Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
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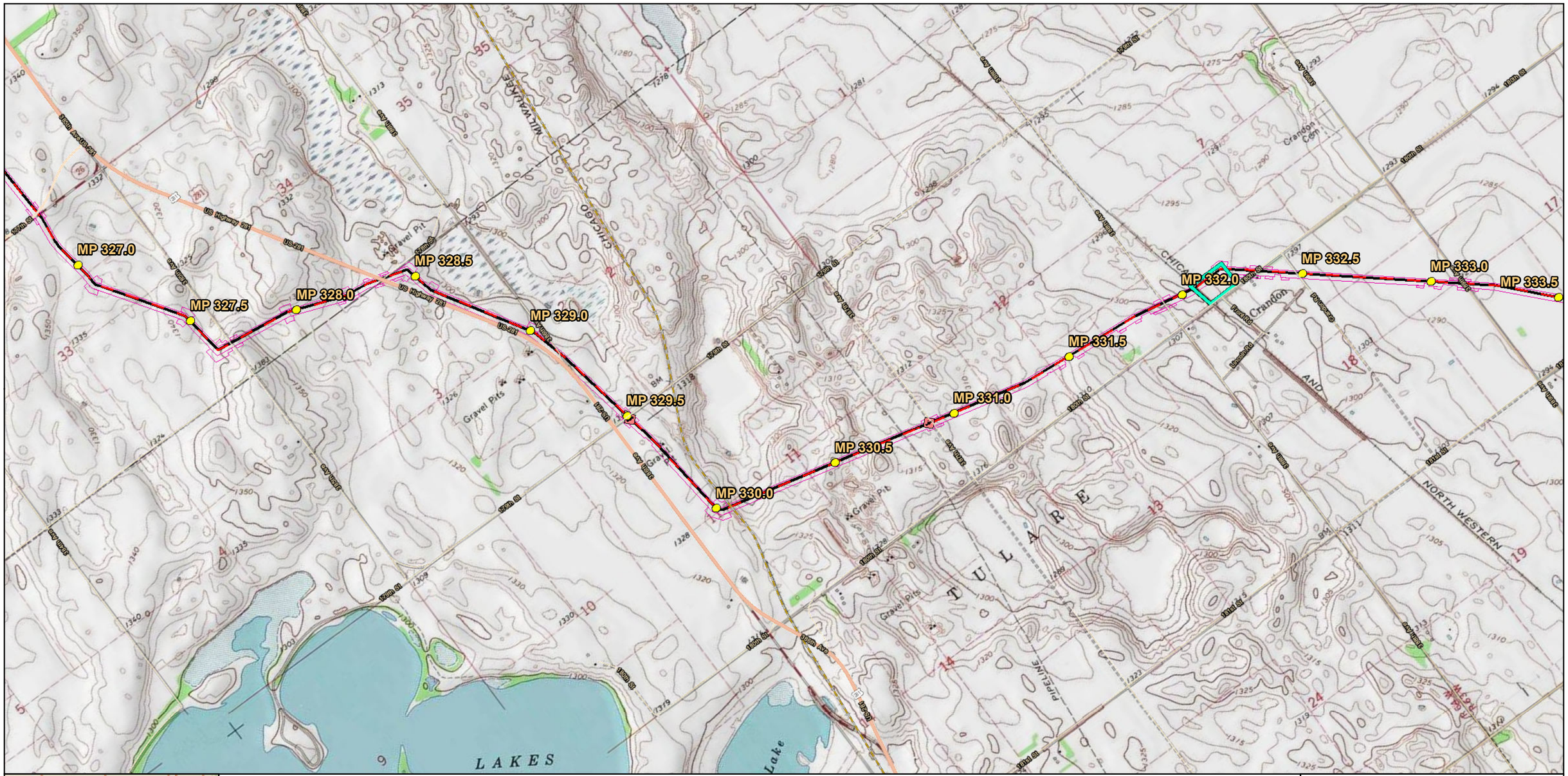

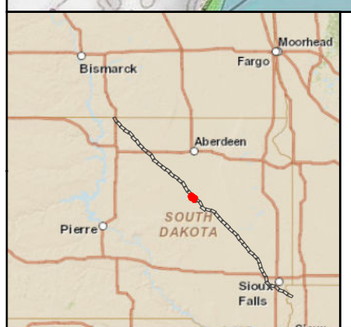

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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Dakota Access Pipeline Project
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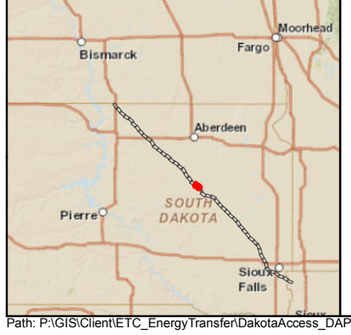

Milepost
Reroute Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Previous Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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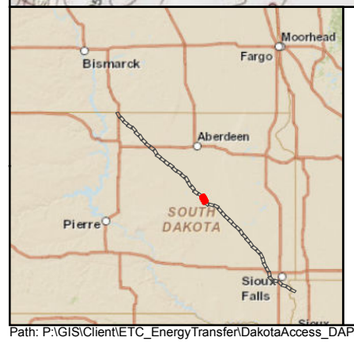

Milepost
Reroute Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Previous Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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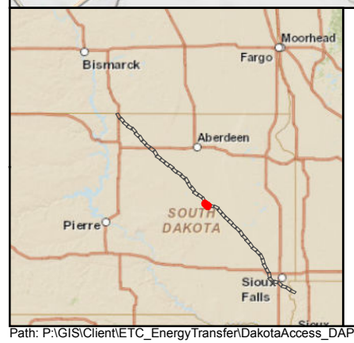

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
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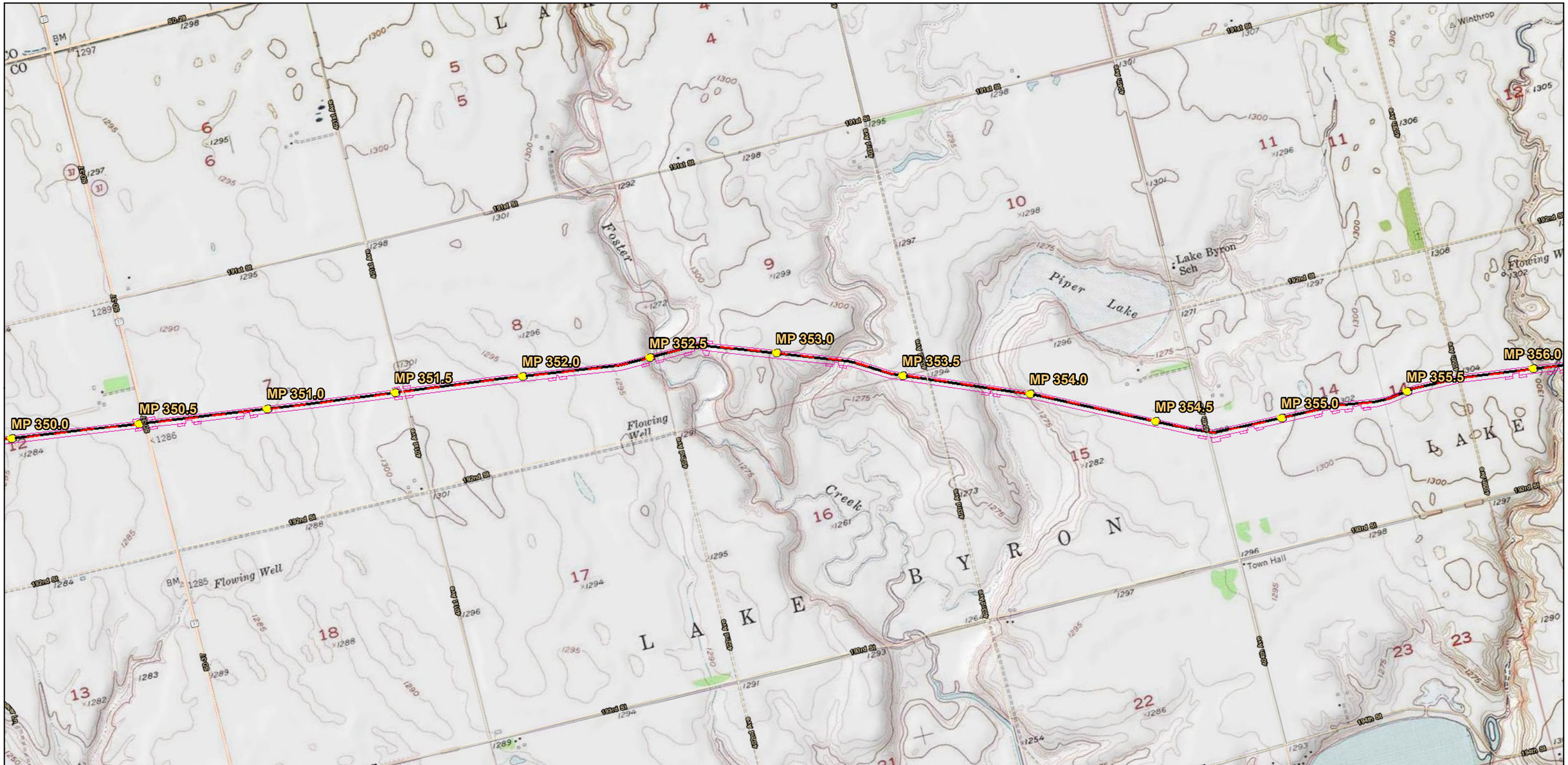

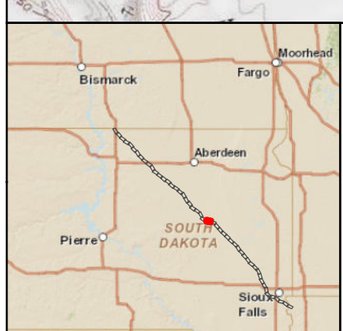

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

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DAKOTA ACCESS, LLC

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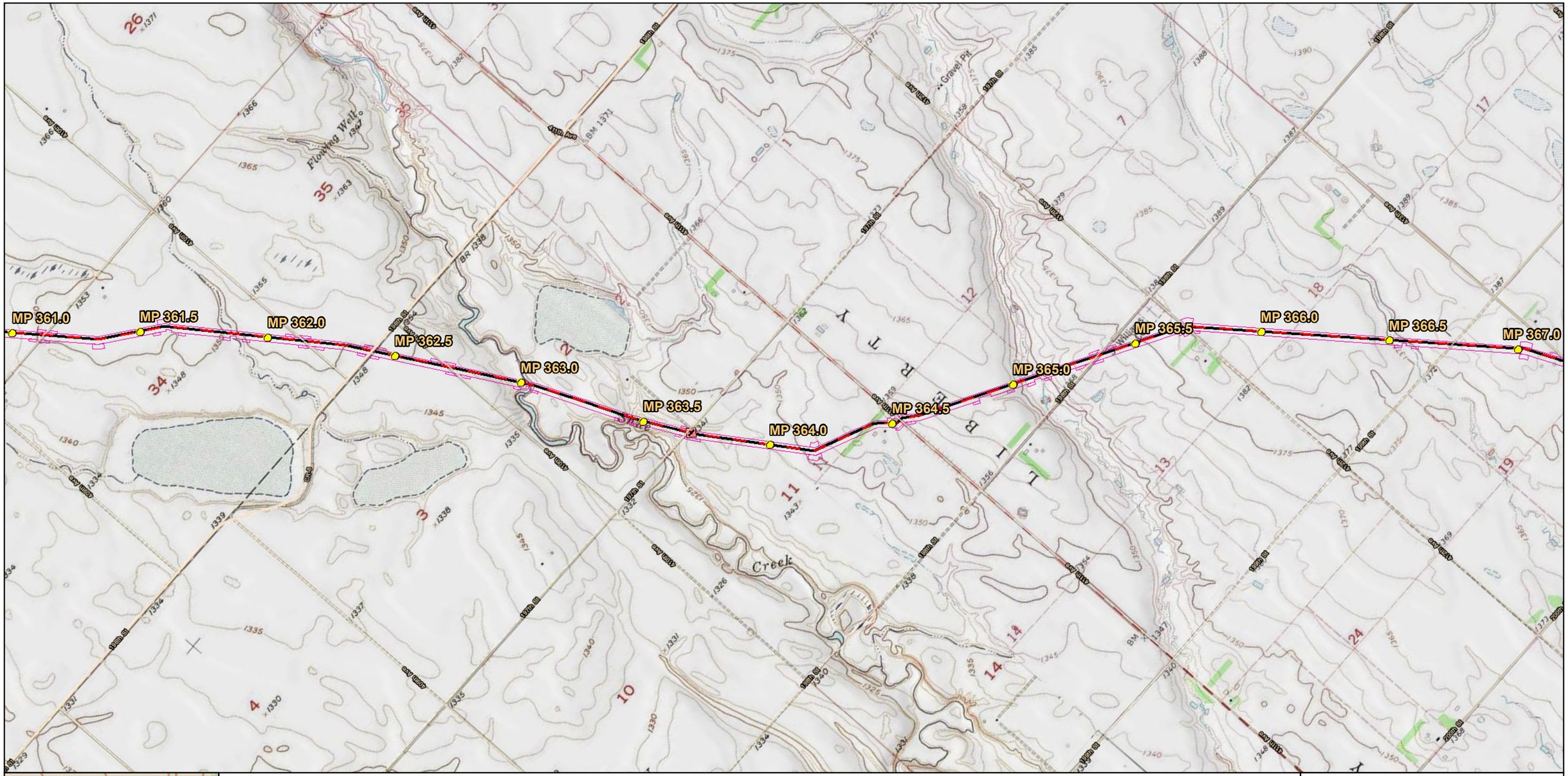

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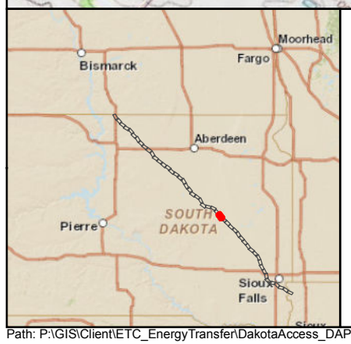

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

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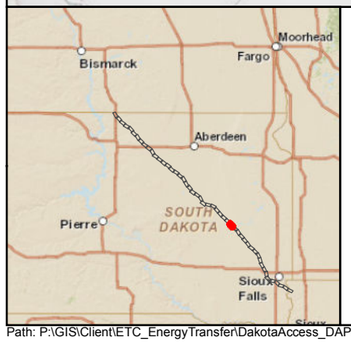

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
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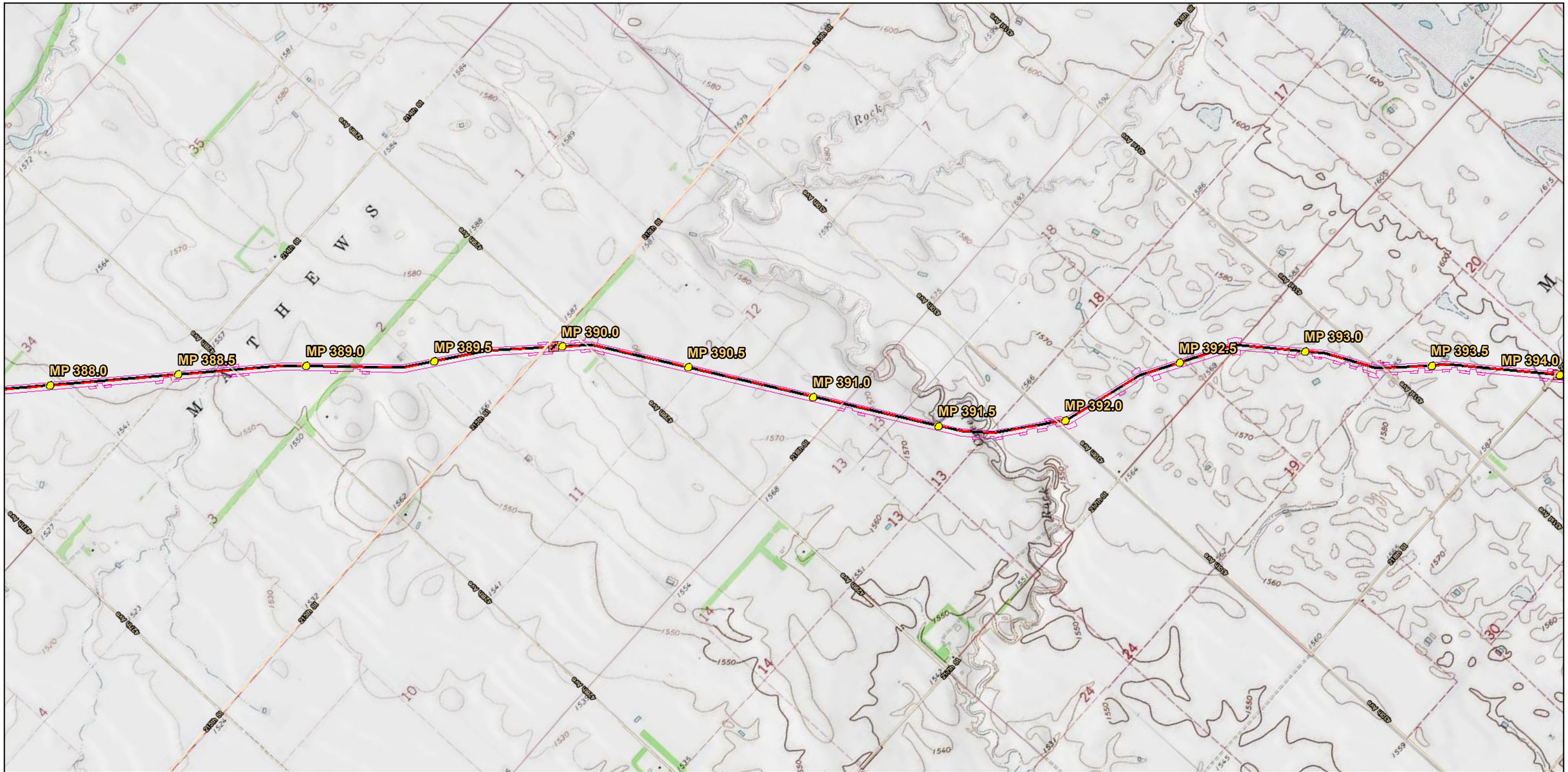

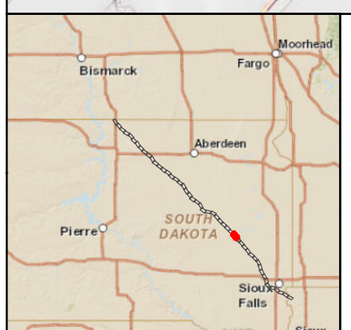

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
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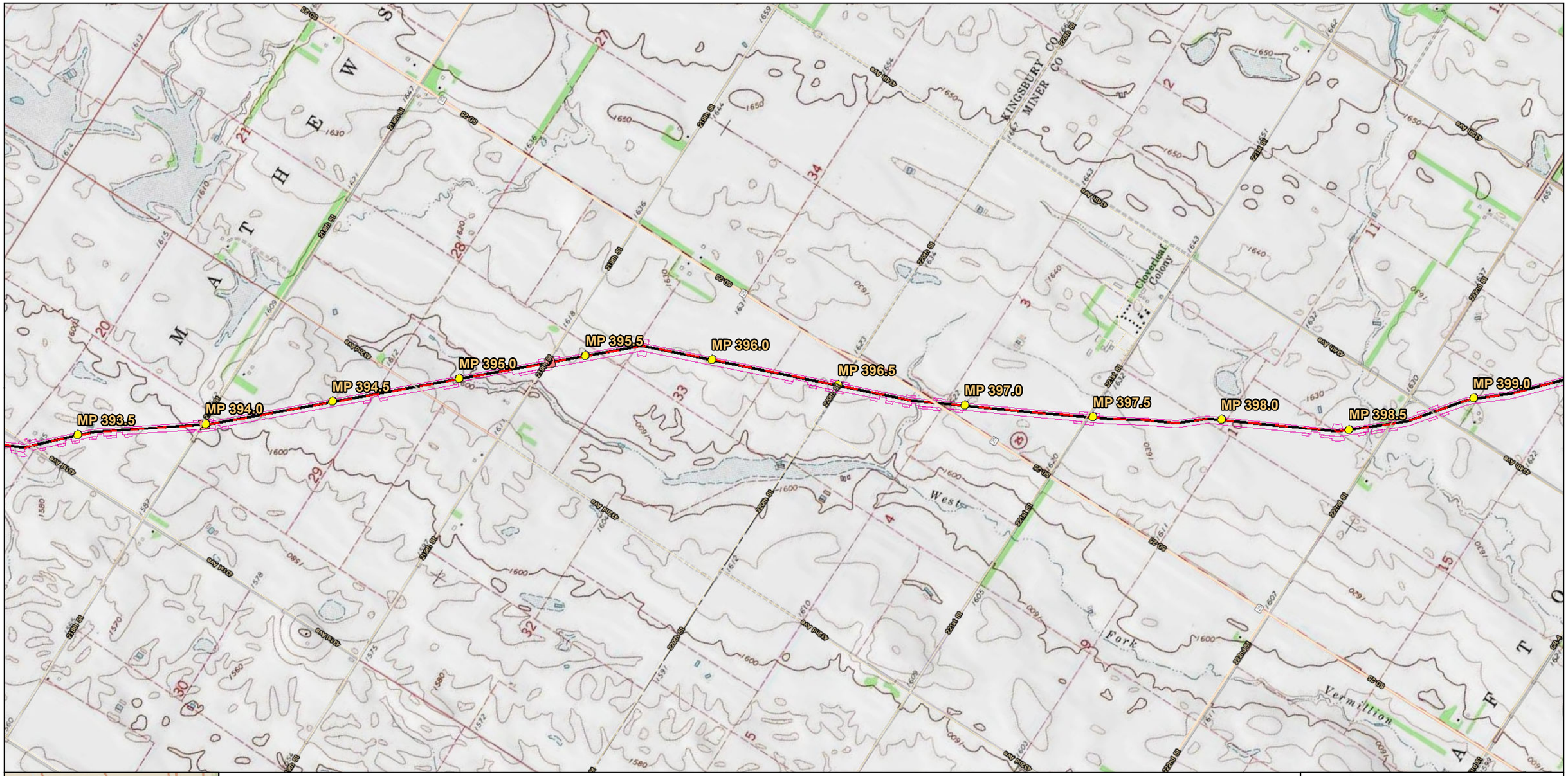

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Dakota Access, LLC
Dakota Access Pipeline Project
General Site/Topographic Map
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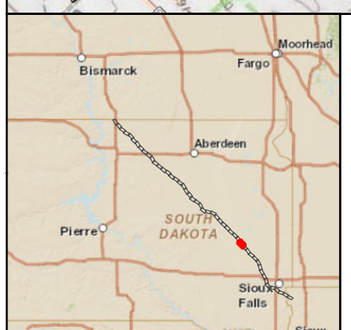

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
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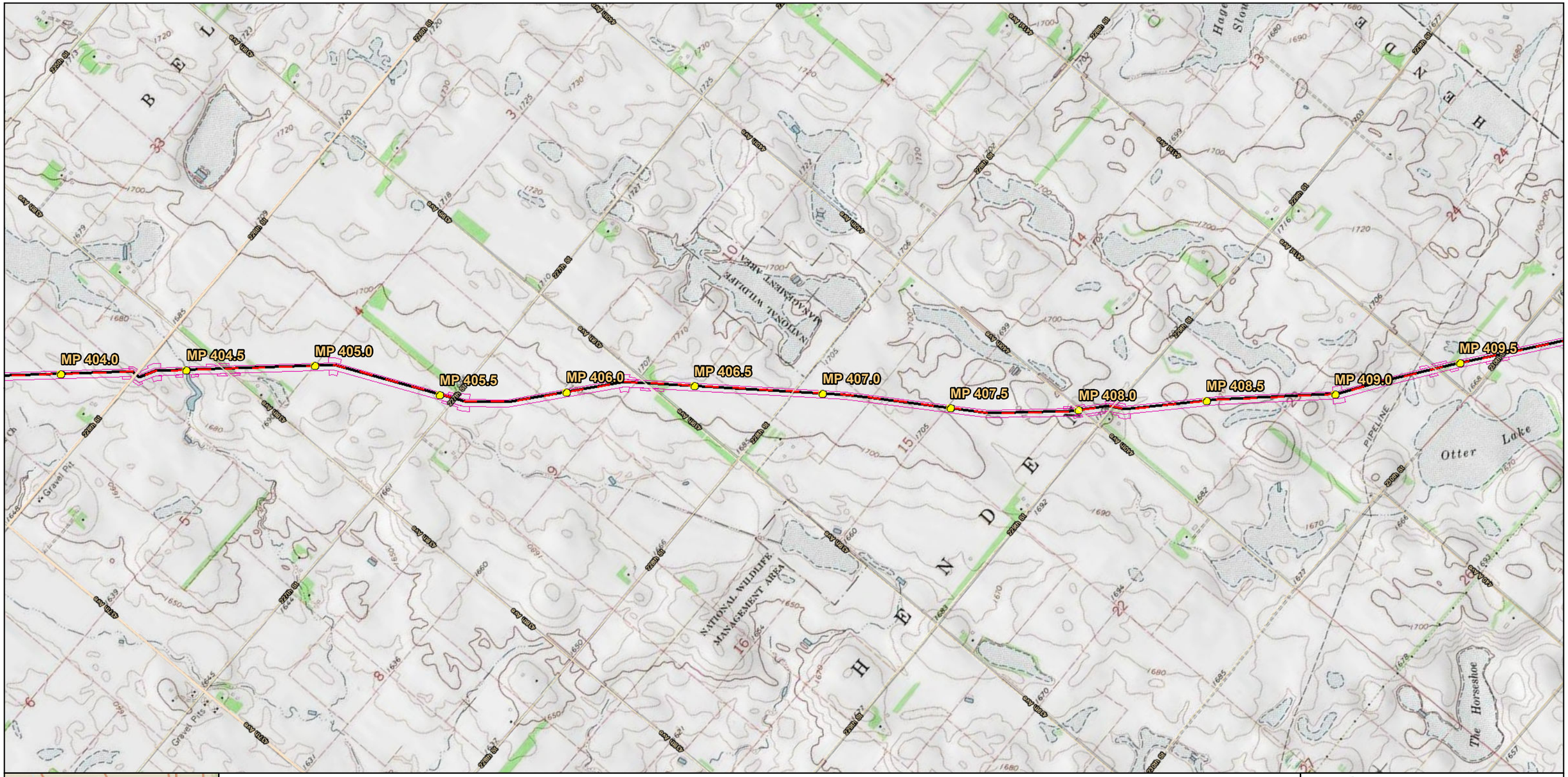

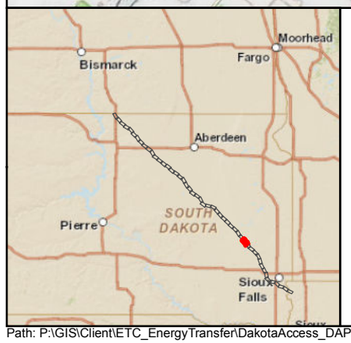

- Milepost
- Launcher/Receiver
- Mainline Valve
- Proposed Route
- Spink Pump Station
- Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
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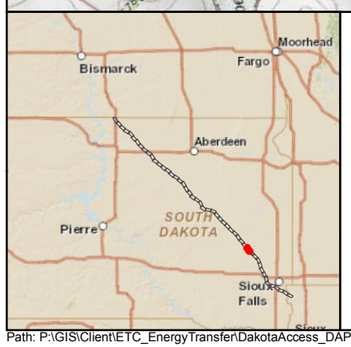

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
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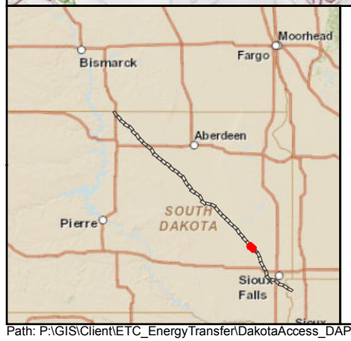

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
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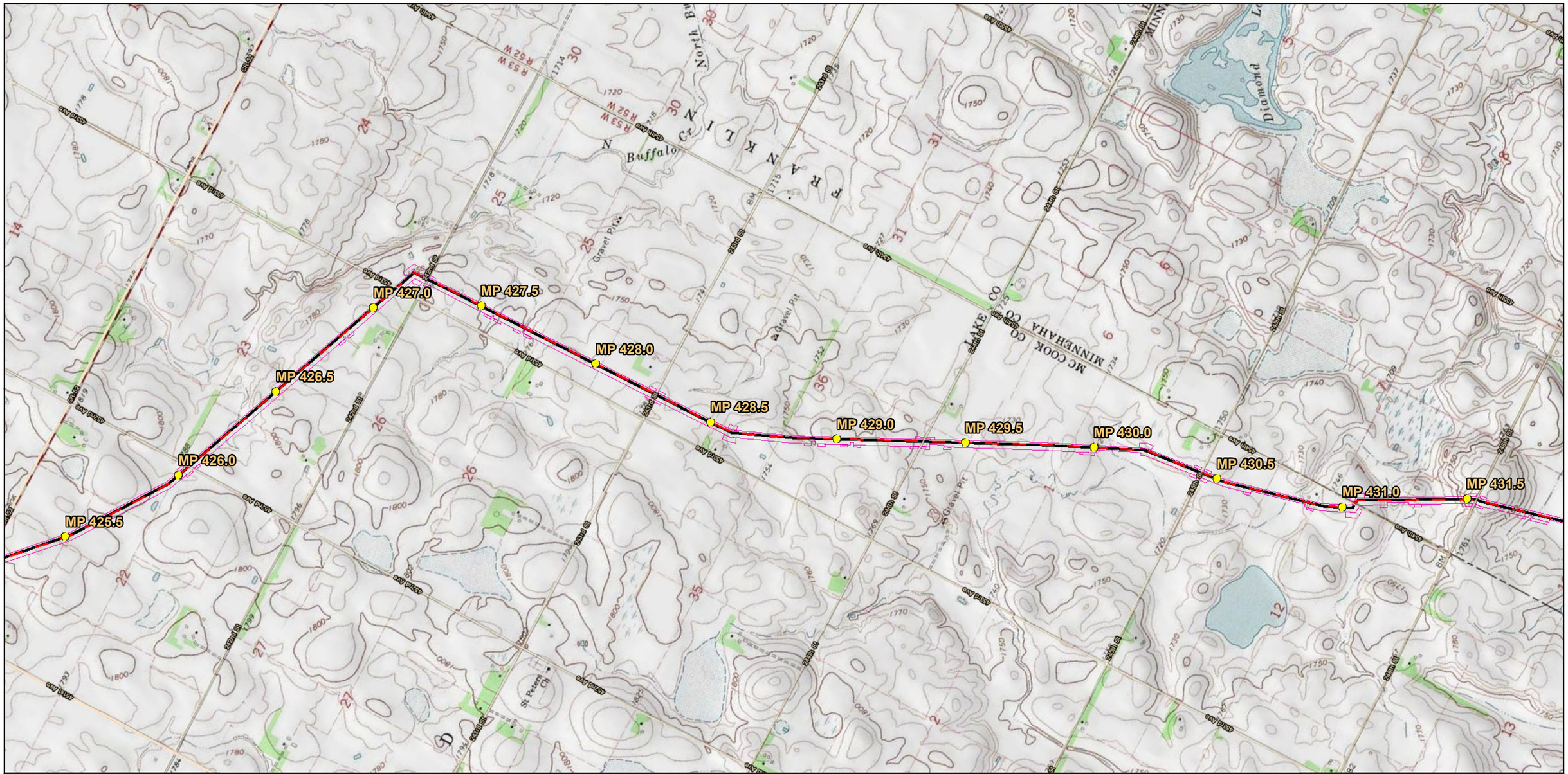

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Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
General Site/Topographic Map
South Dakota

Page 40 of 49	Scale: 1:24,000
NAD 83 South Dakota South Ft	Date: Dec 05, 2014

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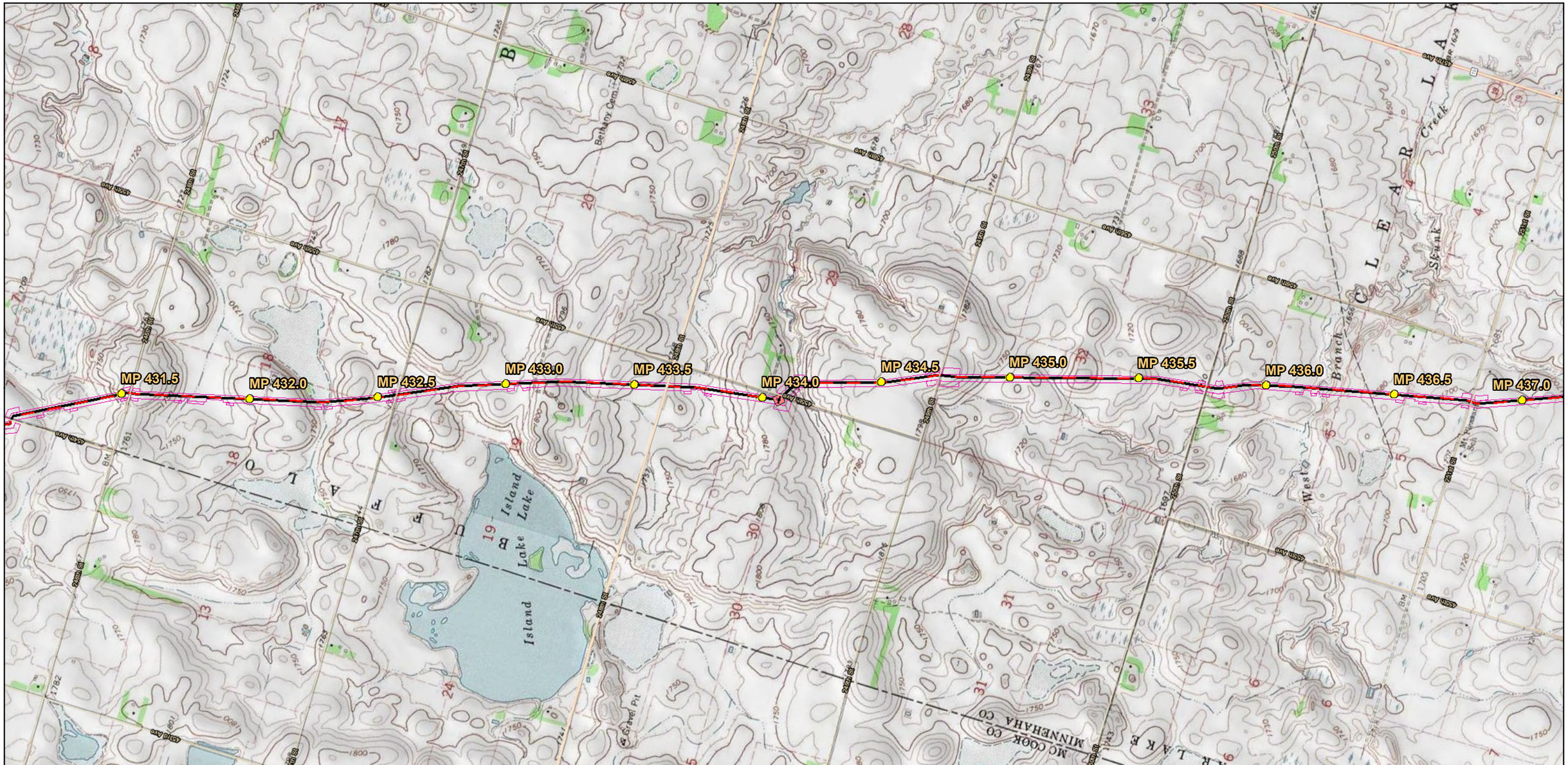

Milepost
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Page 41 of 49	Scale: 1:24,000
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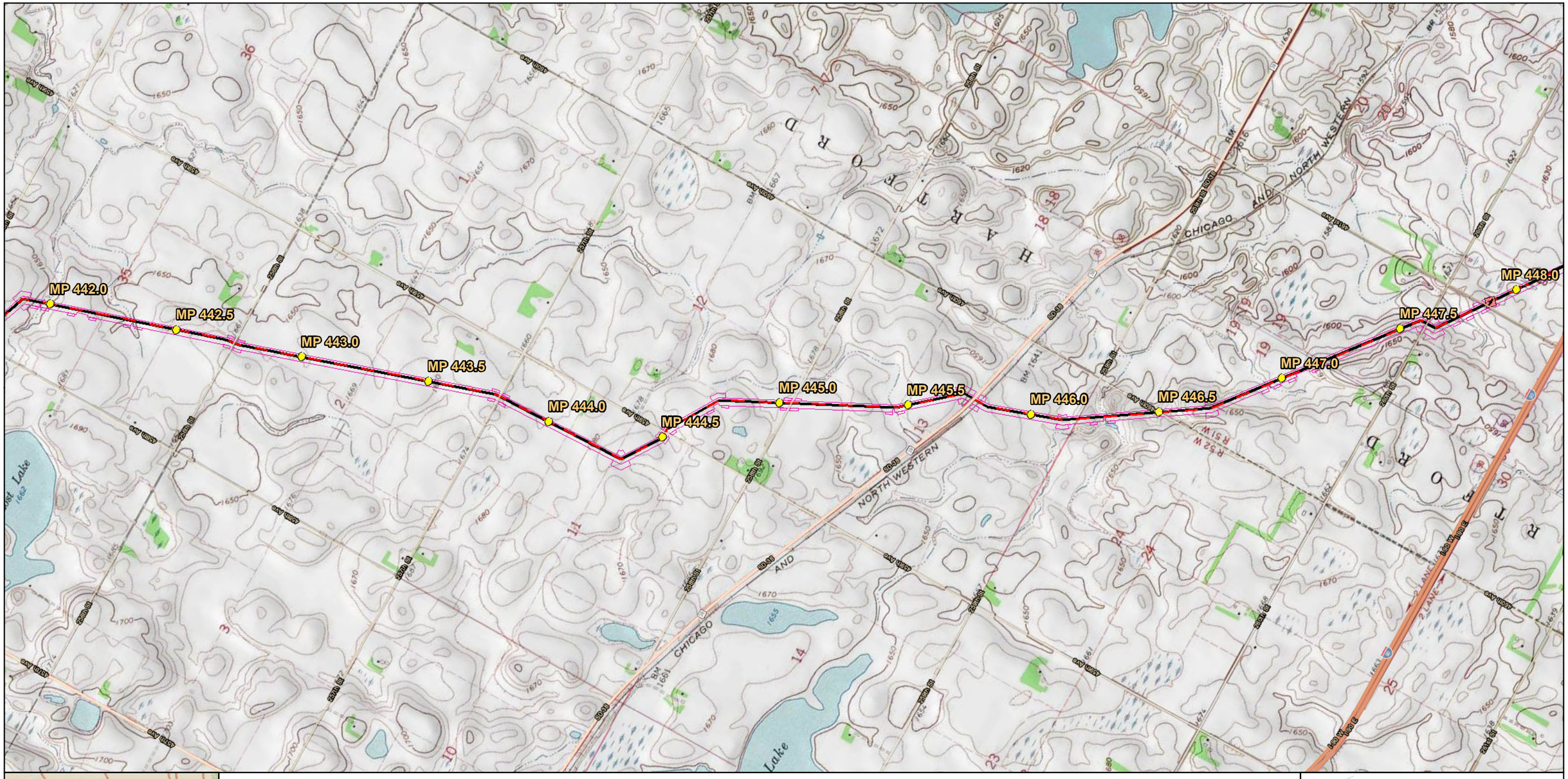

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
General Site/Topographic Map
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
General Site/Topographic Map
South Dakota

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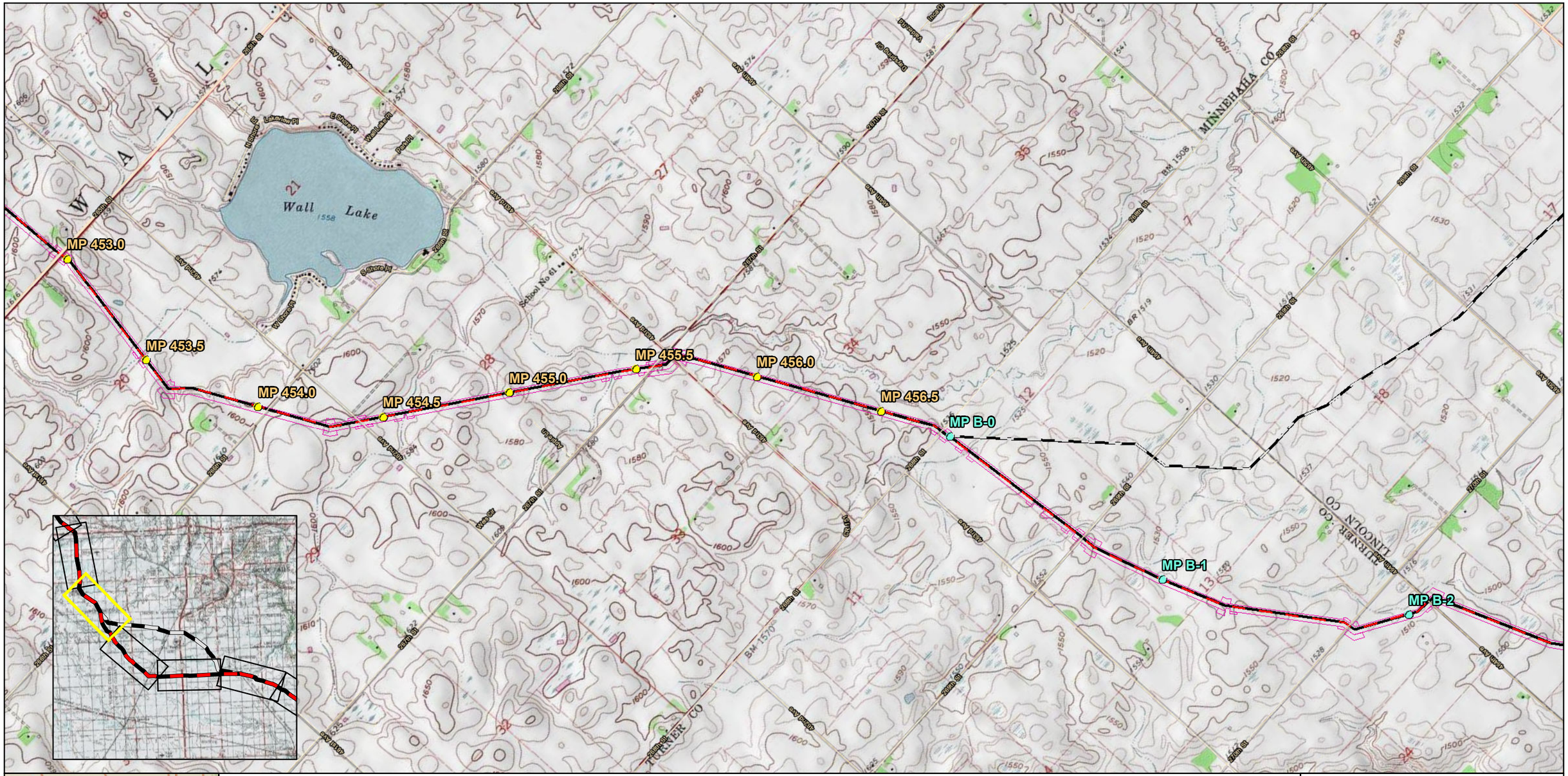

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Dakota Access, LLC
Dakota Access Pipeline Project
General Site/Topographic Map
South Dakota

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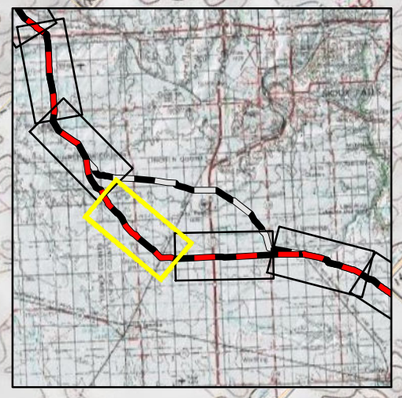

Milepost
Reroute Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Previous Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
General Site/Topographic Map
South Dakota

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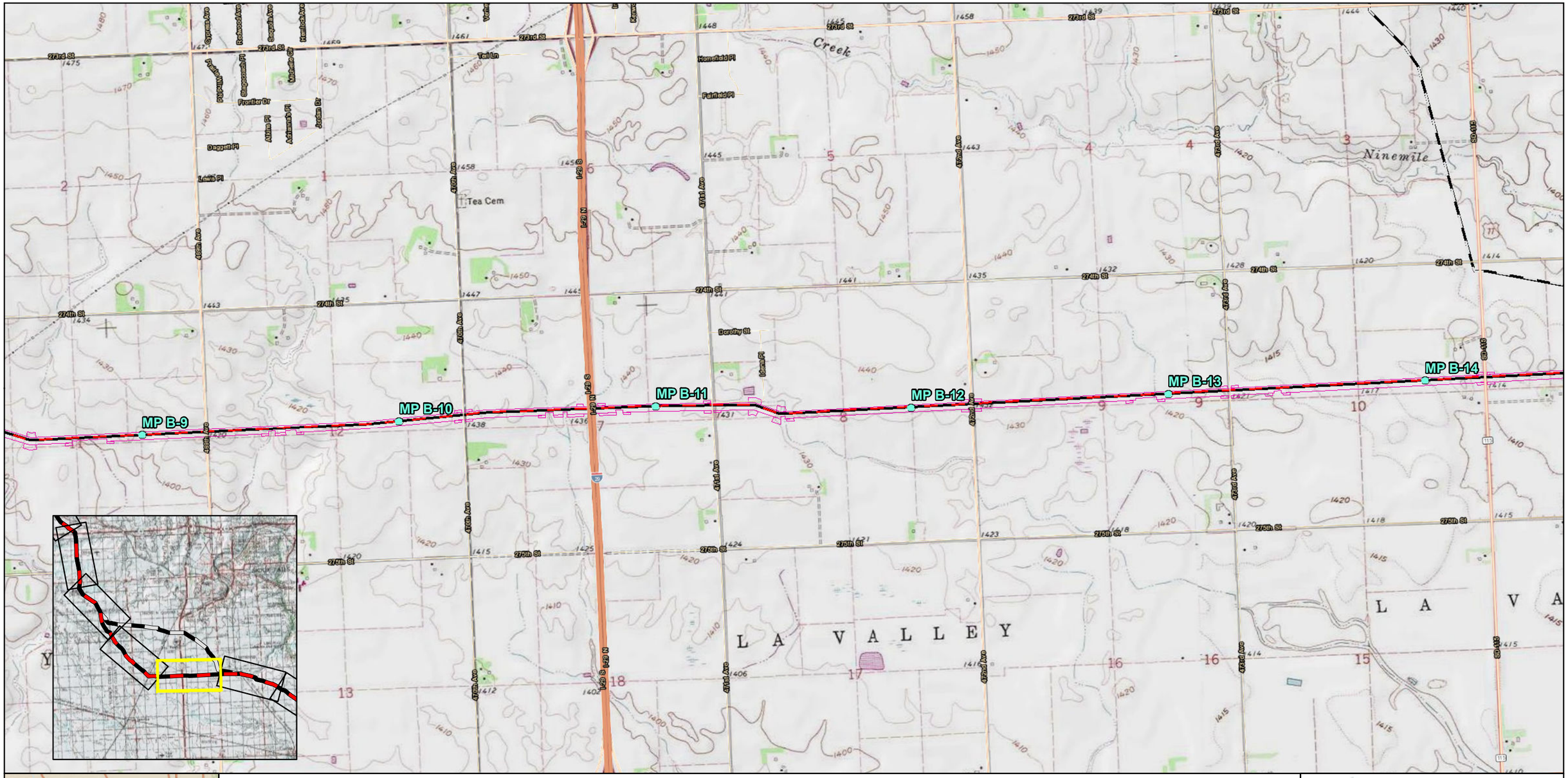

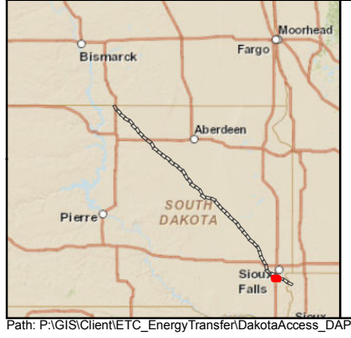

- Milepost
- Reroute Milepost
- Launcher/Receiver
- Mainline Valve
- Proposed Route
- Previous Route
- Spink Pump Station
- Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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Dakota Access Pipeline Project
General Site/Topographic Map
South Dakota

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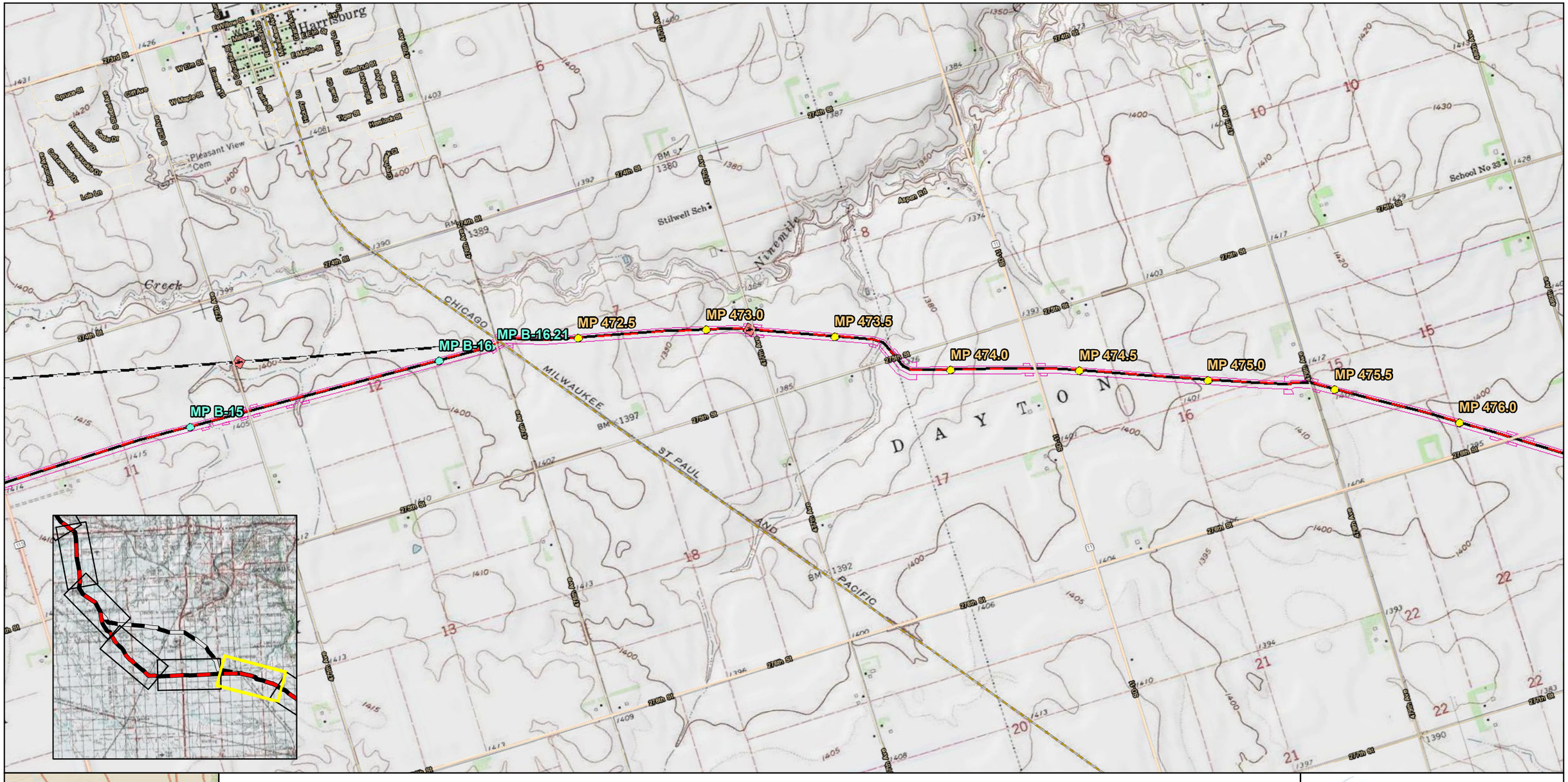

Milepost
Reroute Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Previous Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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Dakota Access Pipeline Project
General Site/Topographic Map
South Dakota

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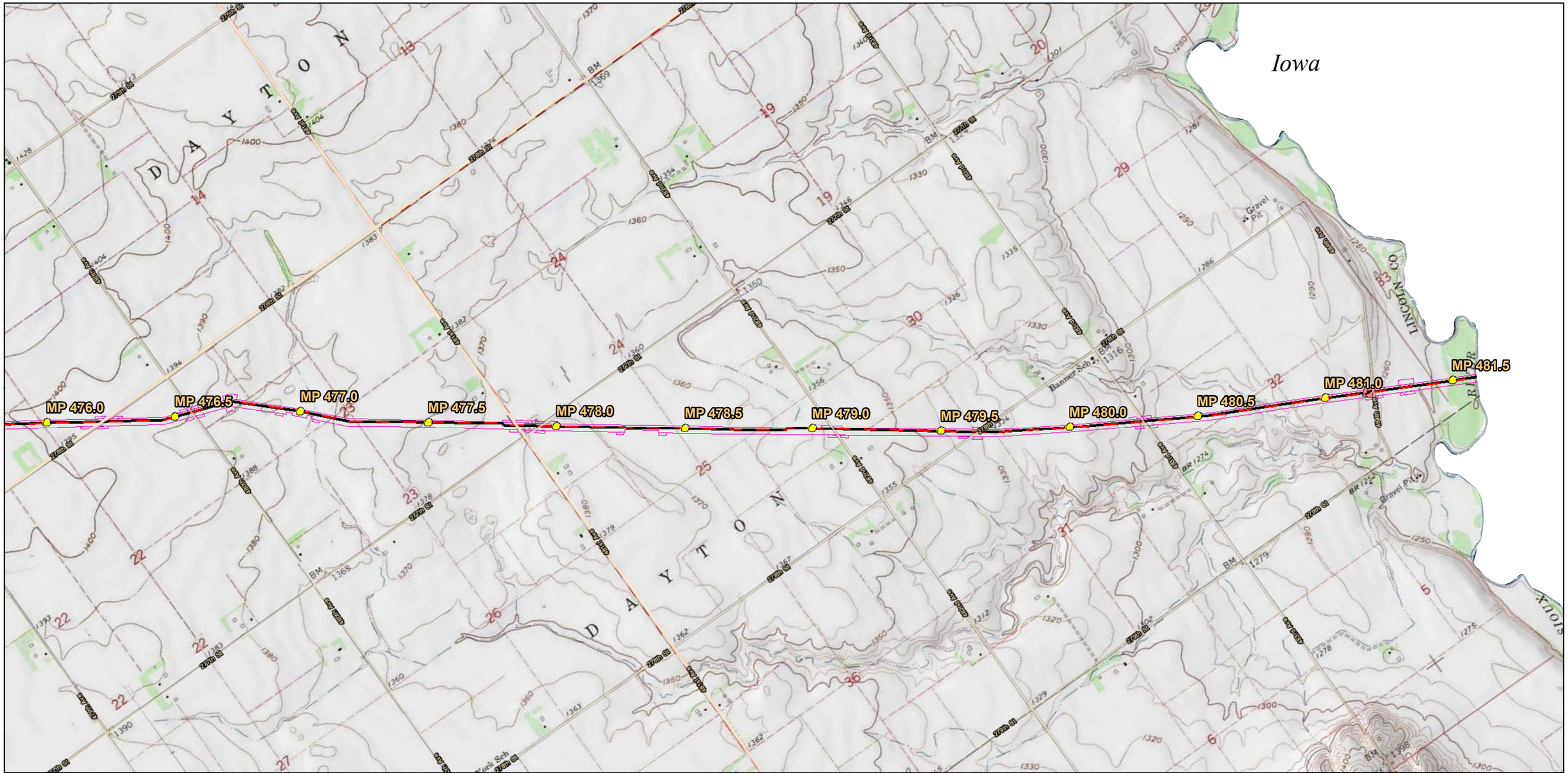

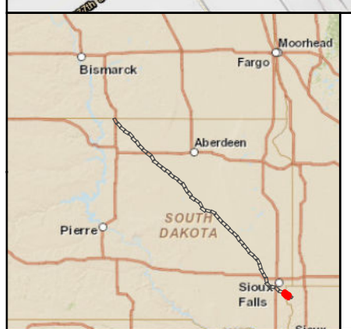

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
Work Space

0 2,000 4,000 6,000 8,000 Feet

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Dakota Access Pipeline Project
General Site/Topographic Map
South Dakota

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Exhibit A

Project Mapping

Exhibit A3

Soil Maps

North Dakota

MP 210.0
MP 210.5
MP 211.0
MP 211.5
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MP 213.0
MP 213.5
MP 214.0
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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

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Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

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Feet

DAKOTA ACCESS, LLC

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Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

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DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

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Feet

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Dakota Access Pipeline Project
SSURGO Soils
South Dakota

Page 5 of 49	Scale: 1:24,000
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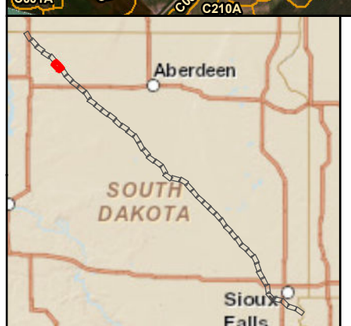

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

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Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

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Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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NAD 83 South Dakota South Ft	Date: Dec 05, 2014

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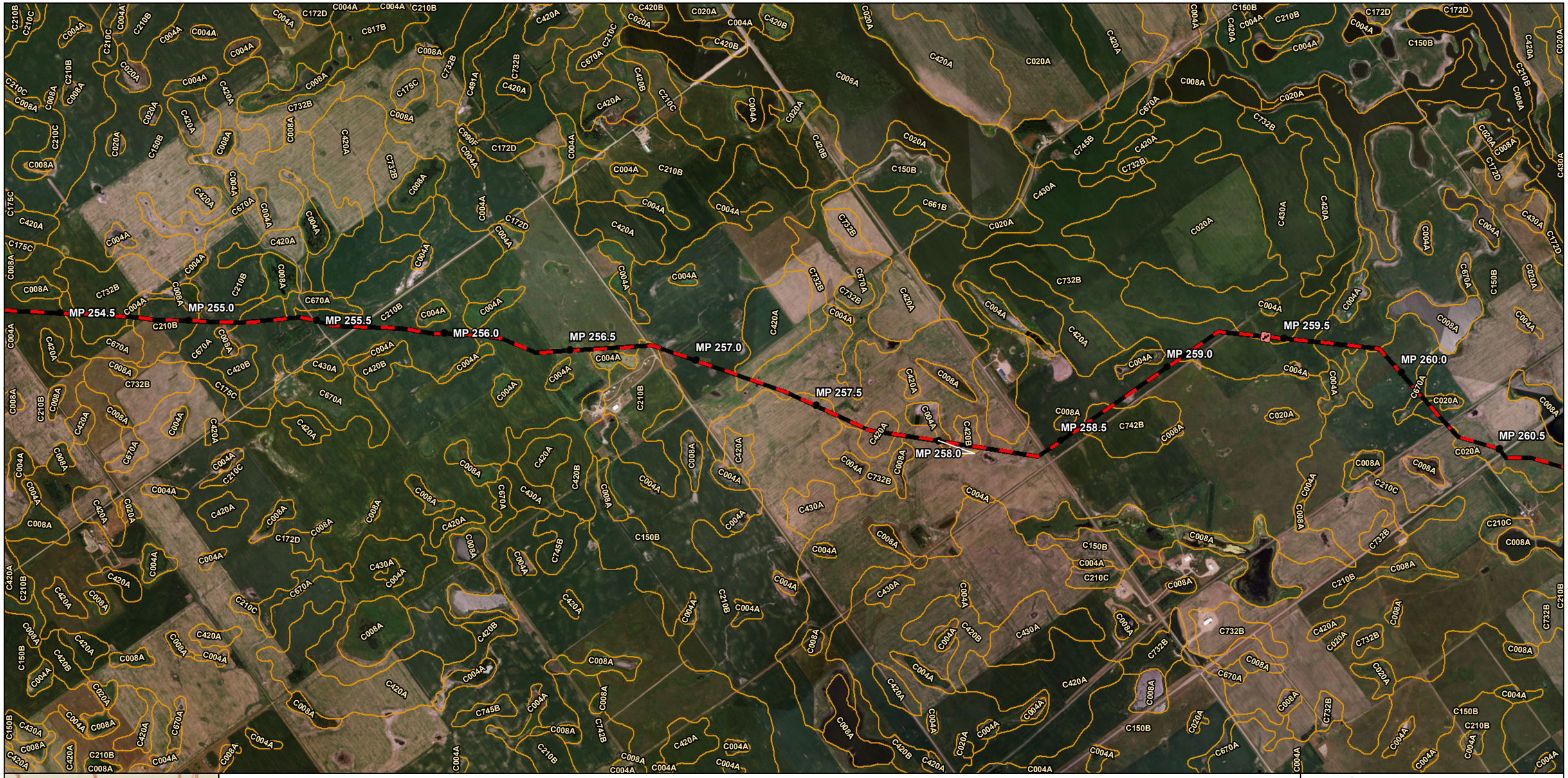

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

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Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

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Feet

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Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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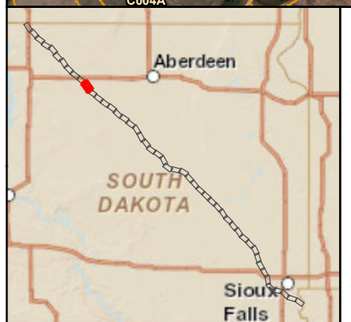

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

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Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

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Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

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Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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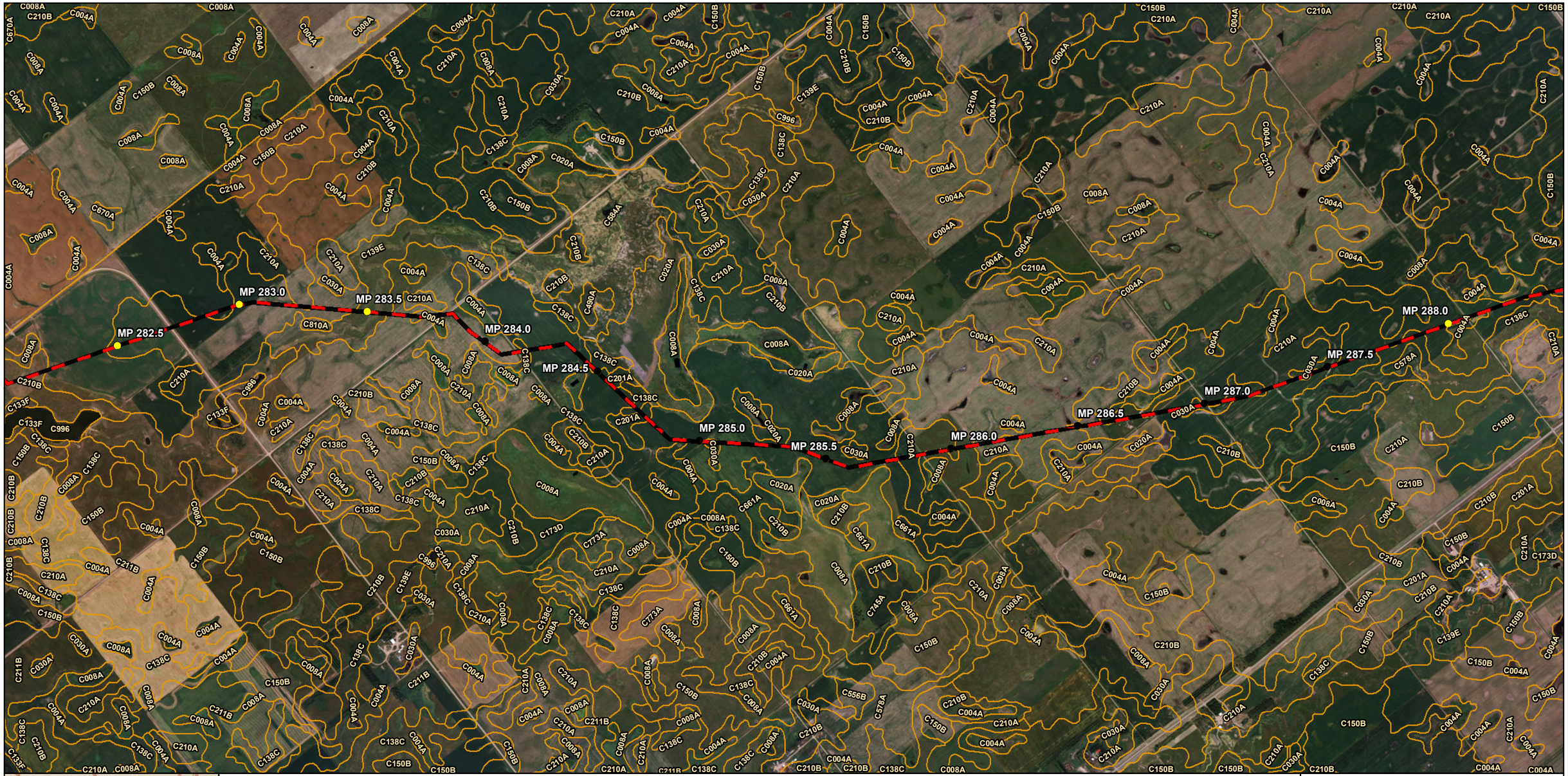

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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MP 288.0
MP 288.5
MP 289.0
MP 289.5
MP 290.0
MP 290.5
MP 291.0
MP 291.5
MP 292.0
MP 292.5
MP 293.0
MP 293.5

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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MP 298.5
MP 299.0
MP 299.5
MP 300.0
MP 300.5
MP 301.0
MP 301.5
MP 302.0
MP 302.5
MP 303.0
MP 303.5
MP 304.0
MP 304.5
MP 305.0

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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MP 304.5
MP 305.0
MP 305.5
MP 306.0
MP 306.5
MP 307.0
MP 307.5
MP 308.0
MP 308.5
MP 309.0
MP 309.5
MP 310.0
MP 310.5

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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MP 316.0
MP 316.5
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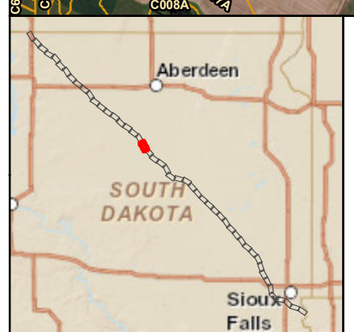
MP 321.5



Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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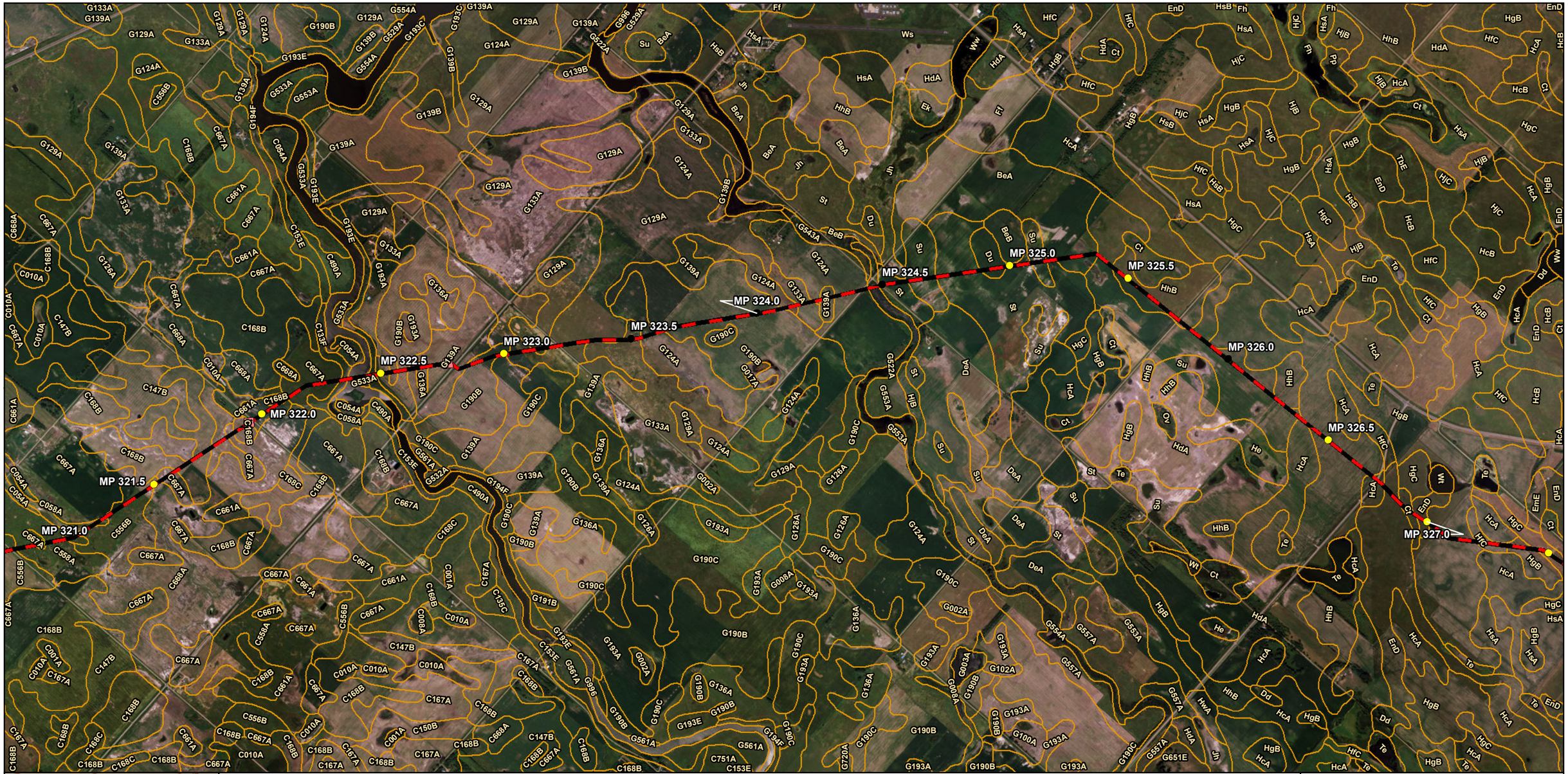

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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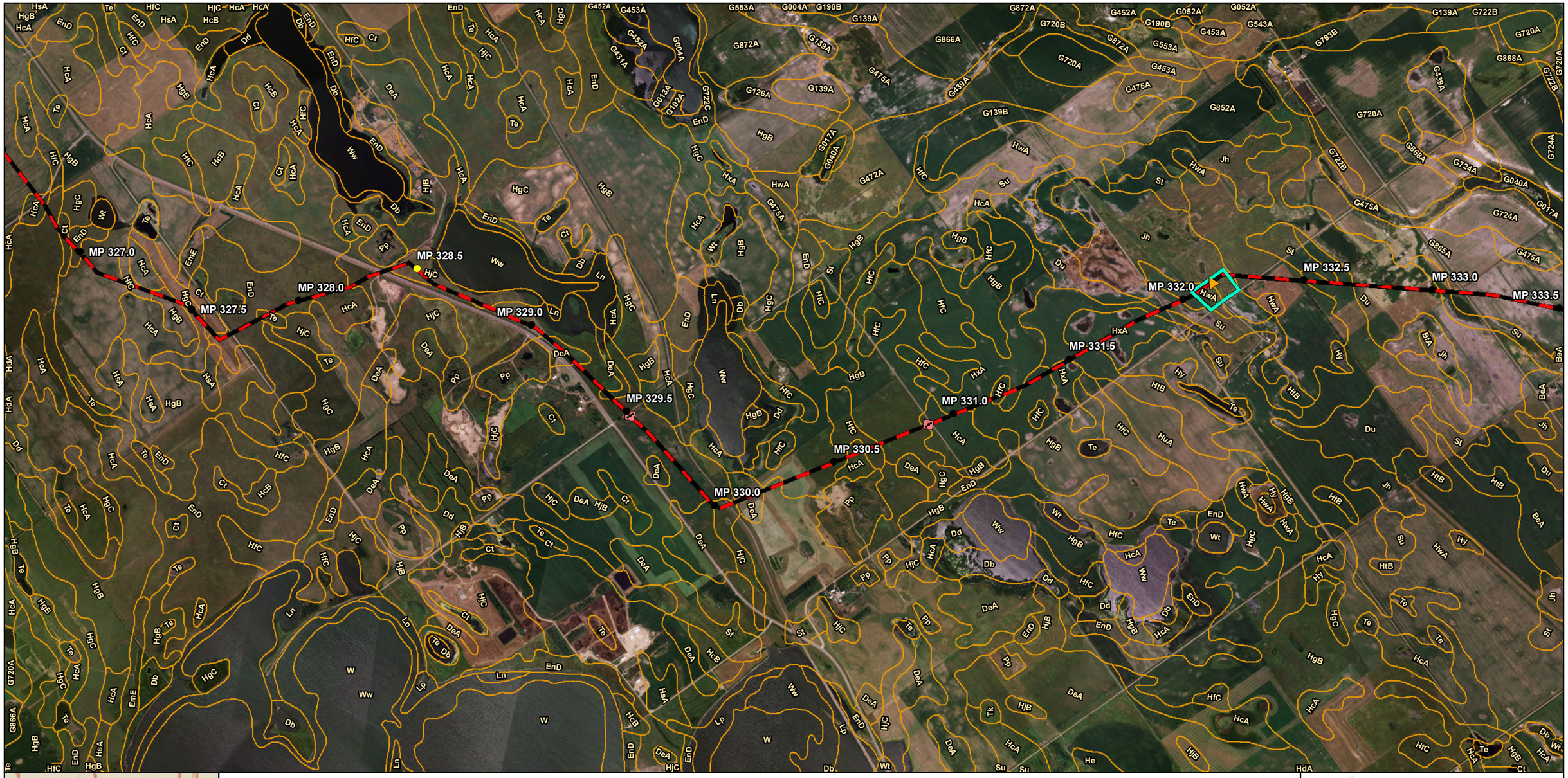

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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- Milepost
- Reroute Milepost
- Launcher/Receiver
- Mainline Valve
- Proposed Route
- Previous Route
- Spink Pump Station
- SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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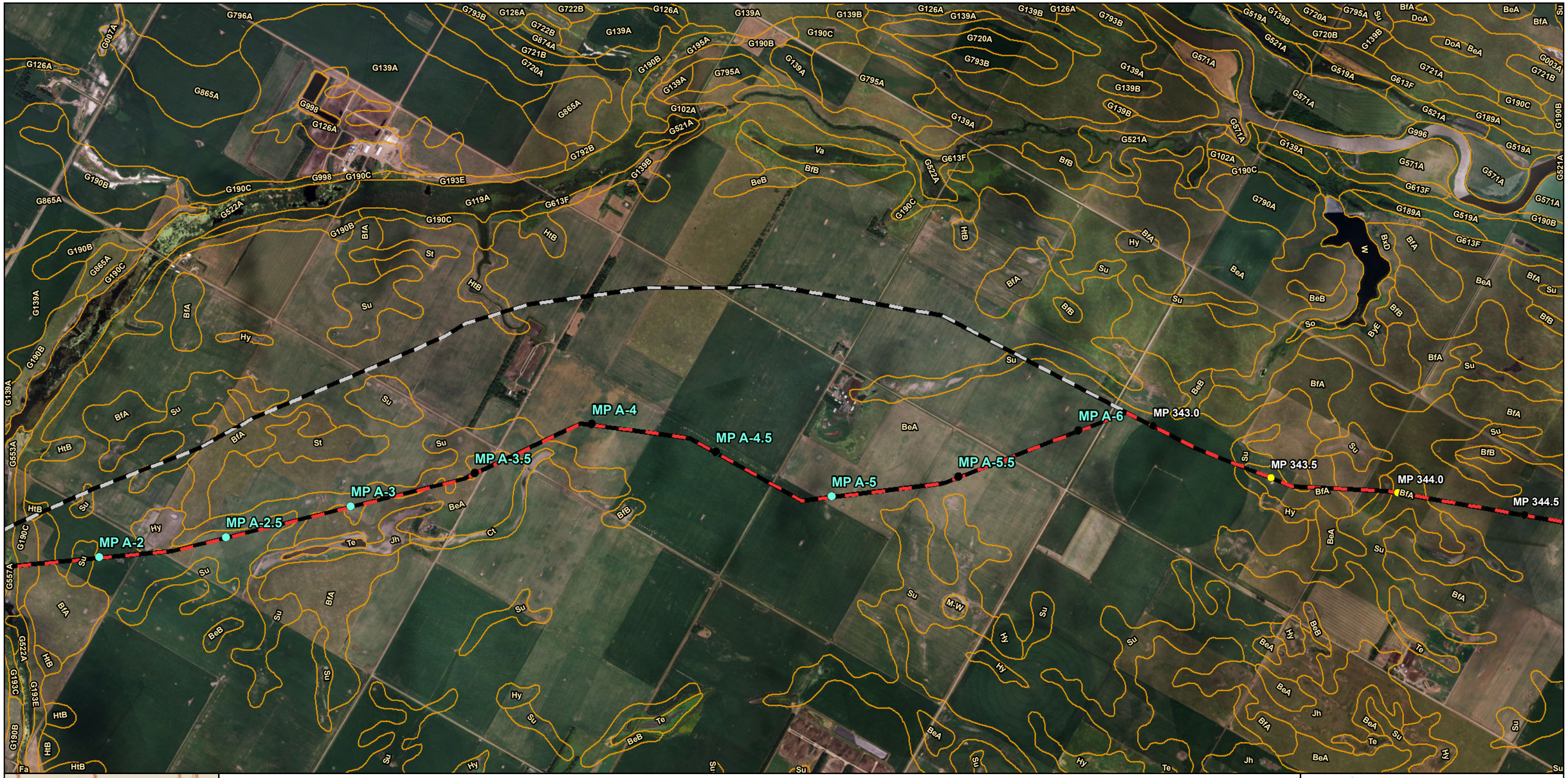

- Milepost
- Reroute Milepost
- Launcher/Receiver
- Mainline Valve
- Proposed Route
- Previous Route
- Spink Pump Station
- SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

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Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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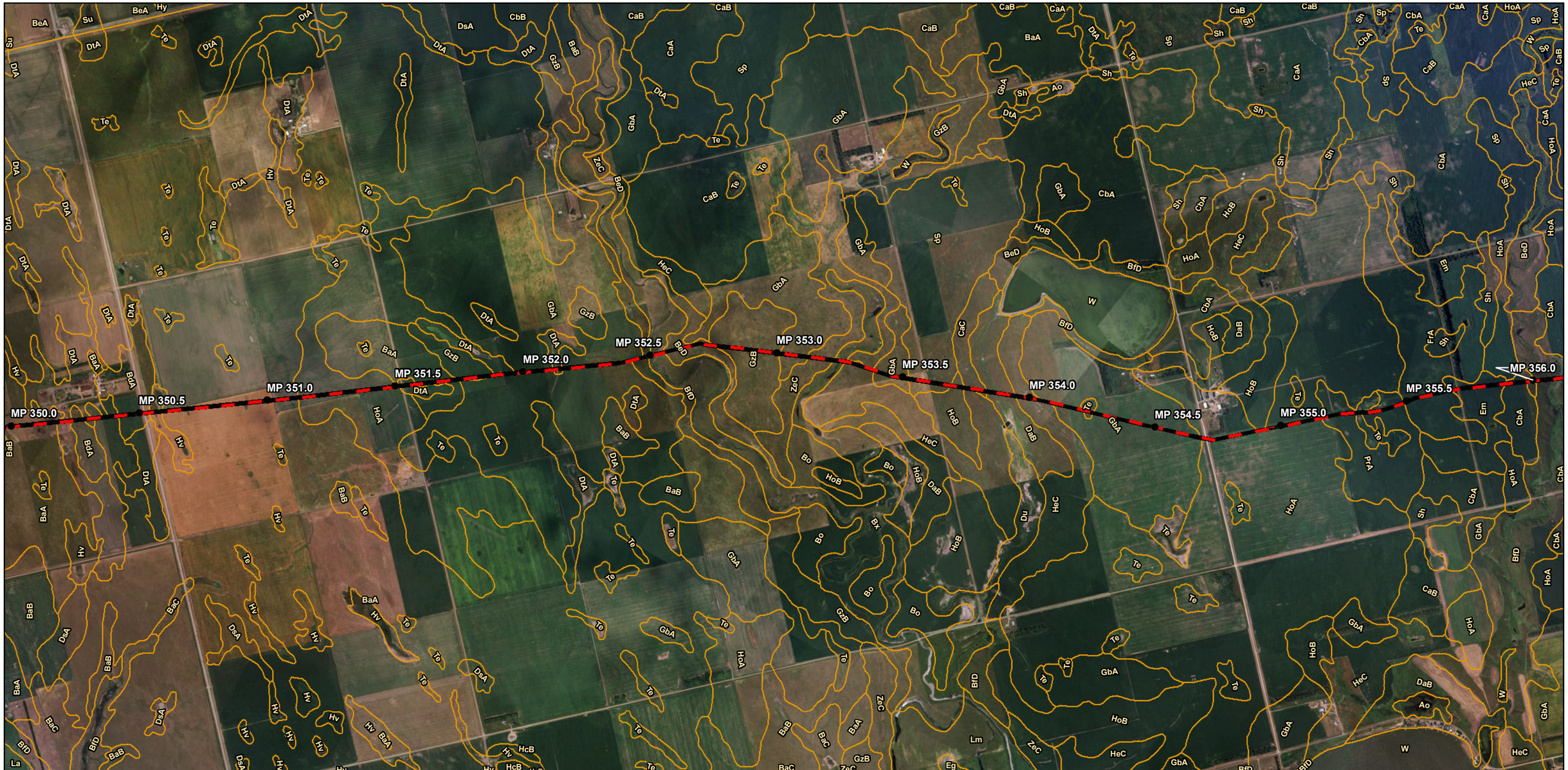

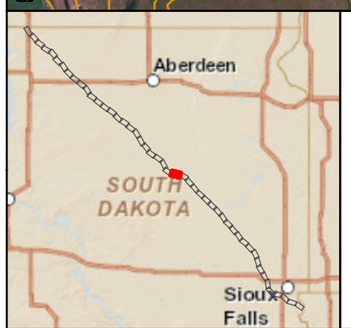

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

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Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
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SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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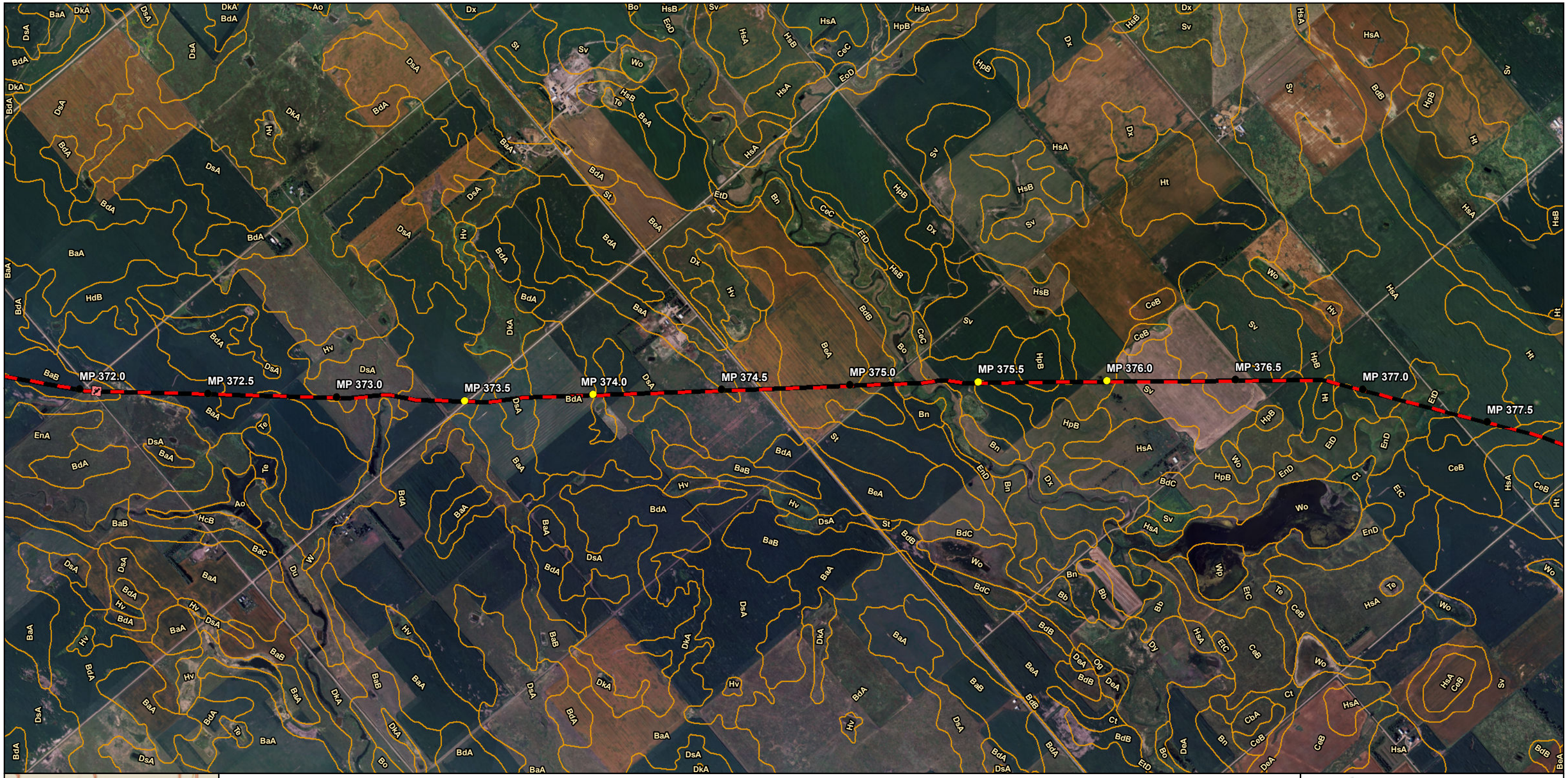

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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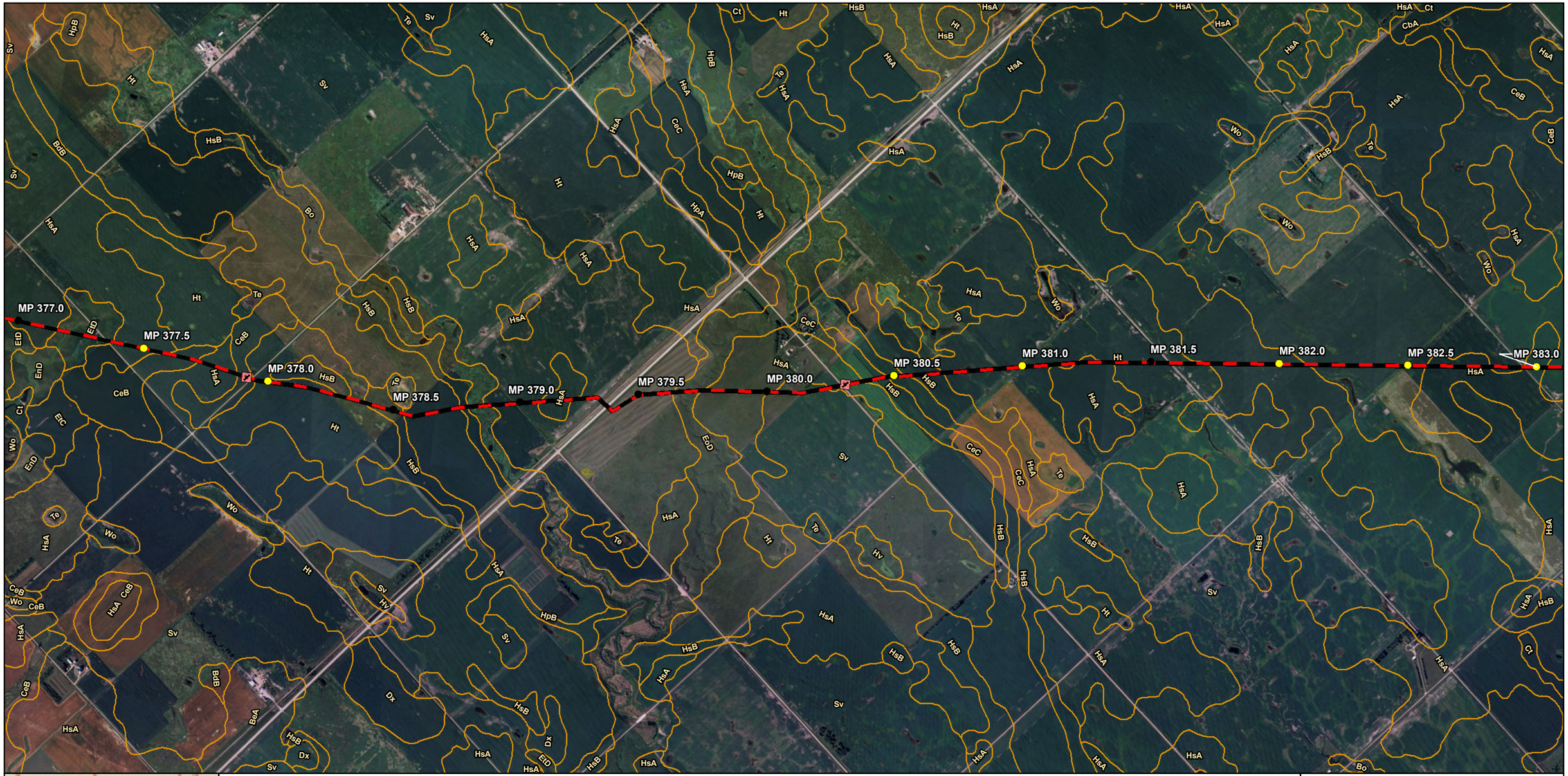

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Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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MP 388.5
MP 389.0
MP 389.5
MP 390.0
MP 390.5
MP 391.0
MP 391.5
MP 392.0
MP 392.5
MP 393.0
MP 393.5
MP 394.0

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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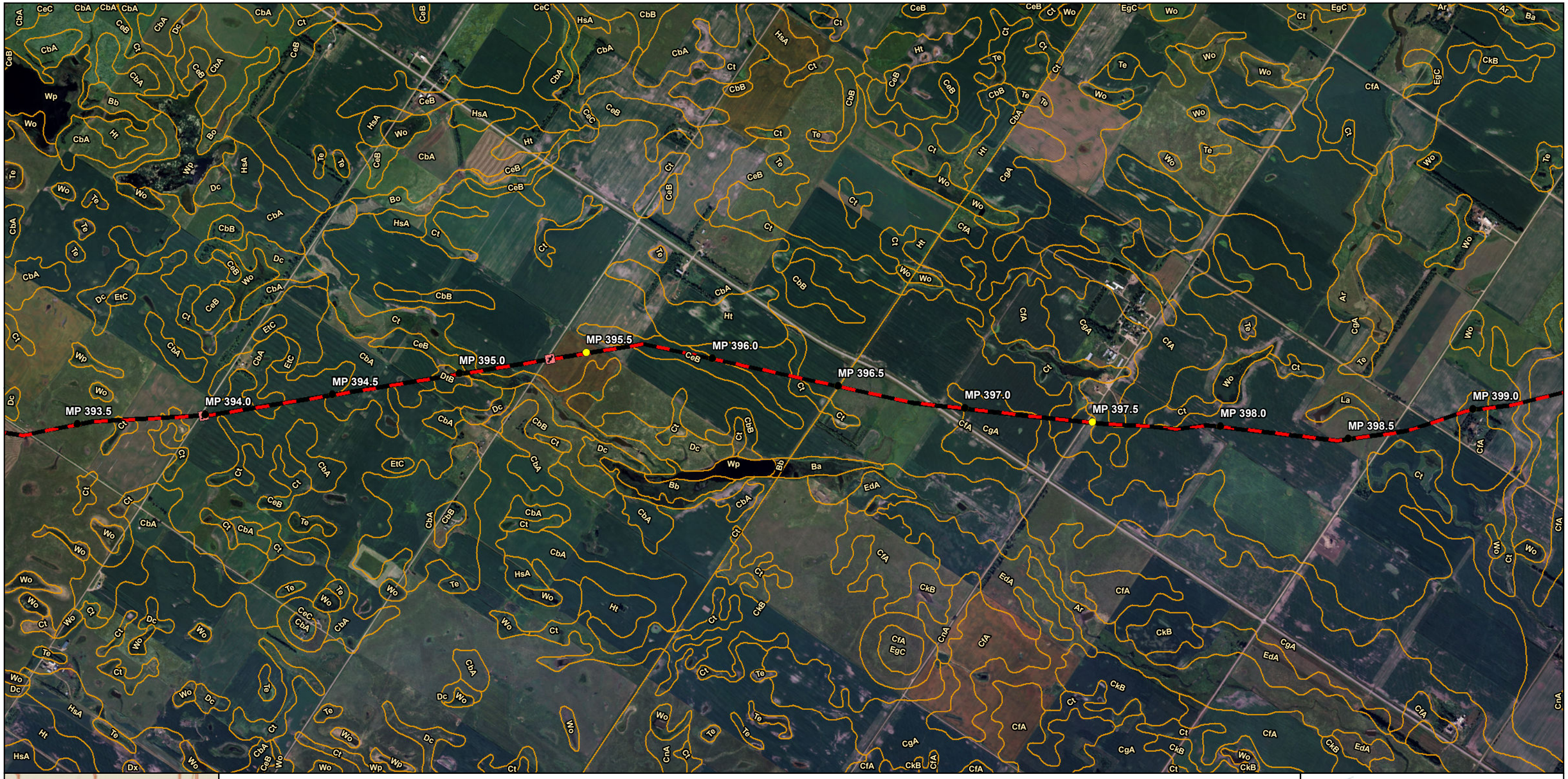

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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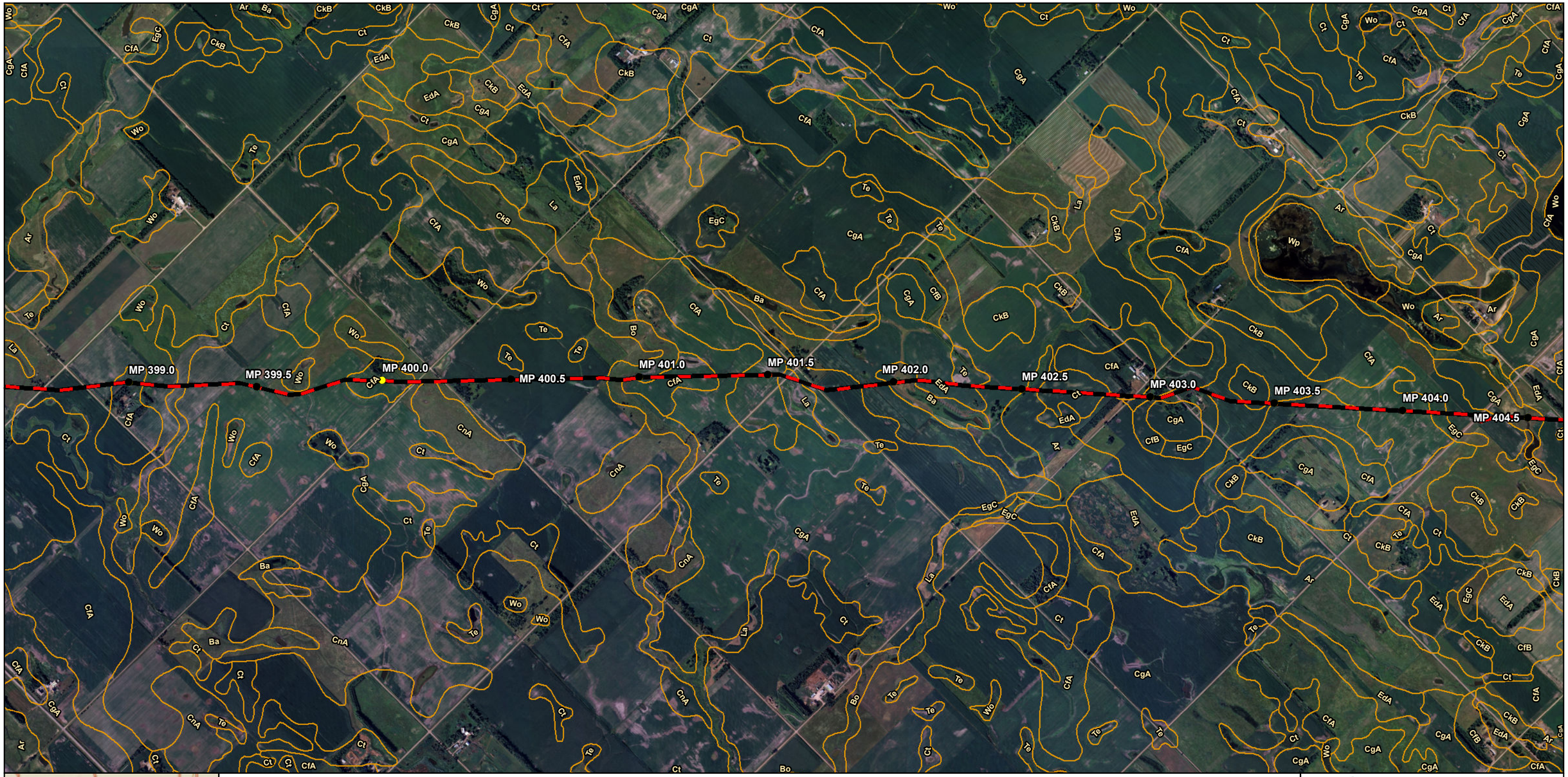

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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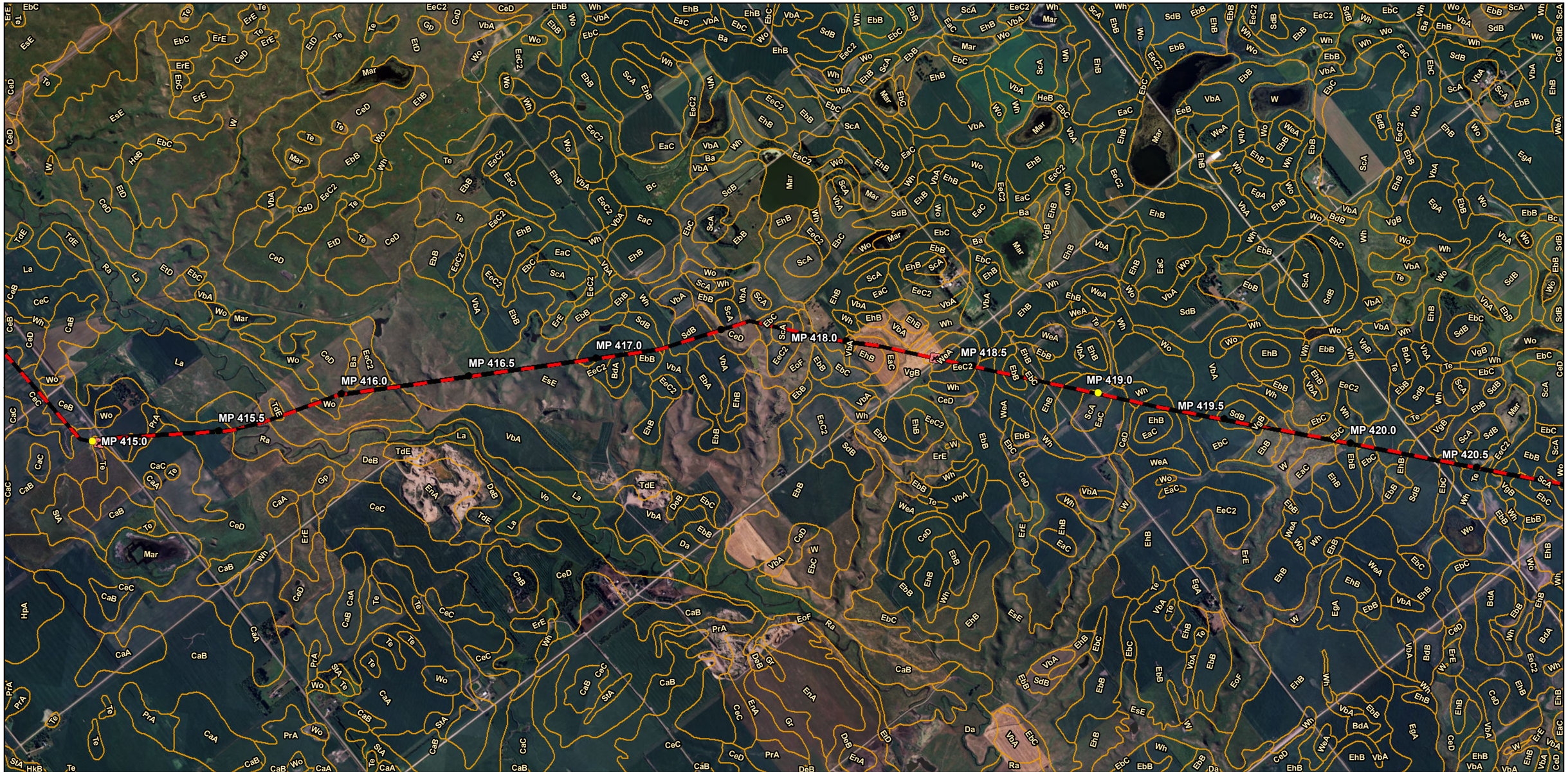

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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MP 426.0
MP 426.5
MP 427.0
MP 427.5
MP 428.0
MP 428.5
MP 429.0
MP 429.5
MP 430.0
MP 430.5
MP 431.0
MP 431.5

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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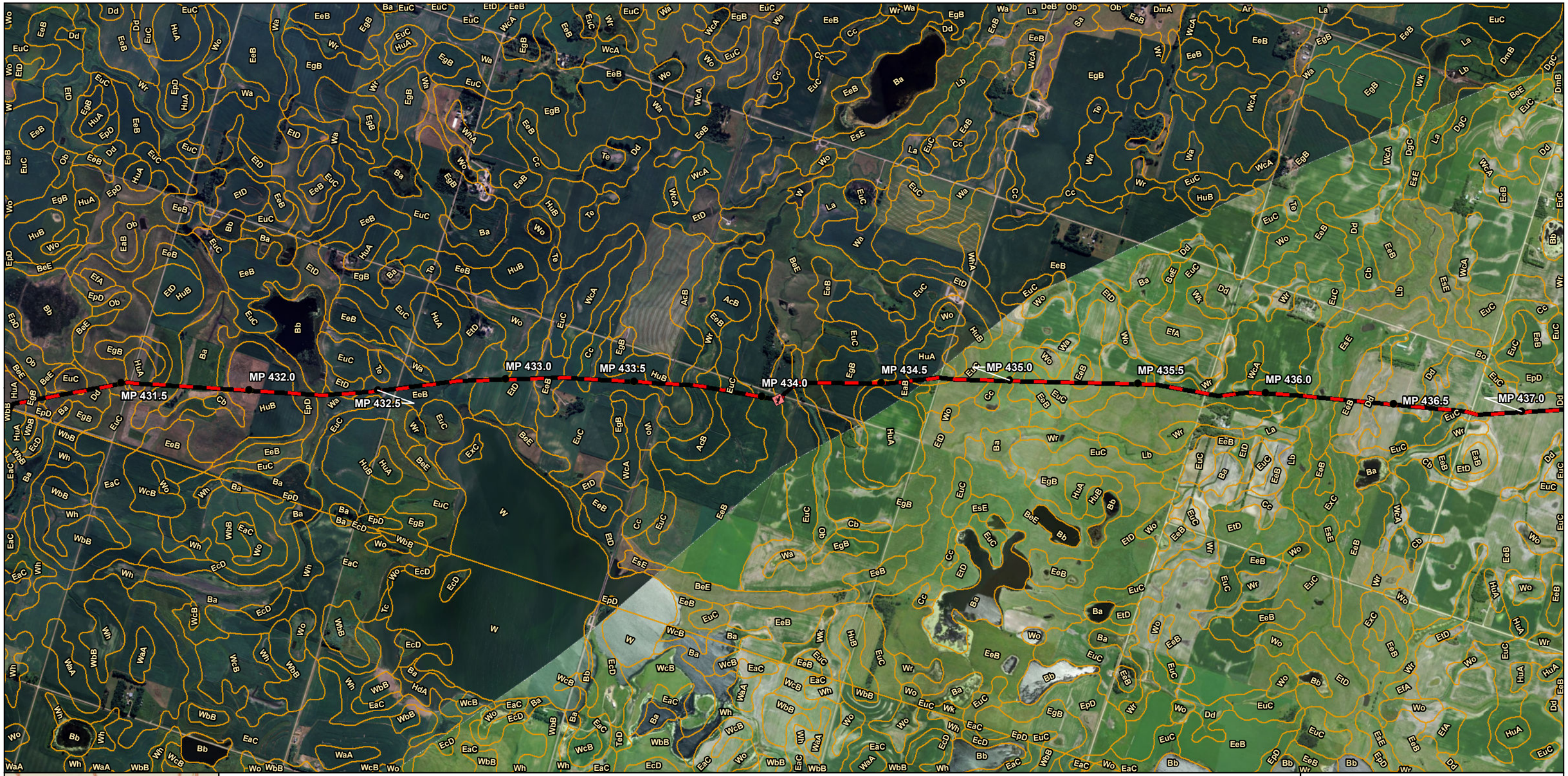

- Milepost
- Launcher/Receiver
- Mainline Valve
- Proposed Route
- Spink Pump Station
- SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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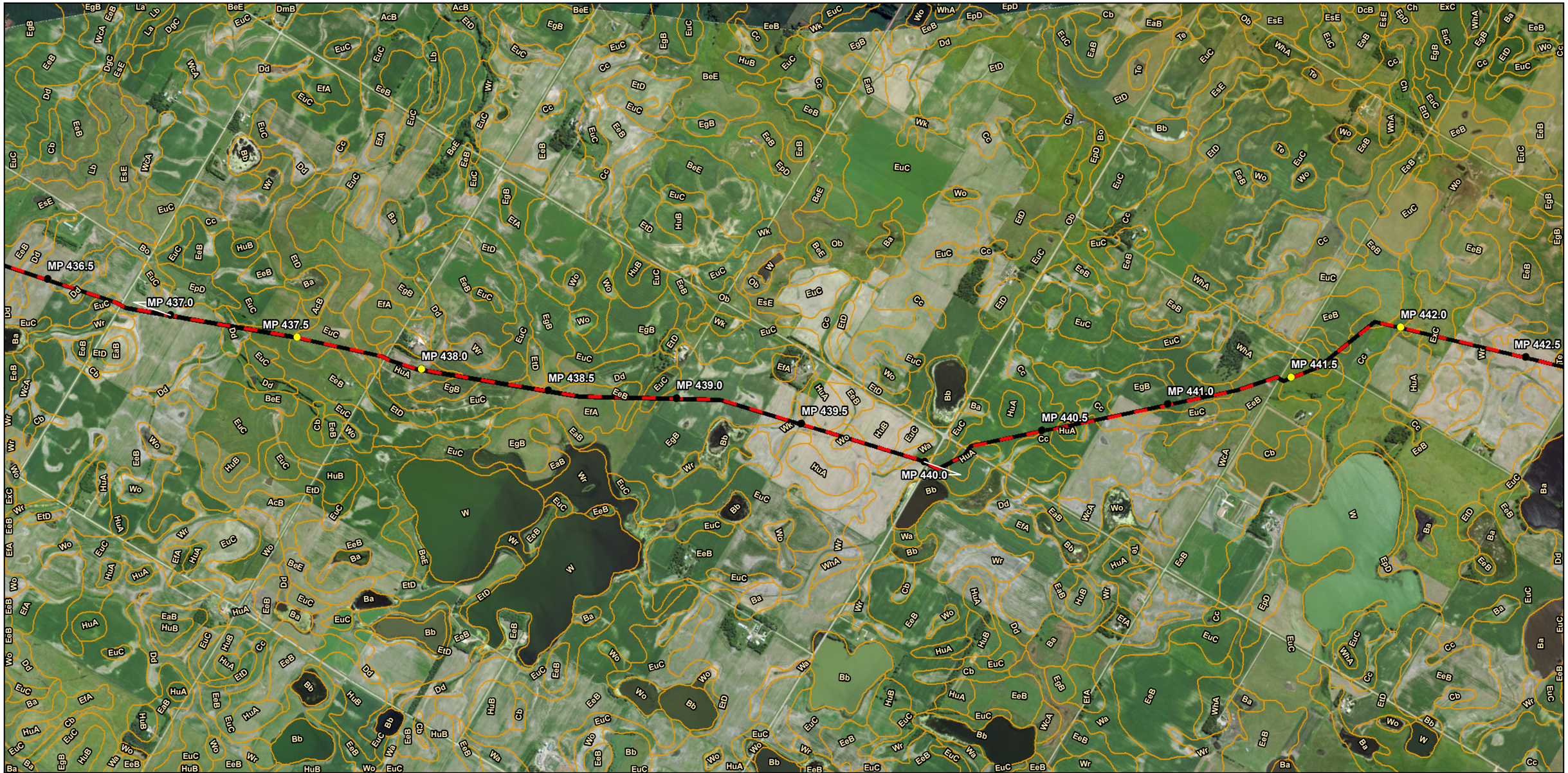

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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MP 442.5
MP 443.0
MP 443.5
MP 444.0
MP 444.5
MP 445.0
MP 445.5
MP 446.0
MP 446.5
MP 447.0
MP 447.5
MP 448.0

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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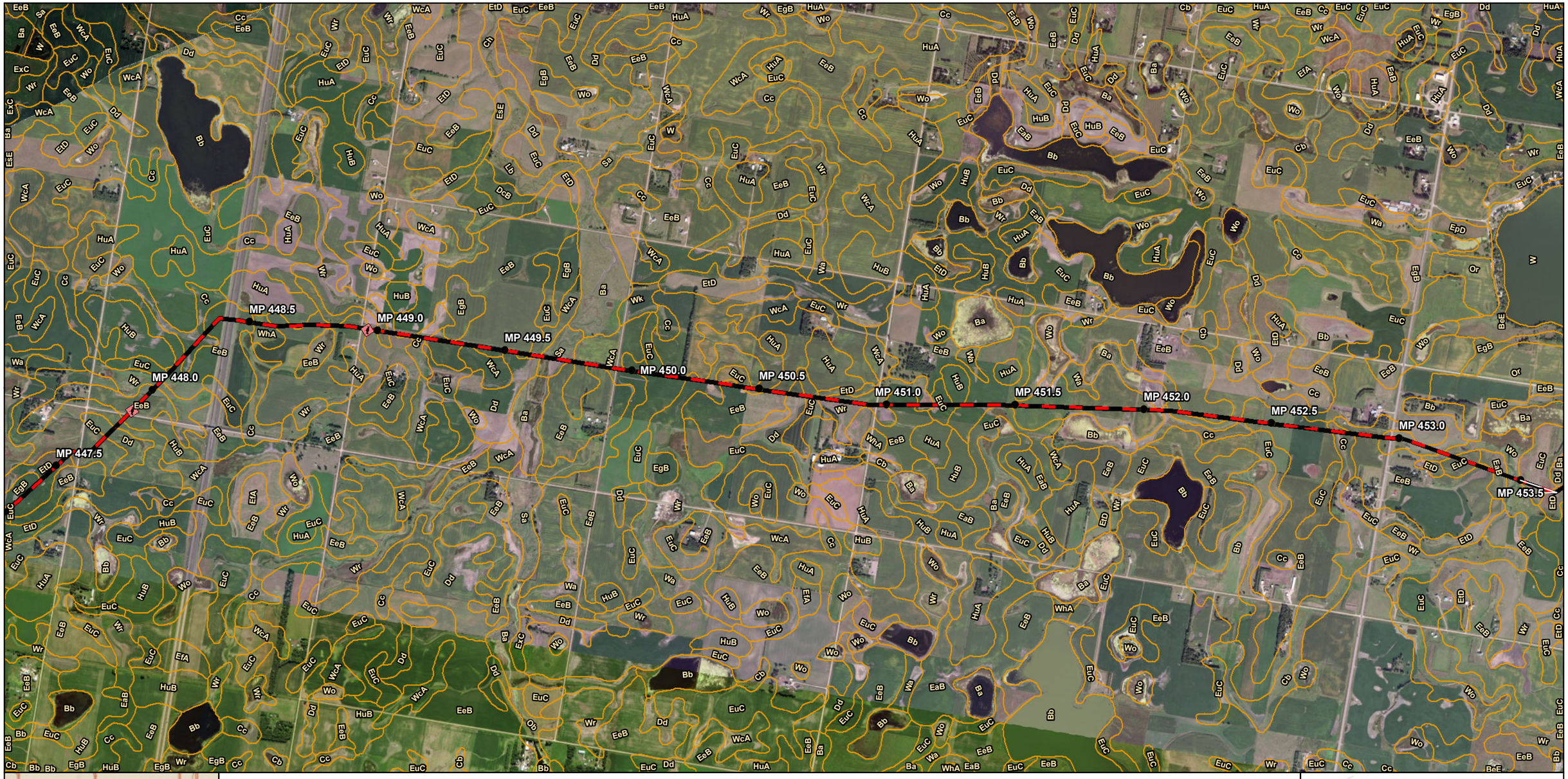

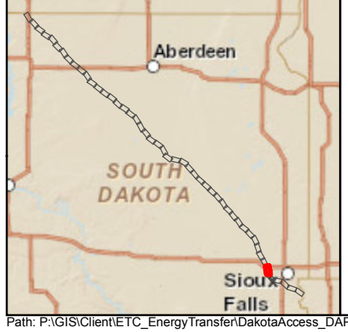

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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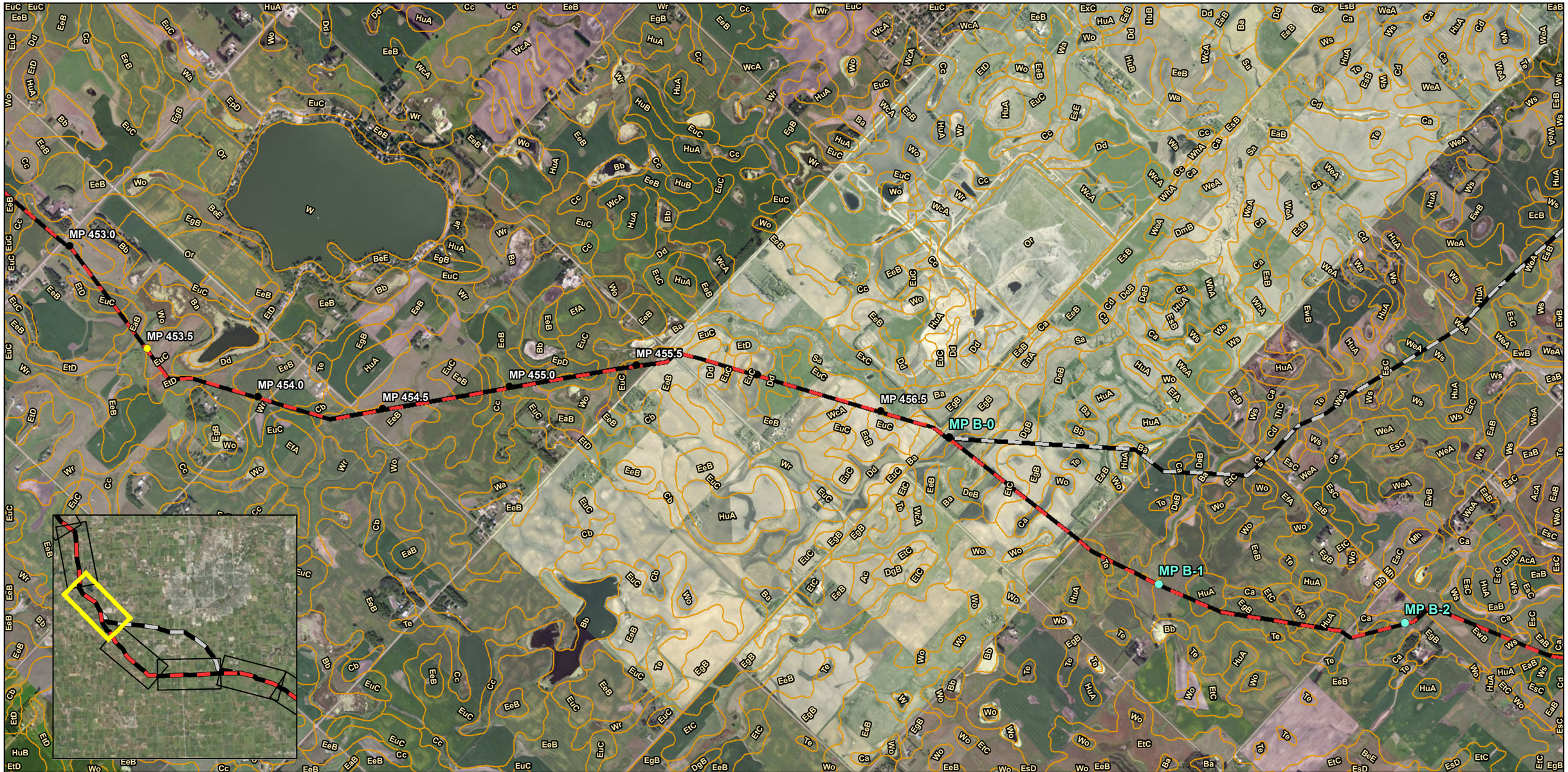

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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MP B-3
MP B-4
MP B-5
MP B-6
MP B-7
MP B-8

Aberdeen
SOUTH DAKOTA
Sioux Falls

Milepost
Reroute Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Previous Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

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South Dakota

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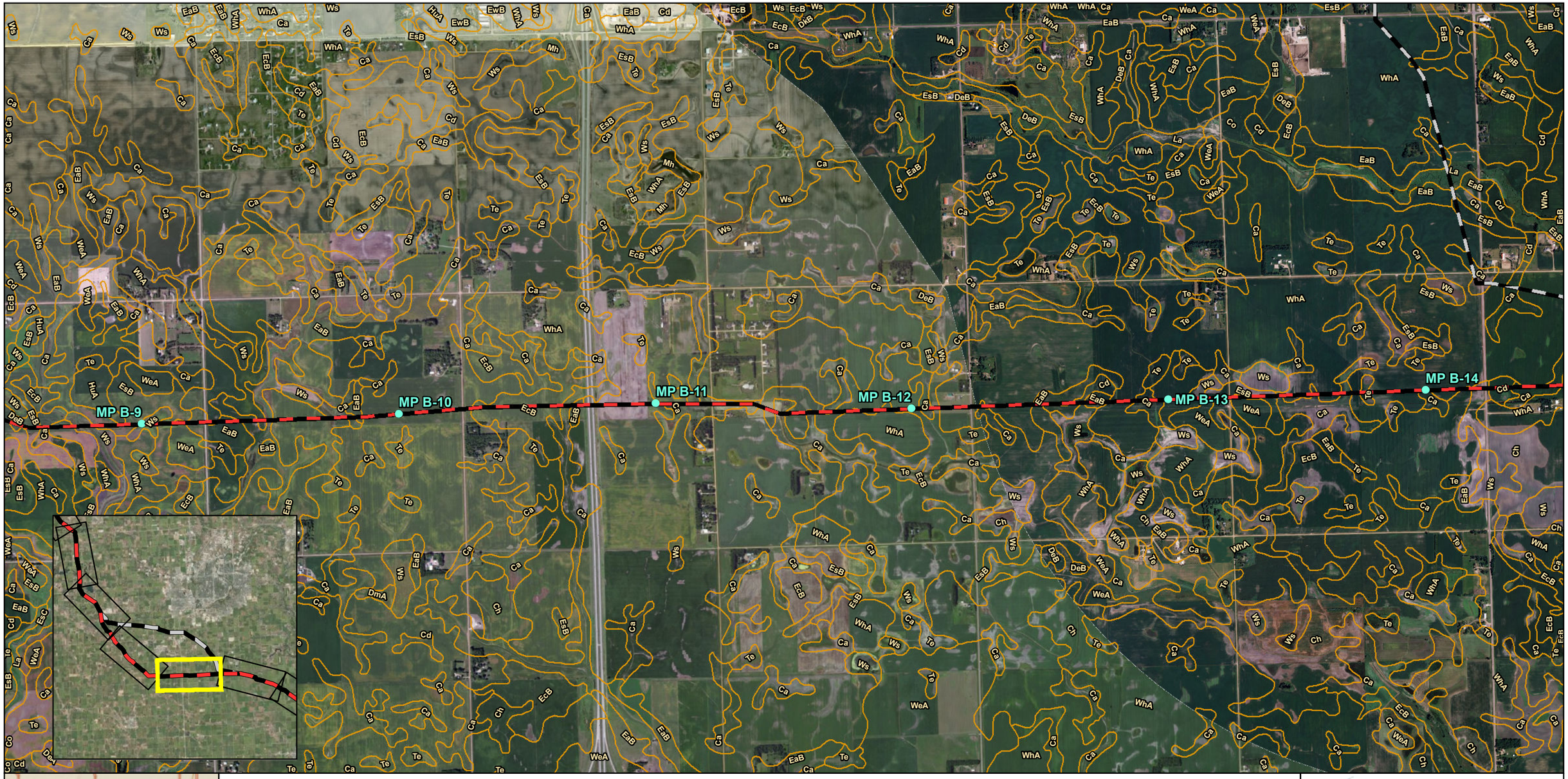

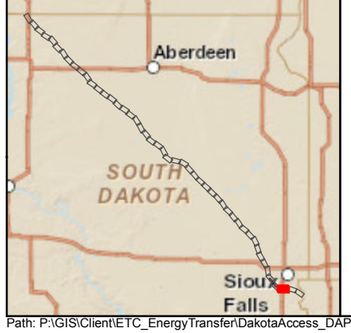

Milepost
Reroute Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Previous Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
SSURGO Soils
South Dakota

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Milepost
Reroute Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Previous Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

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Iowa

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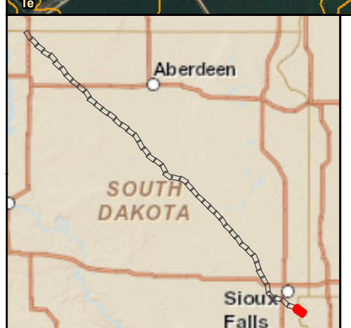
MP 476.5
MP 477.0
MP 477.5
MP 478.0
MP 478.5
MP 479.0
MP 479.5
MP 480.0
MP 480.5
MP 481.0
MP 481.5



Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Spink Pump Station
SSURGO Soils

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

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South Dakota

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Exhibit A

Project Mapping

Exhibit A4

Hydrology Maps

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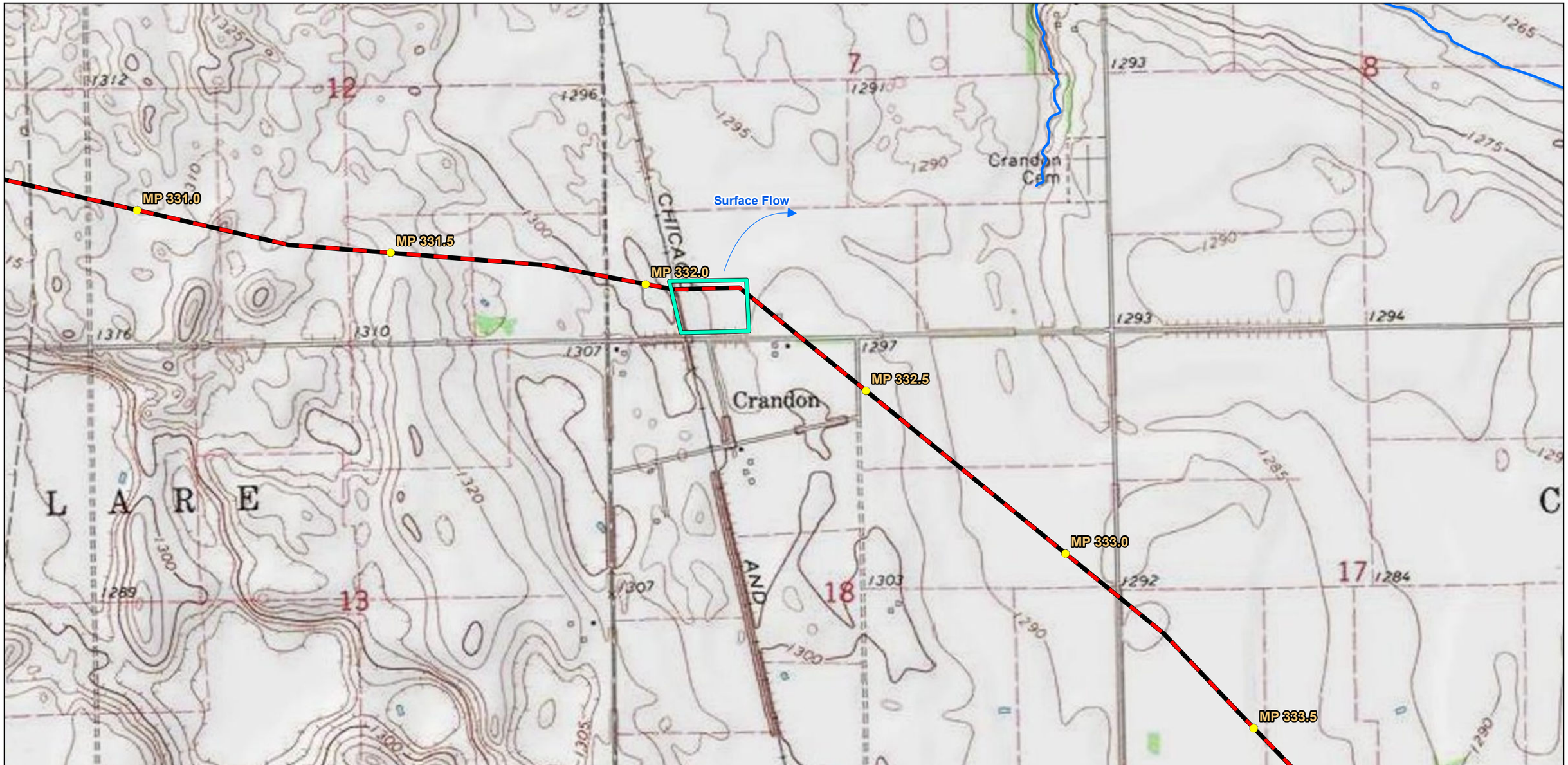

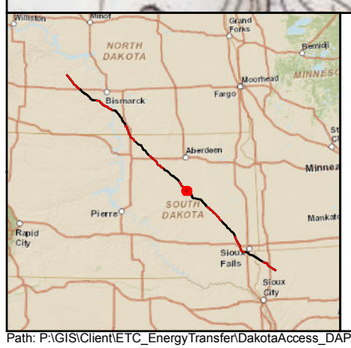

Milepost
Proposed Route
Spink County Pump Station
NHD Stream

0 600 1,200 1,800 2,400 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
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South Dakota

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MP 212.0
MP 212.5
MP 213.0
MP 213.5
MP 214.0
MP 214.5
MP 215.0
MP 215.5
MP 216.0

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Work Space
Spink Pump Station
Topeka Shiner Stream
PAB Wetland
PEM Wetland
PSS Wetland
NHD Waterbody

NHD Stream Type
334 Connector
460 Stream
558 Artificial Path

NHD Waterbody Type
390 Lake/Pond
466 Swampmarsh

0 2,000 4,000 6,000 8,000
Feet

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MP 218.5
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MP 219.5
MP 220.0
MP 220.5
MP 221.0
Spring Creek

Milepost
Launcher/Receiver
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PAB Wetland
PEM Wetland
PSS Wetland
NHD Waterbody

NHD Stream Type
334 Connector
460 Stream
558 Artificial Path

NHD Waterbody Type
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466 Swampmarsh

0 2,000 4,000 6,000 8,000
Feet

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MP 223.5
MP 224.0
MP 224.5
MP 225.0
MP 225.5
MP 226.0
MP 226.5

- Milepost
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NHD Stream Type
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NHD Waterbody Type
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0 2,000 4,000 6,000 8,000
Feet

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MP 229.5
MP 230.0
MP 230.5
MP 231.0
MP 231.5
MP 232.0
MP 232.5

- Milepost
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- PSS Wetland
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0 2,000 4,000 6,000 8,000
Feet

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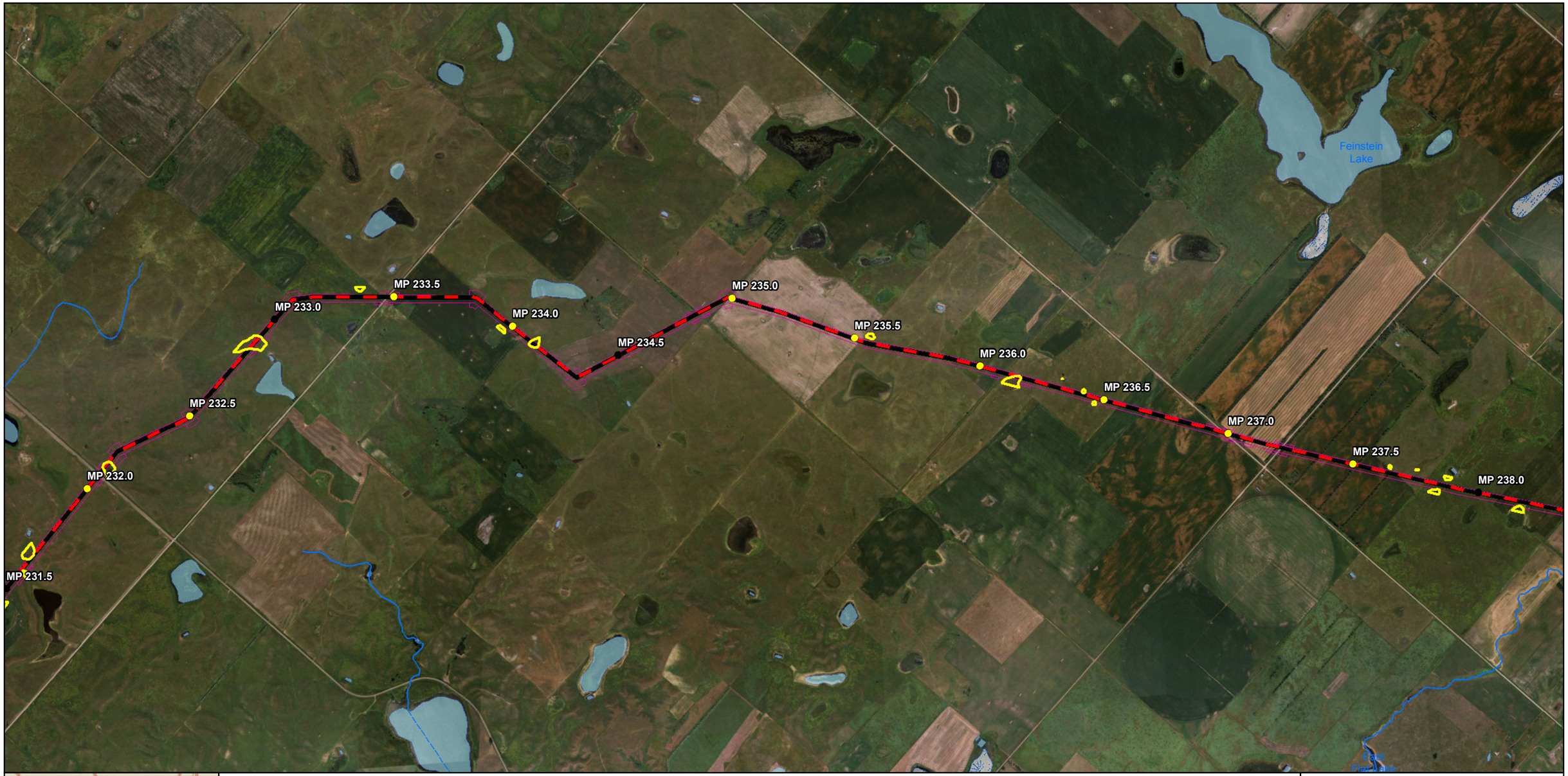

Milepost
Launcher/Receiver
Mainline Valve
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Spink Pump Station
Topeka Shiner Stream
PAB Wetland

PEM Wetland
PSS Wetland
NHD Waterbody

NHD Stream Type
334 Connector
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NHD Waterbody Type
390 Lake/Pond
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0 2,000 4,000 6,000 8,000
Feet

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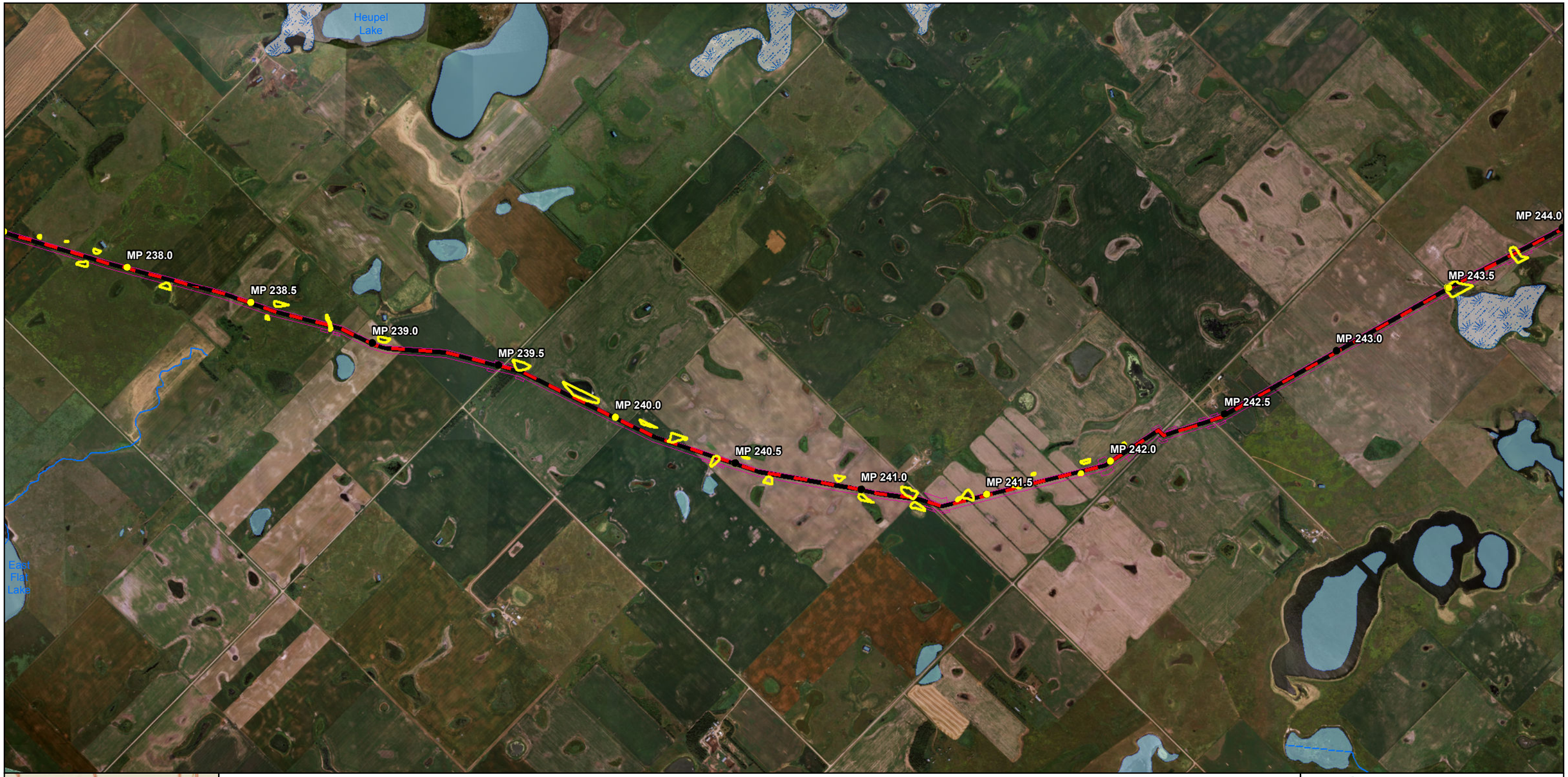

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Work Space
Spink Pump Station
Topeka Shiner Stream
PAB Wetland
PEM Wetland
PSS Wetland
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0 2,000 4,000 6,000 8,000
Feet

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0 2,000 4,000 6,000 8,000
Feet

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MP 255.0

Milepost
Launcher/Receiver
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Topeka Shiner Stream
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0 2,000 4,000 6,000 8,000
Feet

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Milepost
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0 2,000 4,000 6,000 8,000
Feet

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0 2,000 4,000 6,000 8,000
Feet

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Milepost
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0 2,000 4,000 6,000 8,000
Feet

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MP 277.0

Milepost
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0 2,000 4,000 6,000 8,000
Feet

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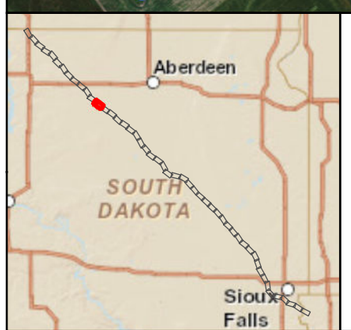

Milepost
Launcher/Receiver
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Topeka Shiner Stream
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0 2,000 4,000 6,000 8,000
Feet

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Milepost
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0 2,000 4,000 6,000 8,000
Feet

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Milepost
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Topeka Shiner Stream
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PEM Wetland
PSS Wetland
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0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

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MP 296.5
MP 297.0
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MP 298.0
MP 298.5
MP 299.0
North Fork Snake Creek
South Fork Snake Creek
South Fork Snake Creek

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
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Topeka Shiner Stream
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PEM Wetland
PSS Wetland
NHD Waterbody

NHD Stream Type
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390 Lake/Pond
466 Swampmarsh

0 2,000 4,000 6,000 8,000
Feet

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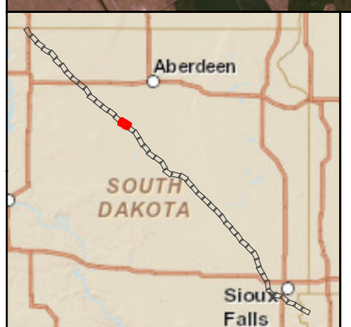
South Fork Snake Creek
South Fork Snake Creek



Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
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Topeka Shiner Stream
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PEM Wetland
PSS Wetland
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0 2,000 4,000 6,000 8,000
Feet

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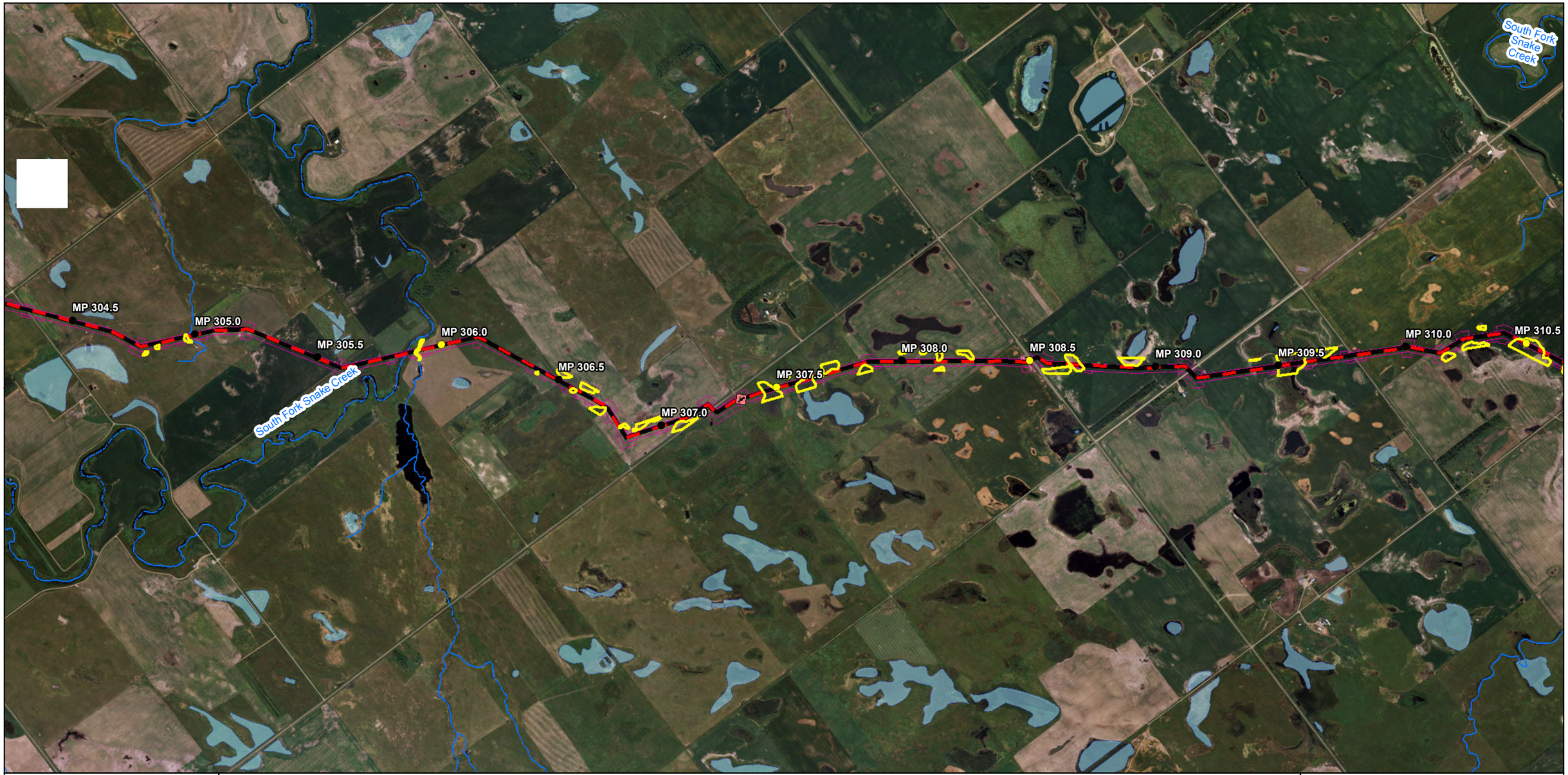

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Work Space

Spink Pump Station
Topeka Shiner Stream
PAB Wetland

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PSS Wetland
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0 2,000 4,000 6,000 8,000
Feet

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South Fork Snake Creek

South Fork Snake Creek

Dove Creek

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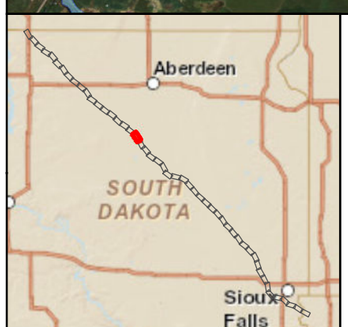

- Milepost
- Launcher/Receiver
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0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

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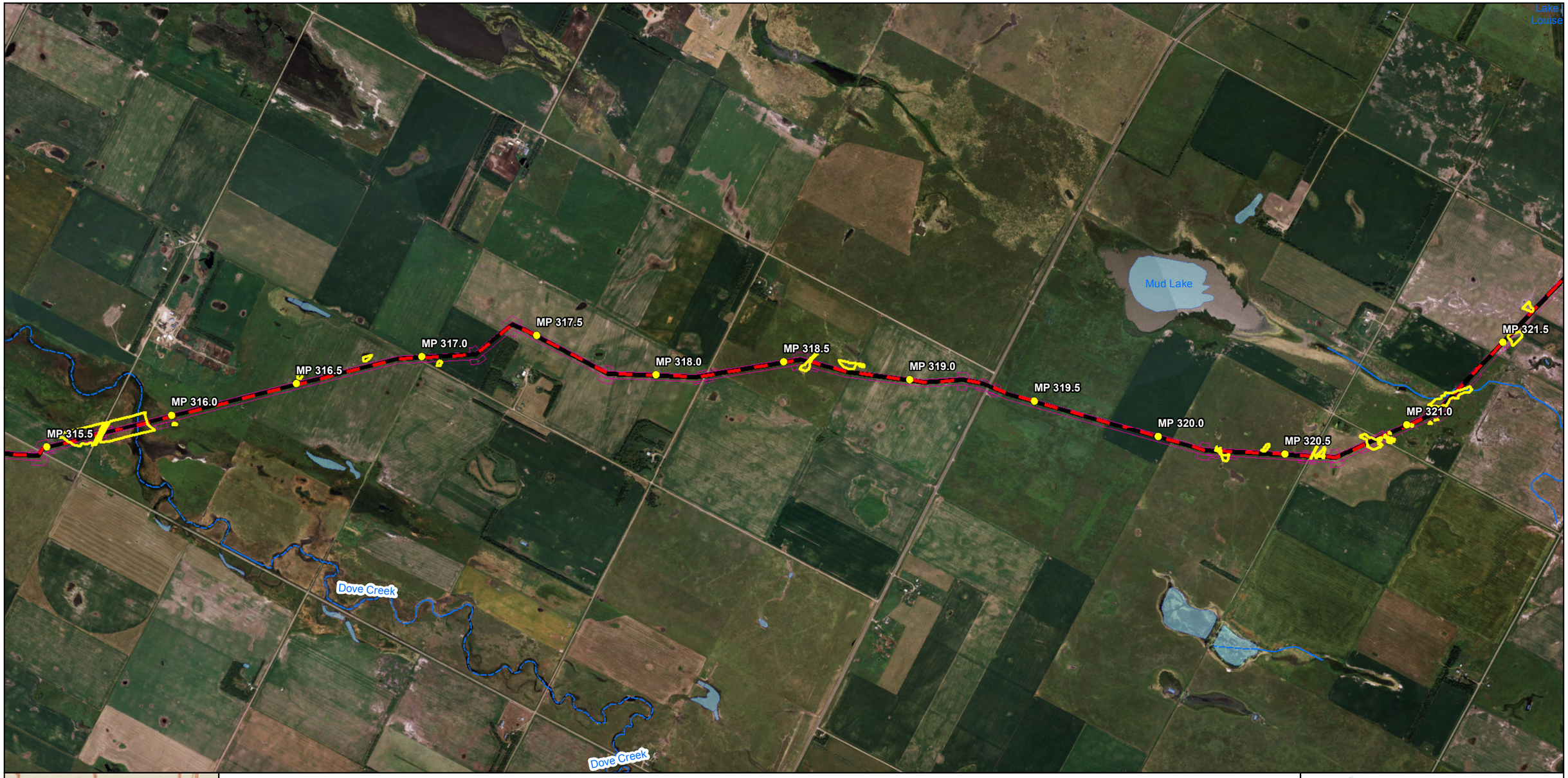

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Work Space
Spink Pump Station
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0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

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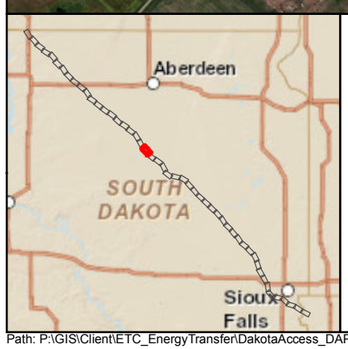
MP 327.5
Turtle Creek
Lake Louise



Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Work Space
Spink Pump Station
Topeka Shiner Stream
PAB Wetland
PEM Wetland
PSS Wetland
NHD Waterbody

NHD Stream Type
334 Connector
460 Stream
558 Artificial Path

NHD Waterbody Type
390 Lake/Pond
466 Swampmarsh

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

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MP 327.0
MP 327.5
MP 328.0
MP 328.5
MP 329.0
MP 329.5
MP 330.0
MP 330.5
MP 331.0
MP 331.5
MP 332.0
MP 332.5
MP 333.0
MP 333.5
Twin Lakes
Mud Lake

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Work Space
Spink Pump Station
Topeka Shiner Stream
PAB Wetland
PEM Wetland
PSS Wetland
NHD Waterbody

NHD Stream Type
334 Connector
460 Stream
558 Artificial Path

NHD Waterbody Type
390 Lake/Pond
466 Swampmarsh

0 2,000 4,000 6,000 8,000
Feet

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MP 333.0
MP 333.5
MP 334.0
MP 334.5
MP 335.0
MP 335.5
MP 336.0
MP A-0
MP A-0.5
MP A-1
MP A-1.5
MP A-2
MP A-2.5

Milepost
Reroute Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Previous Route
Work Space
Spink Pump Station
Topeka Shiner Stream
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PEM Wetland
PSS Wetland
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0 2,000 4,000 6,000 8,000
Feet

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James River
James River
Lake Oudie
MP A-2
MP A-2.5
MP A-3
MP A-3.5
MP A-4
MP A-4.5
MP A-5
MP A-5.5
MP A-6
MP 343.0
MP 343.5
MP 344.0
MP 344.5

Milepost
Reroute Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Previous Route
Work Space
Spink Pump Station
Topeka Shiner Stream
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0 2,000 4,000 6,000 8,000
Feet

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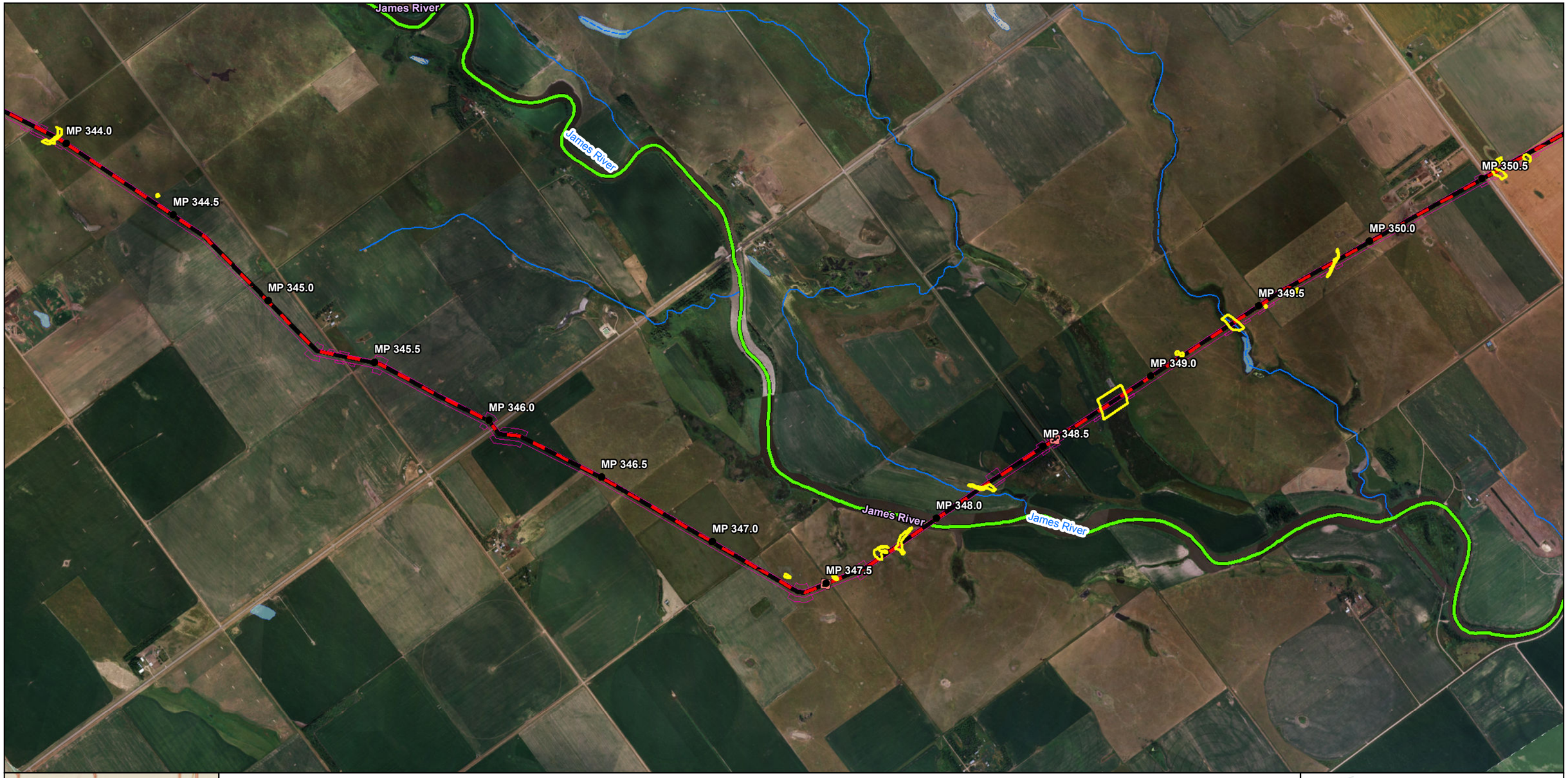

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Work Space
Spink Pump Station
Topeka Shiner Stream
PAB Wetland
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NHD Waterbody

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0 2,000 4,000 6,000 8,000
Feet

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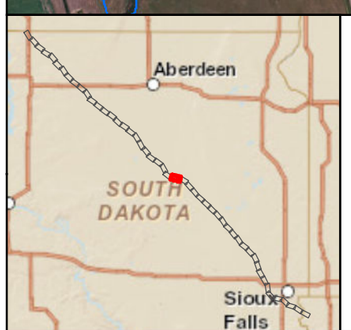

Milepost
Launcher/Receiver
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0 2,000 4,000 6,000 8,000
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- Milepost
- Launcher/Receiver
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0 2,000 4,000 6,000 8,000
Feet

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MP 361.5
MP 362.0
MP 362.5
MP 363.0
MP 363.5
MP 364.0
MP 364.5
MP 365.0
MP 365.5
MP 366.0
MP 366.5
MP 367.0
Shue Creek
Shue Creek

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Work Space
Spink Pump Station
Topeka Shiner Stream
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PEM Wetland
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0 2,000 4,000 6,000 8,000
Feet

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Milepost
Launcher/Receiver
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Proposed Route
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0 2,000 4,000 6,000 8,000
Feet

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Milepost
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0 2,000 4,000 6,000 8,000
Feet

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MP 378.0
MP 378.5
MP 379.0
MP 379.5
MP 380.0
MP 380.5
MP 381.0
MP 381.5
MP 382.0
MP 382.5
MP 383.0
West Redstone Creek

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Work Space
Spink Pump Station
Topeka Shiner Stream
PAB Wetland
PEM Wetland
PSS Wetland
NHD Waterbody

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0 2,000 4,000 6,000 8,000
Feet

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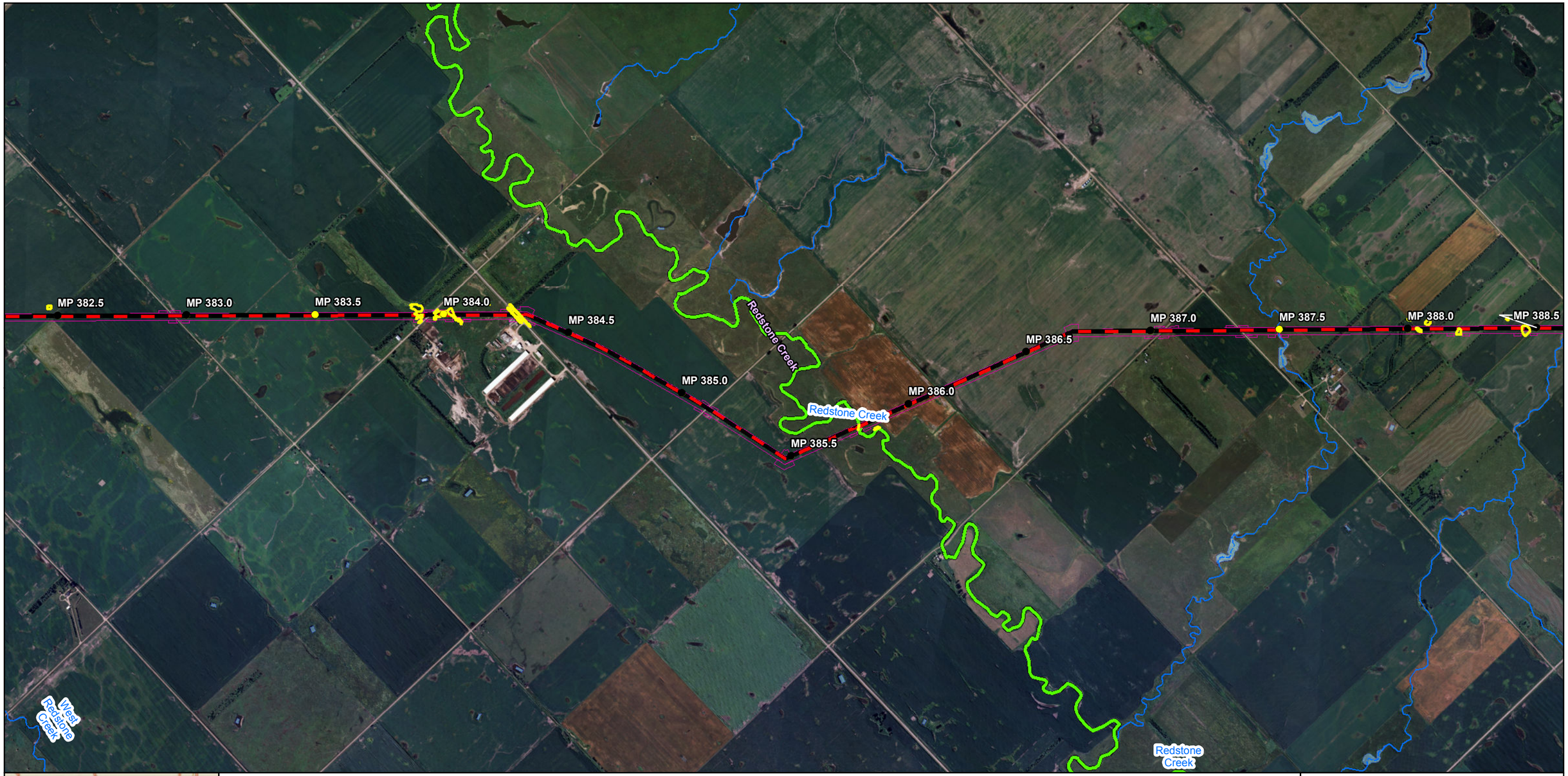

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
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NHD Waterbody

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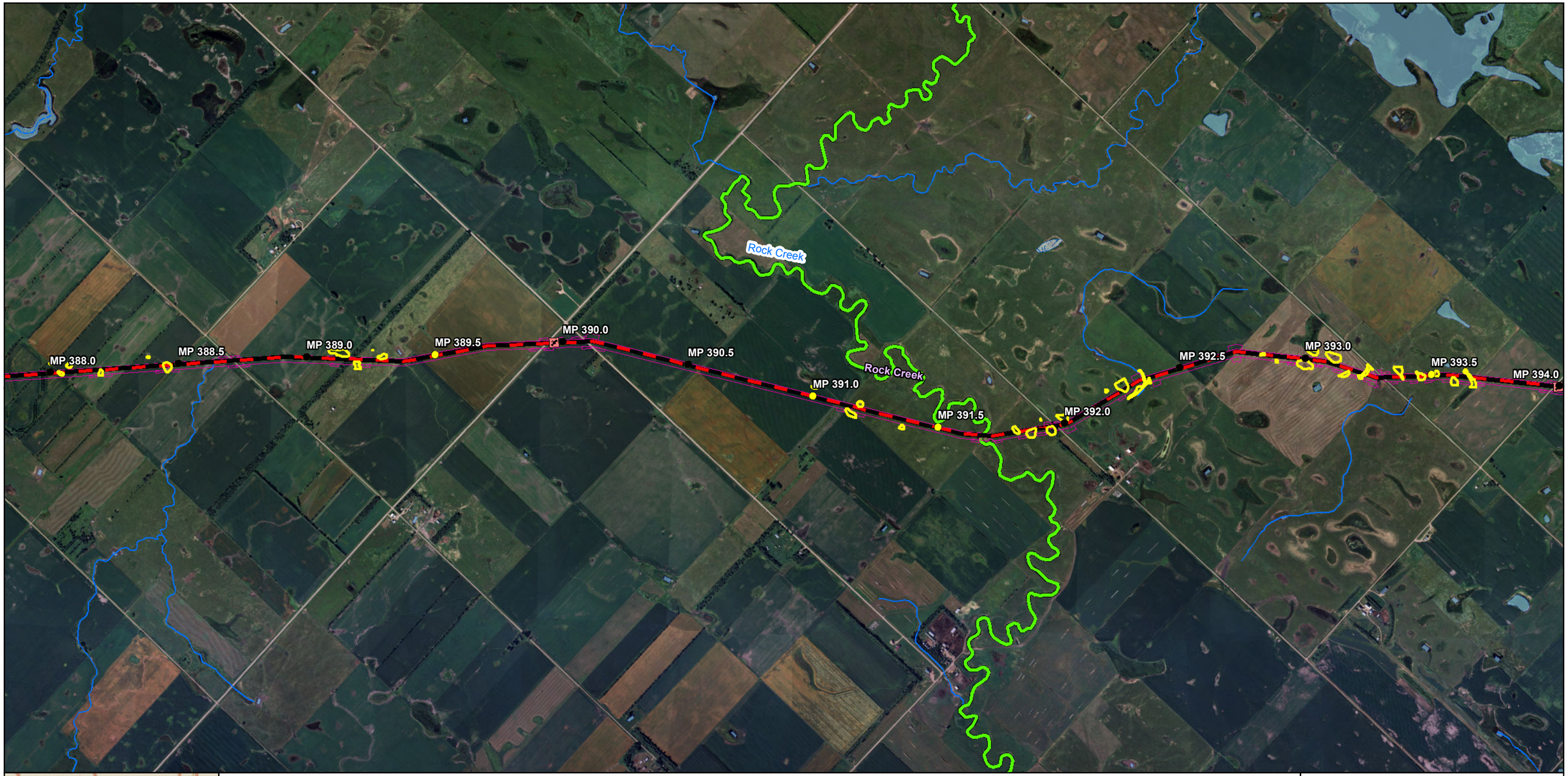

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Work Space
Spink Pump Station
Topeka Shiner Stream
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0 2,000 4,000 6,000 8,000
Feet

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Milepost
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Feet

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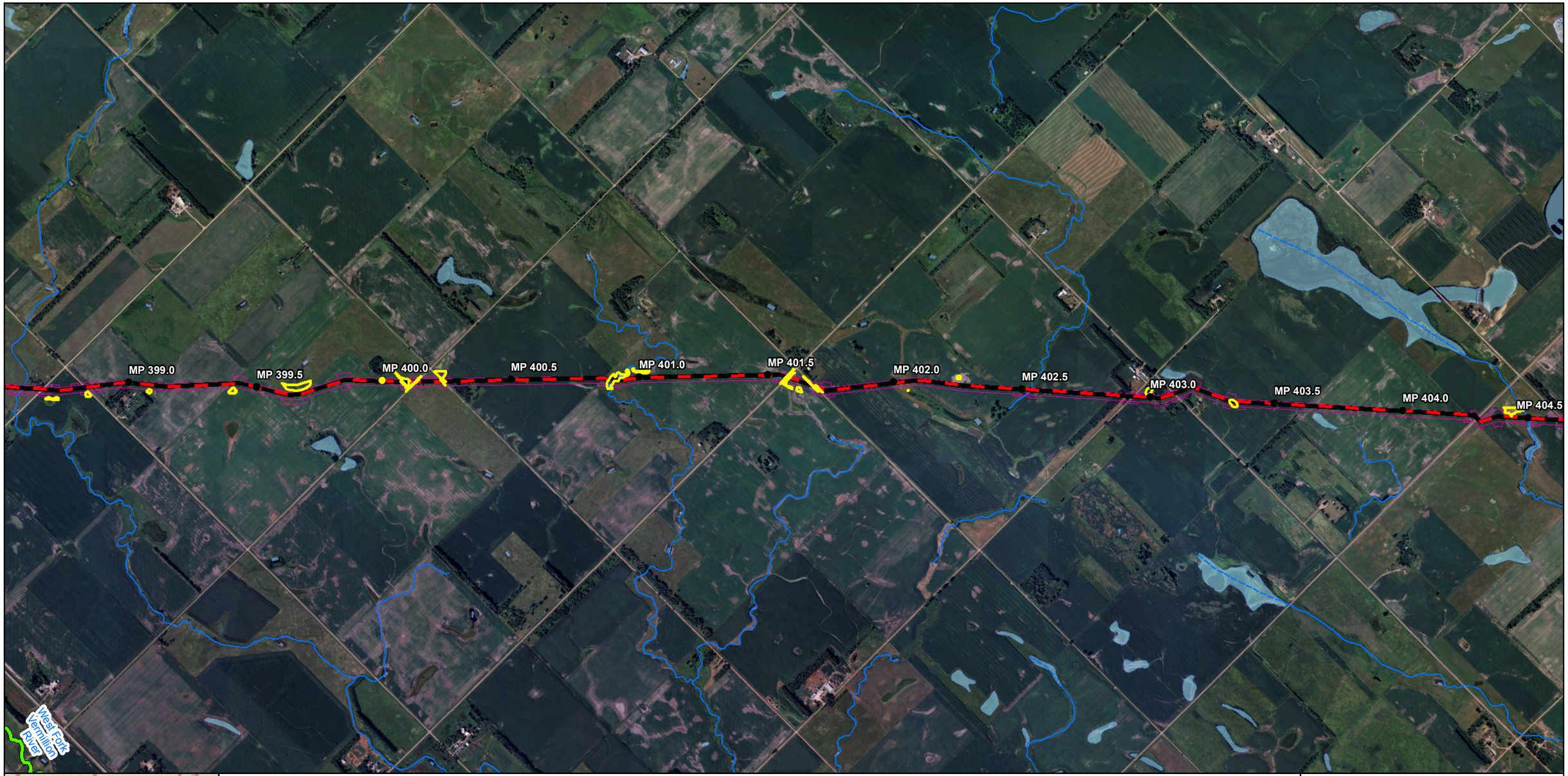

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Work Space
Spink Pump Station
Topeka Shiner Stream
PAB Wetland
PEM Wetland
PSS Wetland
NHD Waterbody

NHD Stream Type
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0 2,000 4,000 6,000 8,000
Feet

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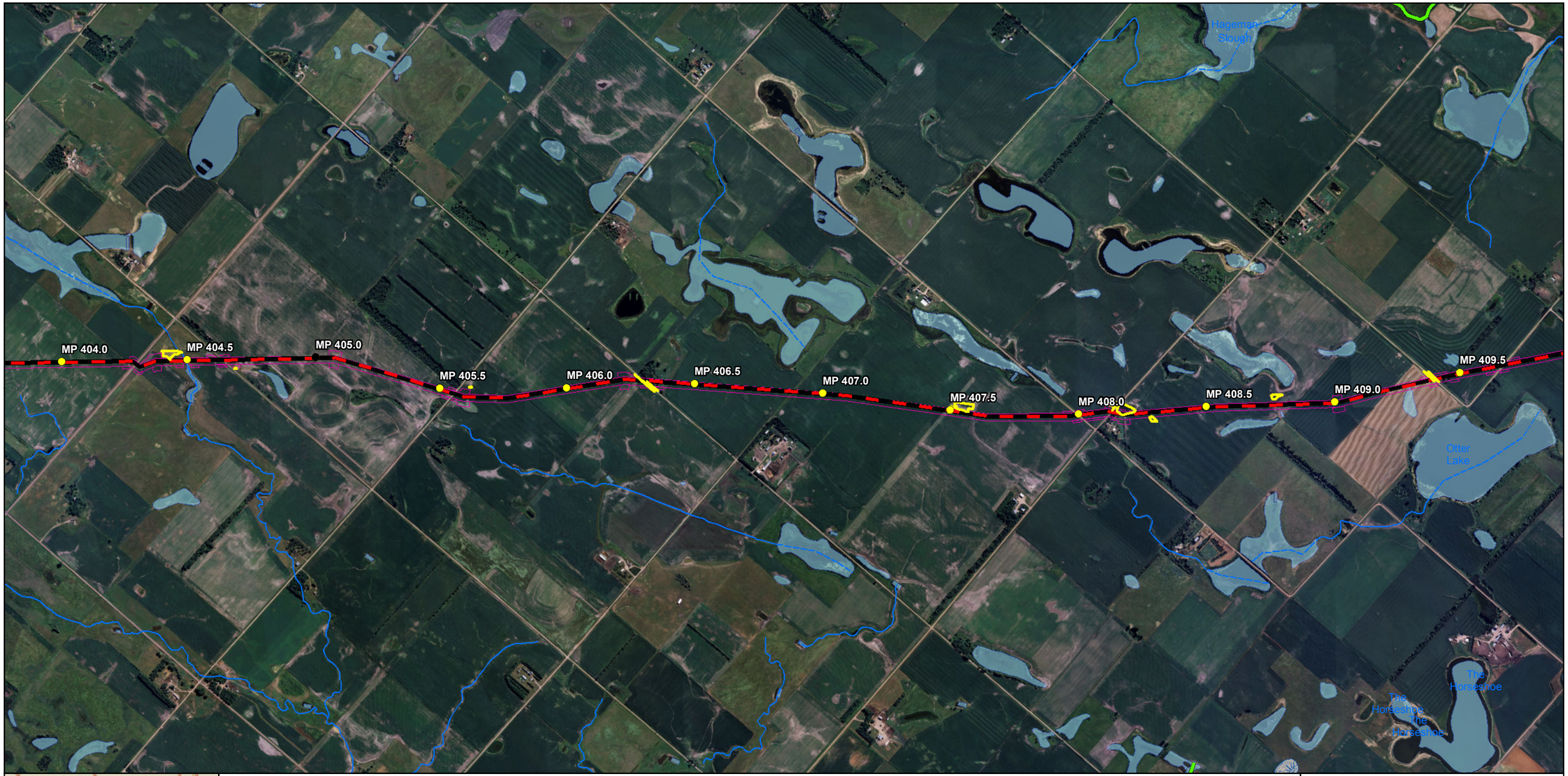

- Milepost
- Launcher/Receiver
- Mainline Valve
- Proposed Route
- Work Space
- Spink Pump Station
- Topeka Shiner Stream
- PAB Wetland
- PEM Wetland
- PSS Wetland
- NHD Waterbody

NHD Stream Type
- 334 Connector
- 460 Stream
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NHD Waterbody Type
- 390 Lake/Pond
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0 2,000 4,000 6,000 8,000
Feet

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East Fork Vermillion River

East Fork Vermillion River

East Fork Vermillion River

MP 409.5

MP 410.0

MP 410.5

MP 411.0

MP 411.5

MP 412.0

MP 412.5

MP 413.0

MP 413.5

MP 414.0

MP 414.5

MP 415.0

Otter Lake

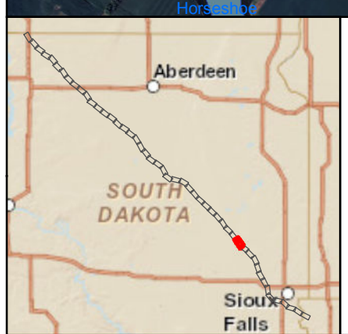
Silver Lake

The Horseshoe

Pedley Lake

Redley Lake

Lake Winfred



- Milepost
- Launcher/Receiver
- Mainline Valve
- Proposed Route
- Work Space
- Spink Pump Station
- Topeka Shiner Stream
- PAB Wetland
- PEM Wetland
- PSS Wetland
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NHD Stream Type

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0 2,000 4,000 6,000 8,000

Feet

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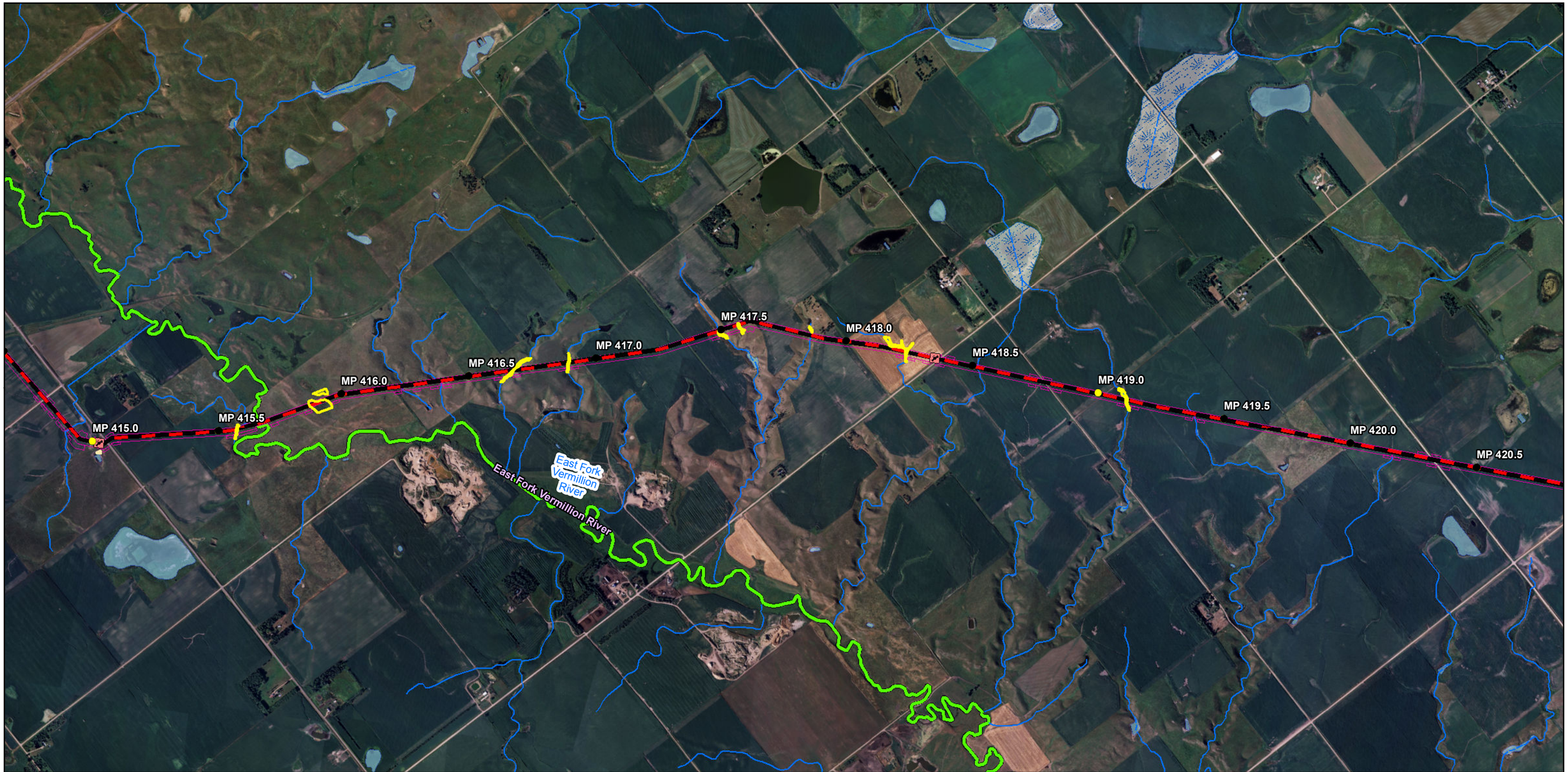

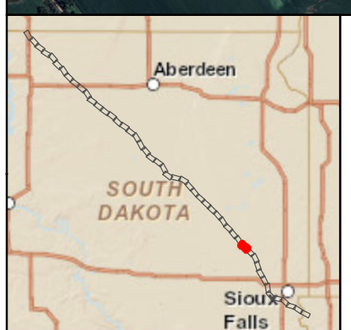

Milepost
Launcher/Receiver
Mainline Valve
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0 2,000 4,000 6,000 8,000
Feet

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Milepost
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0 2,000 4,000 6,000 8,000
Feet

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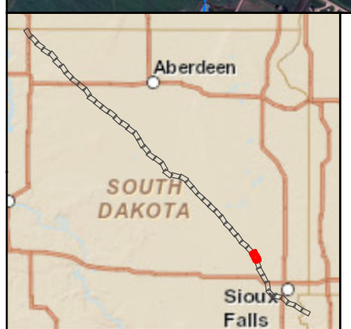

Milepost
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0 2,000 4,000 6,000 8,000
Feet

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MP 431.5
MP 432.0
MP 432.5
MP 433.0
MP 433.5
MP 434.0
MP 434.5
MP 435.0
MP 435:5
MP 436.0
MP 436.5
MP 437.0
West Branch Skunk Creek
Island Lake
Island Lake

Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
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Spink Pump Station
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0 2,000 4,000 6,000 8,000
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West Branch Skunk Creek

MP 436.5
MP 437.0
MP 437.5
MP 438.0
MP 438.5
MP 439.0
MP 439.5
MP 440.0
MP 440.5
MP 441.0
MP 441.5
MP 442.0
MP 442.5

West Branch Skunk Creek

Lost Lake

- Milepost
- Launcher/Receiver
- Mainline Valve
- Proposed Route
- Work Space
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- Topeka Shiner Stream
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0 2,000 4,000 6,000 8,000
Feet

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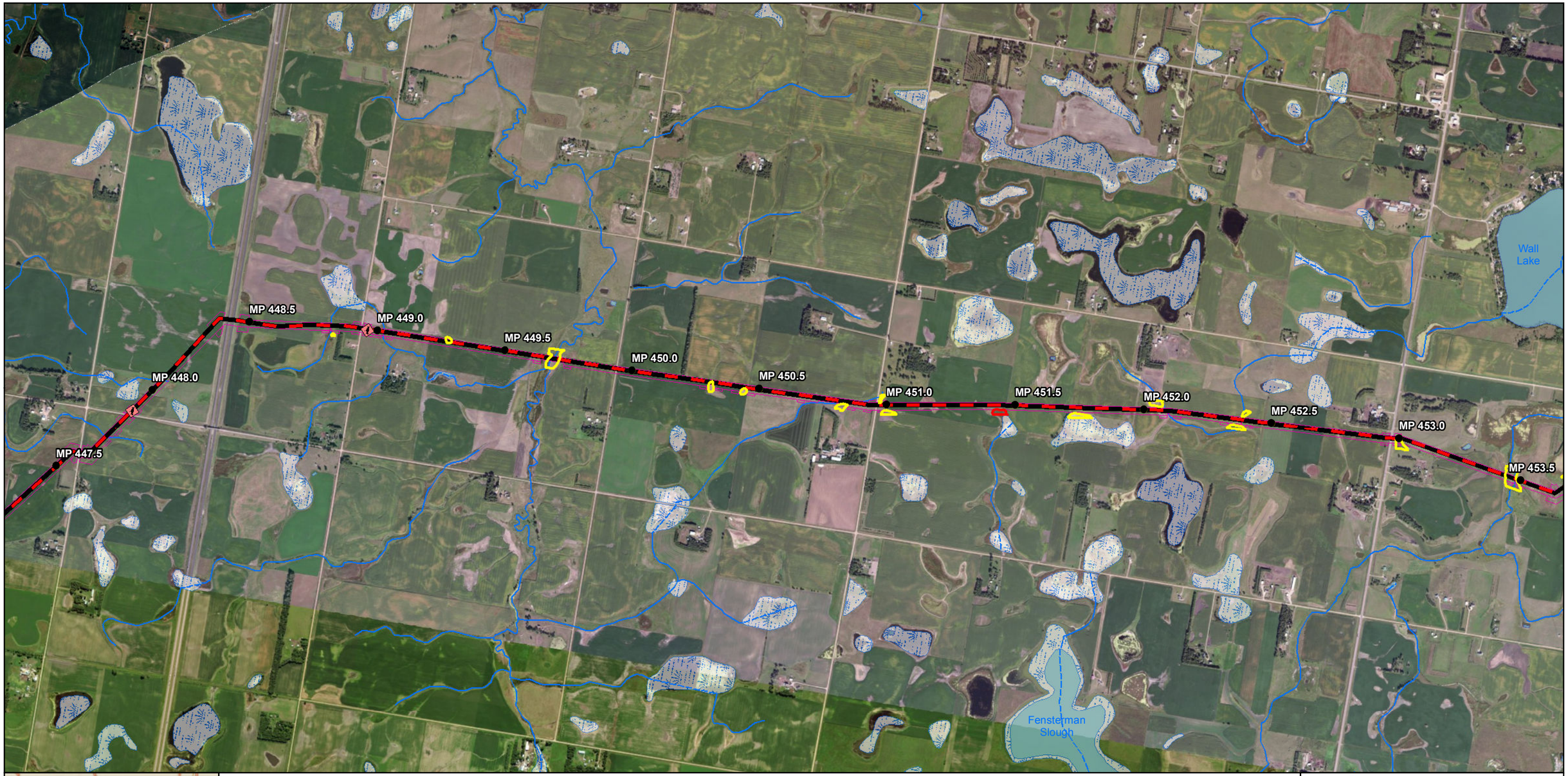

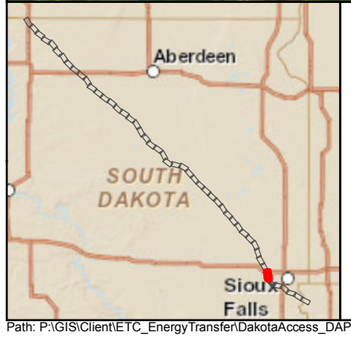

Milepost
Launcher/Receiver
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- Milepost
- Reroute Milepost
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Feet

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Dakota Access Pipeline Project
Hydrology
Surface Water Map
South Dakota

Page 46 of 52	Scale: 1:24,000
NAD 83 South Dakota South Ft	Date: Dec 05, 2014

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MP B-3

MP B-4

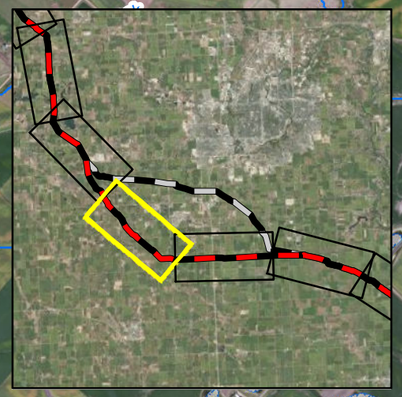
MP B-5

MP B-6

MP B-7

MP B-8

Beaver Creek



Milepost
Reroute Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Previous Route
Work Space
Spink Pump Station
Topeka Shiner Stream
PAB Wetland
PEM Wetland
PSS Wetland
NHD Waterbody

NHD Stream Type
334 Connector
460 Stream
558 Artificial Path

NHD Waterbody Type
390 Lake/Pond
466 Swampmarsh

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

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Dakota Access Pipeline Project
Hydrology
Surface Water Map
South Dakota

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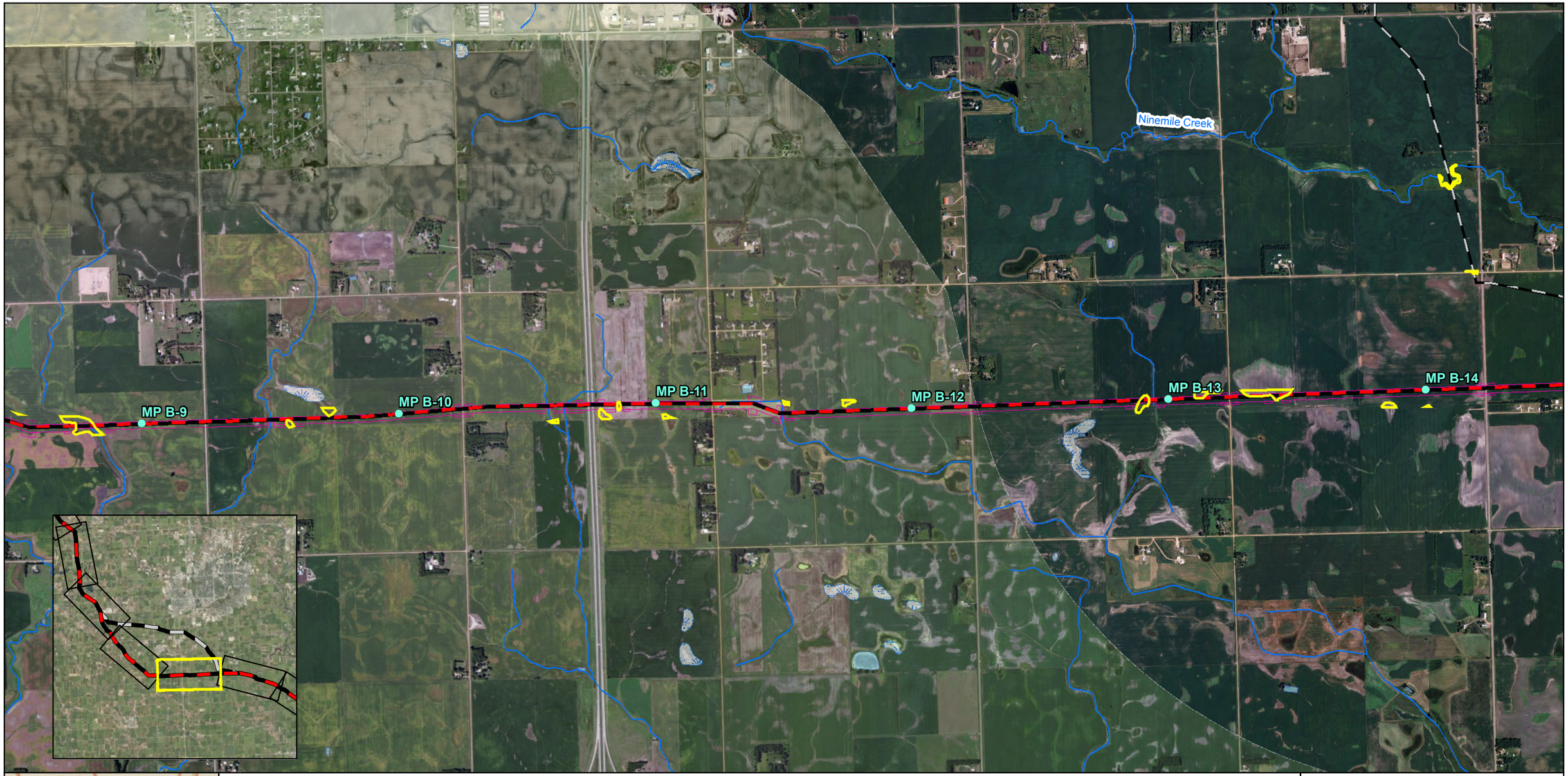

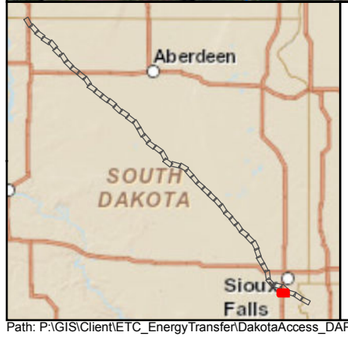

Milepost
Reroute Milepost
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Mainline Valve
Proposed Route
Previous Route
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Spink Pump Station
Topeka Shiner Stream
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0 2,000 4,000 6,000 8,000
Feet

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South Dakota

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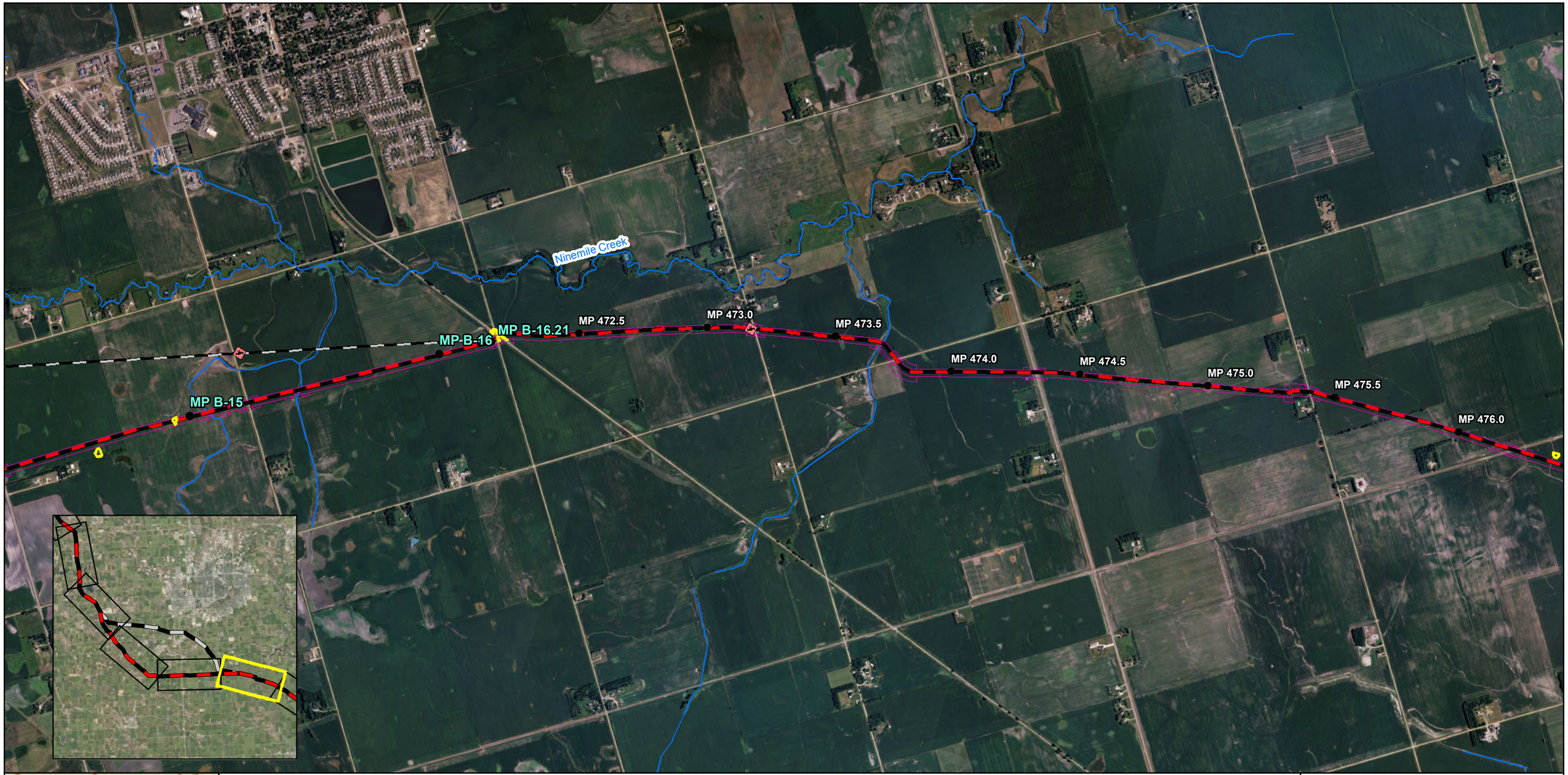

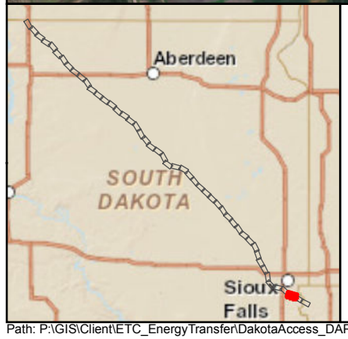

Milepost
Reroute Milepost
Launcher/Receiver
Mainline Valve
Proposed Route
Previous Route
Work Space
Spink Pump Station
Topeka Shiner Stream
PAB Wetland
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NHD Stream Type
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NHD Waterbody Type
390 Lake/Pond
466 Swampmarsh

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

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Dakota Access Pipeline Project
Hydrology
Surface Water Map
South Dakota

Page 49 of 52	Scale: 1:24,000
NAD 83 South Dakota South Ft	Date: Dec 05, 2014

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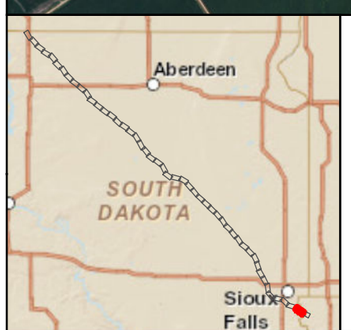

- Milepost
- Launcher/Receiver
- Mainline Valve
- Proposed Route
- Work Space
- Spink Pump Station
- Topeka Shiner Stream
- PAB Wetland
- PEM Wetland
- PSS Wetland
- NHD Waterbody

NHD Stream Type
- 334 Connector
- 460 Stream
- 558 Artificial Path

NHD Waterbody Type
- 390 Lake/Pond
- 466 Swampmarsh

0 2,000 4,000 6,000 8,000
Feet

DAKOTA ACCESS, LLC

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Dakota Access Pipeline Project
Hydrology
Surface Water Map
South Dakota

Page 50 of 52	Scale: 1:24,000
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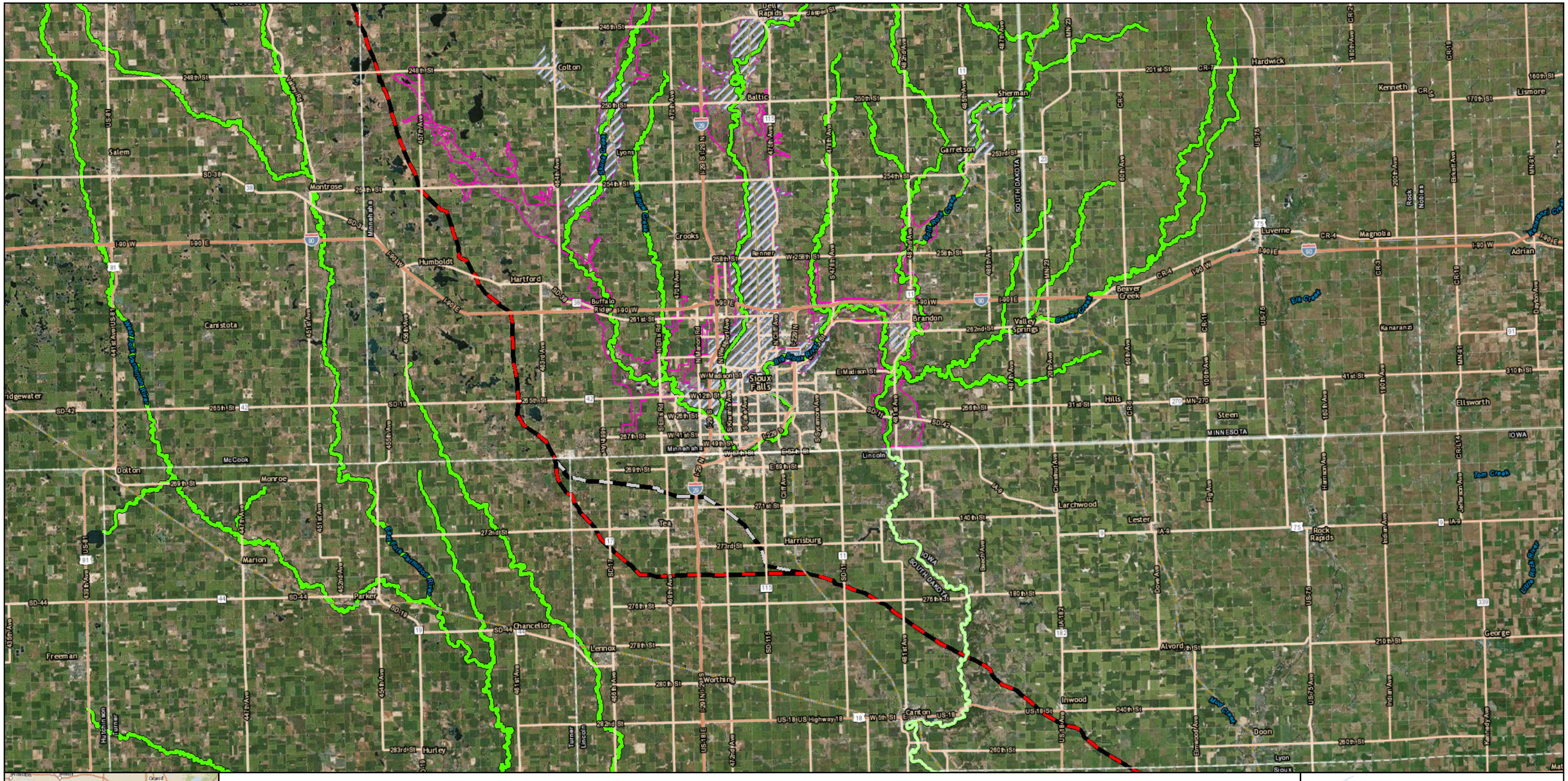

- Proposed Route
- Previous Route
- Topeka Shiner Stream
- Minnehaha Zone A (Sourcewater Protection Area)
- Minnehaha County Wellhead Protection Area

0 5 10 15 20 Miles

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Dakota Access, LLC
Dakota Access Pipeline Project
Hydrology
Minnehaha Sourcewater Map
South Dakota

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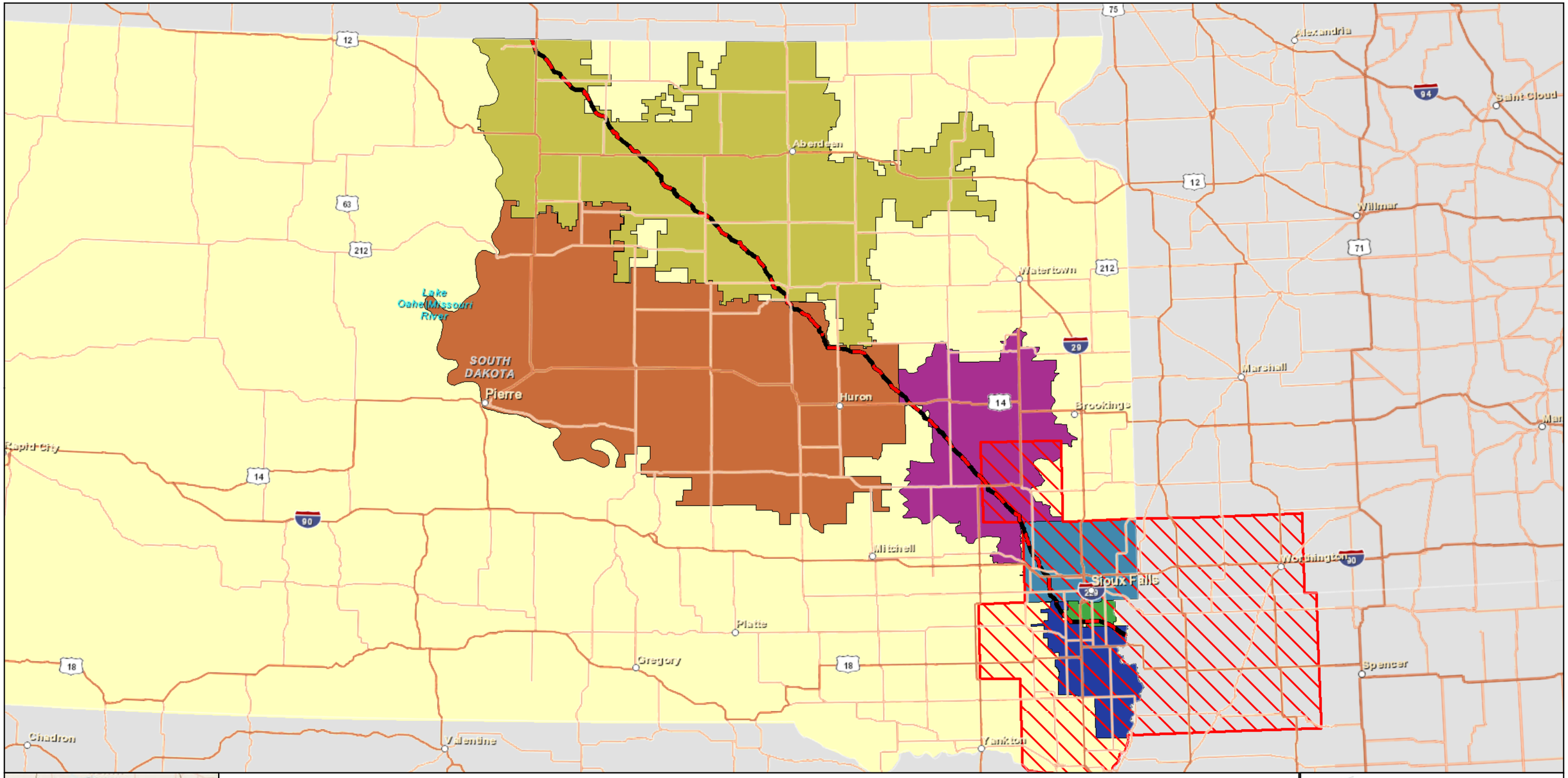
Aberdeen
Watertown
Huron
Pierre
SOUTH DAKOTA
Lake Oahe/Missouri River
Mitchell
Platte
Gregory
Chadron
Valentine
Rapid City
Sioux Falls
Yankton
Brookings
Marshall
Willmar
Alexandria
Saint Cloud
Spencer
Worthington
Proposed Route
Rural Water System Boundaries
Kingbrook
Lincoln
Mid Dakota
Minnehaha
South Lincoln
WEB
Lewis and Clark
0
30
60
90
120
Miles
DAKOTA ACCESS, LLC
Dakota Access, LLC
Dakota Access Pipeline Project
Hydrology
Rural Water Systems Map
South Dakota
Page 52 of 52
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Exhibit A

Project Mapping

Exhibit A5

USGS Landcover/Land Use Field Data Maps

North Dakota

Campbell

MP 210.0
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MP 212.0
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MP 213.5
MP 214.0
MP 214.5
MP 215.0
MP 215.5
MP 216.0

Milepost
Proposed Route

USGS NLCD Type
- Open Water
- Developed, Open Space
- Developed, Low intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

Land Use Field Data Type
- Haylands
- Pasturelands and rangelands
- Undisturbed native grassland
- Irrigated lands
- Land use primarily for row and no-row crops in rotation
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- Residential
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USFWS Fee Owned Land
- Waterfowl Protection Area

USFWS Easements
- Grassland
- Grassland/Wetland
- Wetland

0 2,000 4,000 6,000 8,000 Feet

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Dakota Access, LLC
Dakota Access Pipeline Project
USGS Landcover/Land Use Field Data
South Dakota

Page 1 of 49	Scale: 1:24,000
NAD 83 South Dakota South Ft	Date: Dec 15, 2014

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Milepost
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0 2,000 4,000 6,000 8,000 Feet

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Dakota Access Pipeline Project
USGS Landcover/Land Use Field Data
South Dakota

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NAD 83 South Dakota South Ft	Date: Dec 15, 2014

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Milepost
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0 2,000 4,000 6,000 8,000 Feet

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USGS Landcover/Land Use Field Data
South Dakota

Page 3 of 49	Scale: 1:24,000
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MP 232.5

Milepost
Proposed Route

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0 2,000 4,000 6,000 8,000 Feet

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Dakota Access Pipeline Project
USGS Landcover/Land Use Field Data
South Dakota

Page 4 of 49	Scale: 1:24,000
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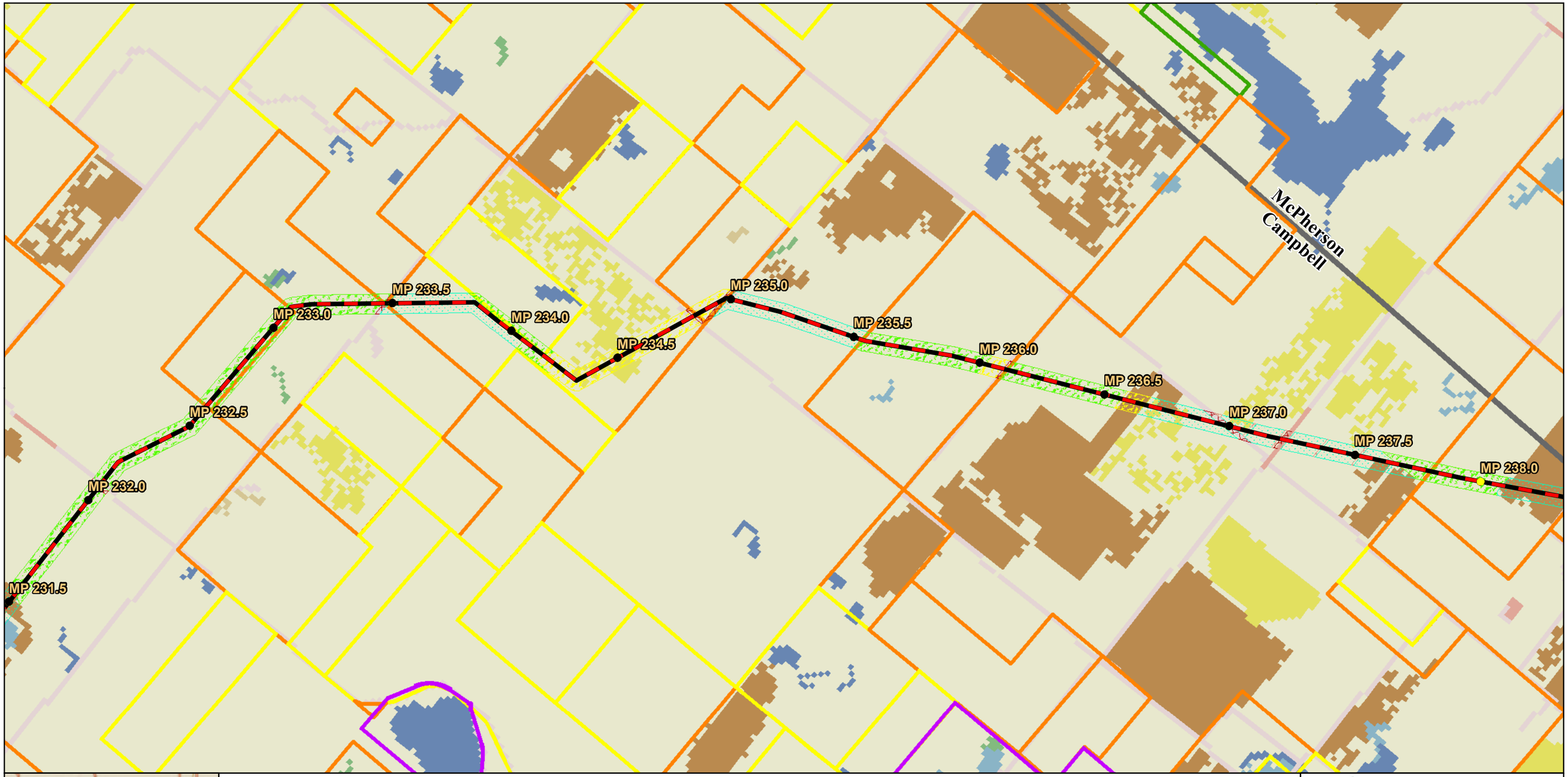

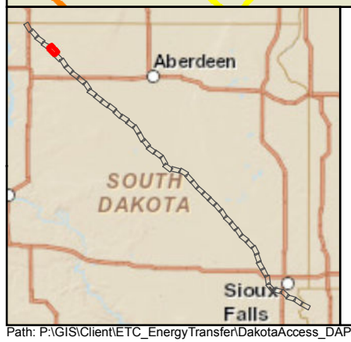

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USFWS Easements
- Grassland
- Grassland/Wetland
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0 2,000 4,000 6,000 8,000 Feet

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Dakota Access Pipeline Project
USGS Landcover/Land Use Field Data
South Dakota

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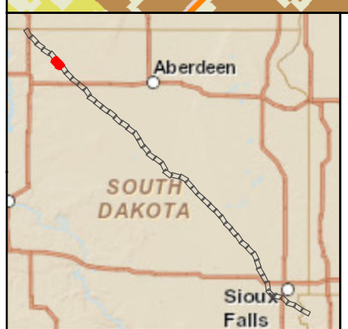
Campbell
McPherson
Edmunds



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0 2,000 4,000 6,000 8,000 Feet

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South Dakota

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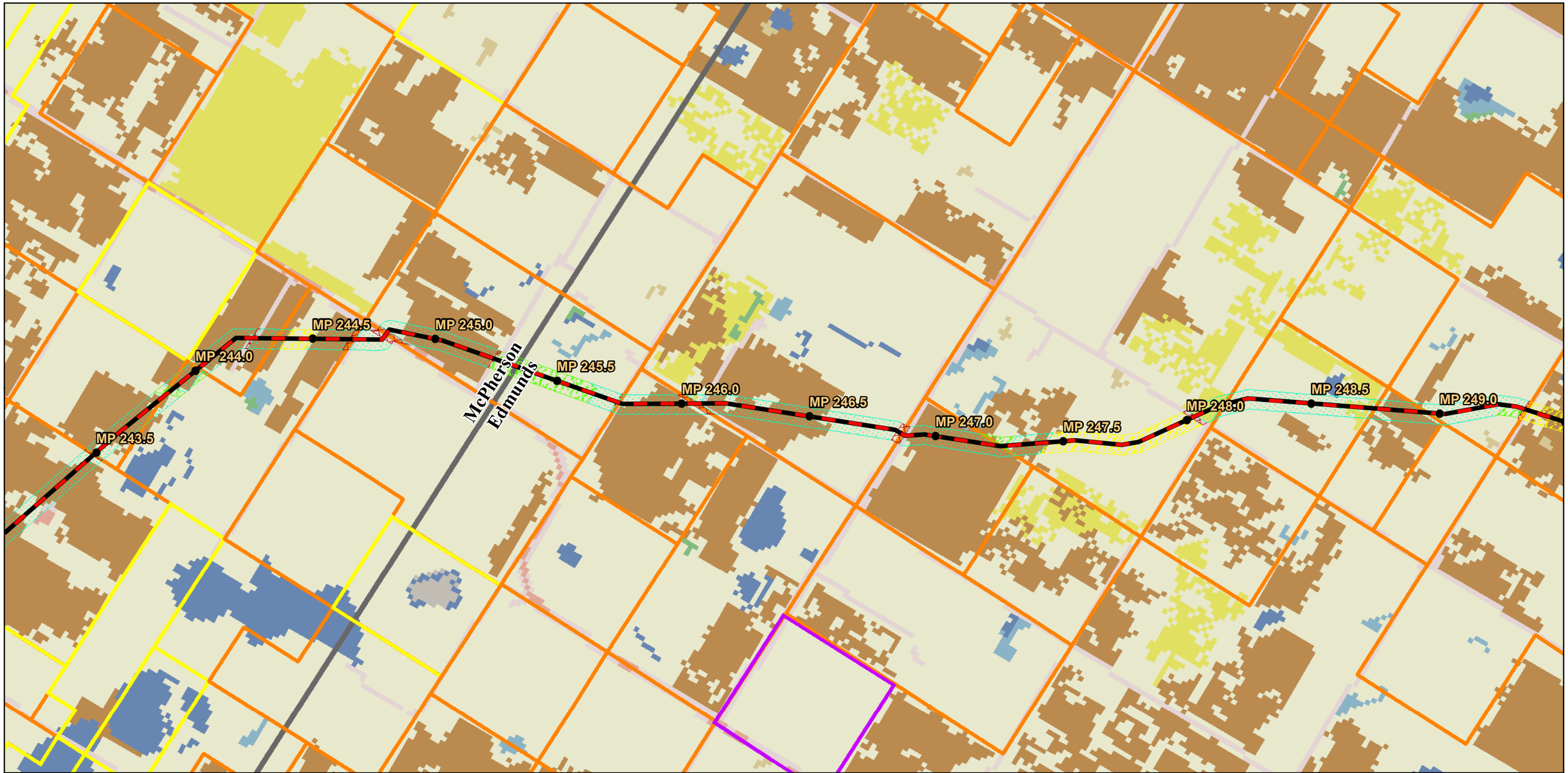

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- Grassland
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0 2,000 4,000 6,000 8,000 Feet

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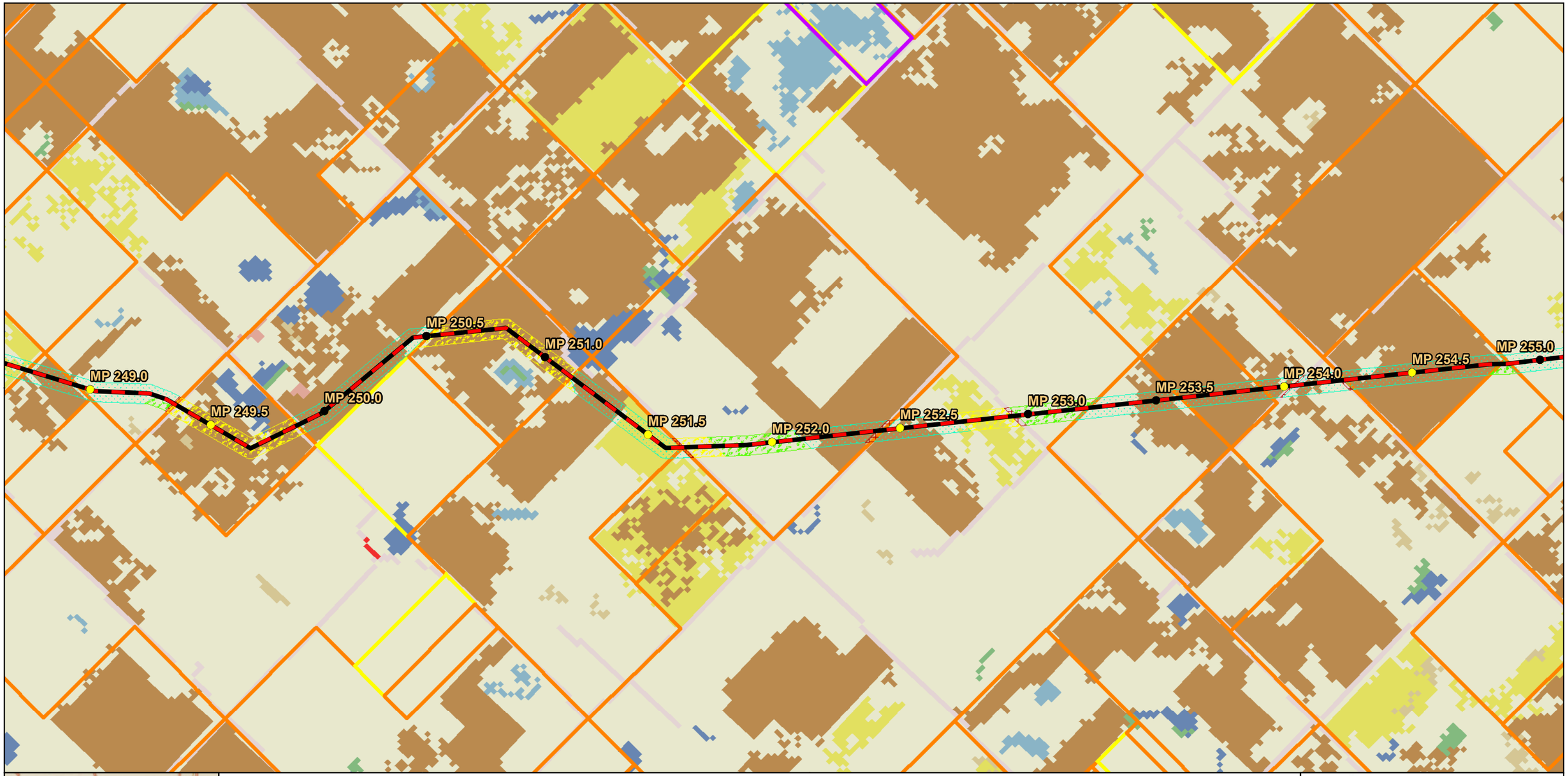

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0 2,000 4,000 6,000 8,000 Feet

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NAD 83 South Dakota South Ft	Date: Dec 15, 2014

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Milepost
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0 2,000 4,000 6,000 8,000 Feet

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Dakota Access Pipeline Project
USGS Landcover/Land Use Field Data
South Dakota

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NAD 83 South Dakota South Ft	Date: Dec 15, 2014

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Milepost
Proposed Route

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0 2,000 4,000 6,000 8,000 Feet

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Dakota Access Pipeline Project
USGS Landcover/Land Use Field Data
South Dakota

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MP 271.5

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USGS Landcover/Land Use Field Data
South Dakota

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Milepost
Proposed Route

USGS NLCD Type
- Open Water
- Developed, Open Space
- Developed, Low intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

Land Use Field Data Type
- Haylands
- Pasturelands and rangelands
- Undisturbed native grassland
- Irrigated lands
- Land use primarily for row and no-row crops in rotation
- Public, commercial, and institutional use
- Residential
- Rural residences and farmsteads, family farms, and ranches

USFWS Fee Owned Land
- Waterfowl Protection Area

USFWS Easements
- Grassland
- Grassland/Wetland
- Wetland

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

Dakota Access, LLC
Dakota Access Pipeline Project
USGS Landcover/Land Use Field Data
South Dakota

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MP 282.0
MP 282.5
Edmunds
Faulk

Milepost
Proposed Route

USGS NLCD Type
- Open Water
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0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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Dakota Access Pipeline Project
USGS Landcover/Land Use Field Data
South Dakota

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Edmunds
Faulk

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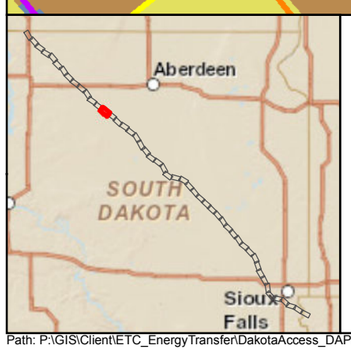

Milepost
Proposed Route

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USGS Landcover/Land Use Field Data
South Dakota

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Milepost
Proposed Route

USGS NLCD Type
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DAKOTA ACCESS, LLC

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USGS Landcover/Land Use Field Data
South Dakota

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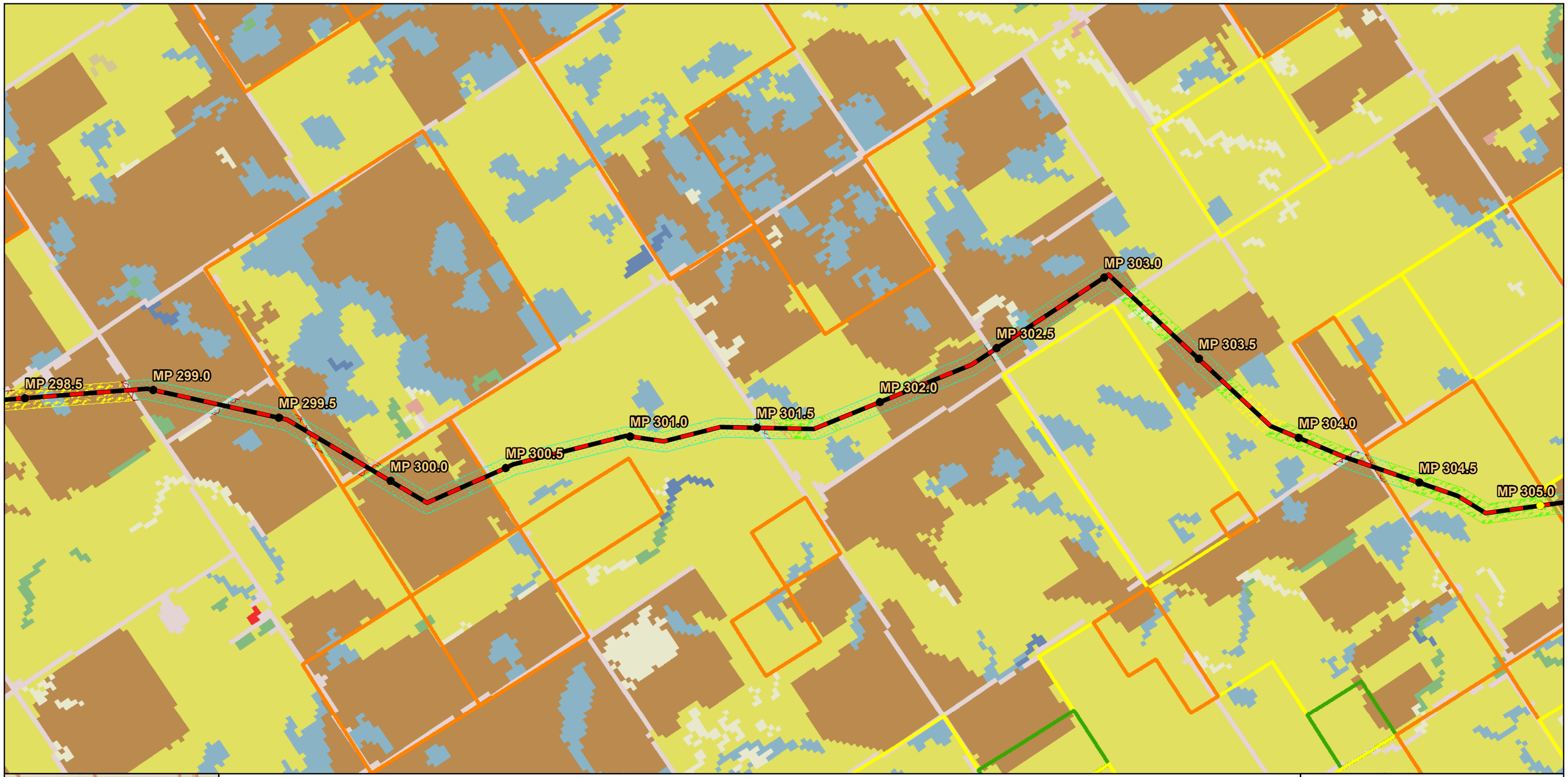

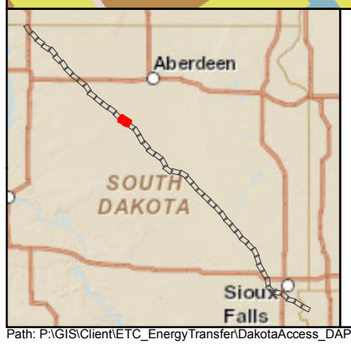

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South Dakota

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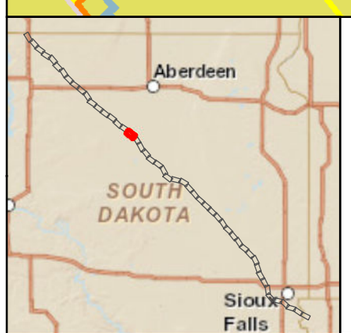

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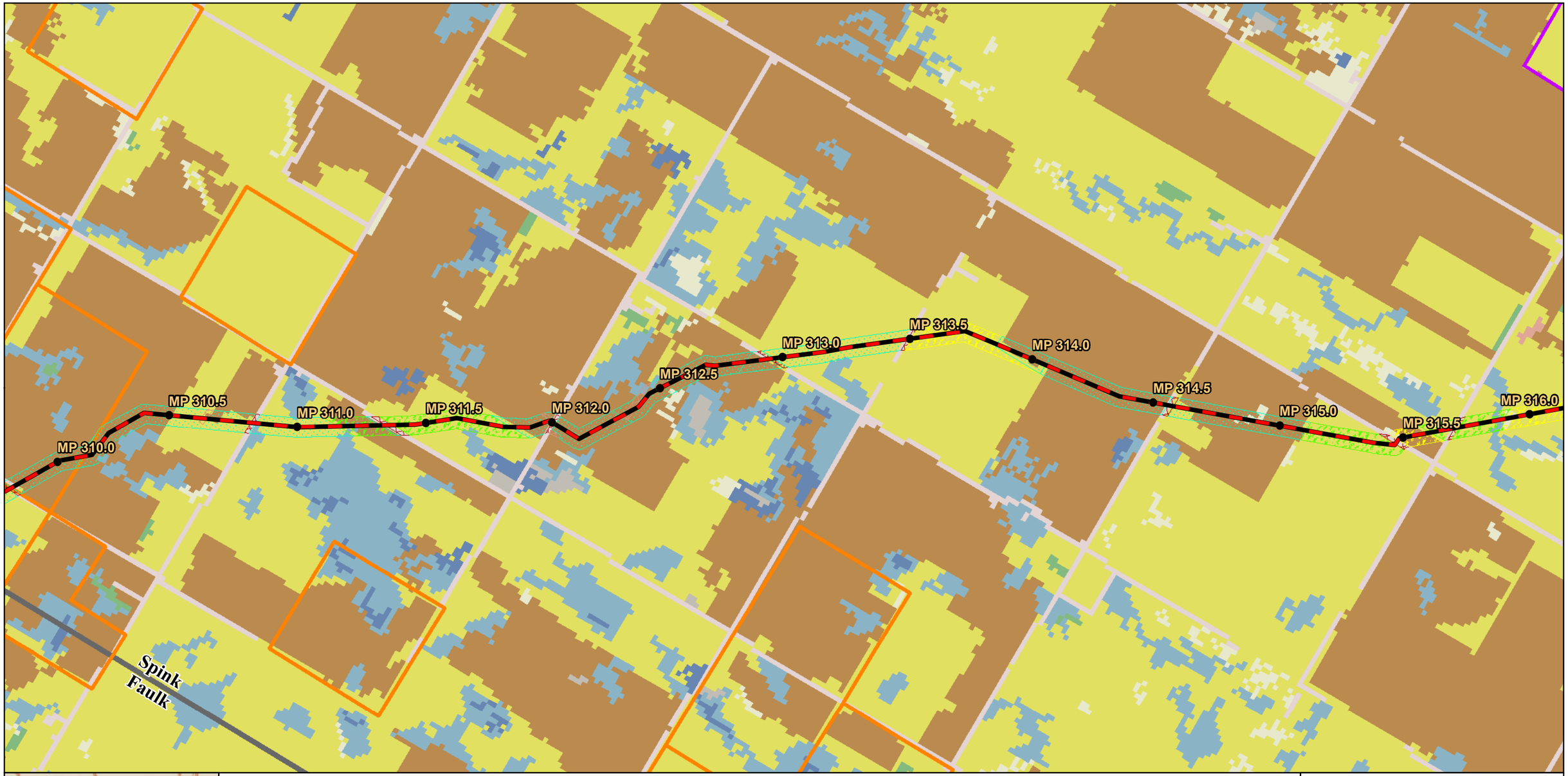

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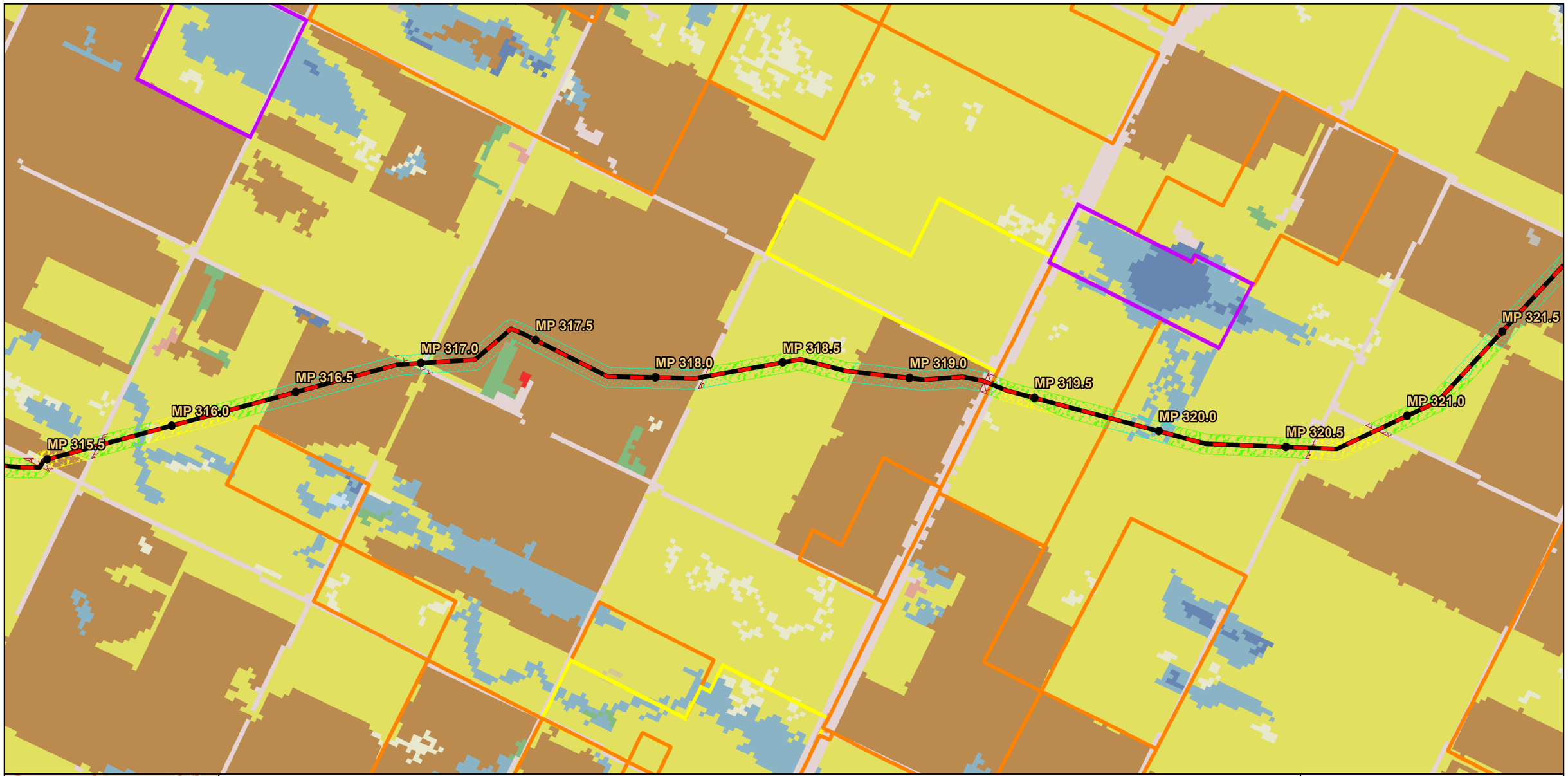

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0 2,000 4,000 6,000 8,000 Feet

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South Dakota

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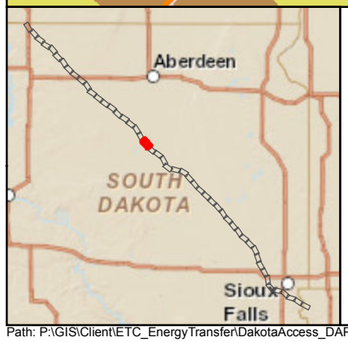

Milepost
Proposed Route

USGS NLCD Type
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- Grassland
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0 2,000 4,000 6,000 8,000 Feet

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South Dakota

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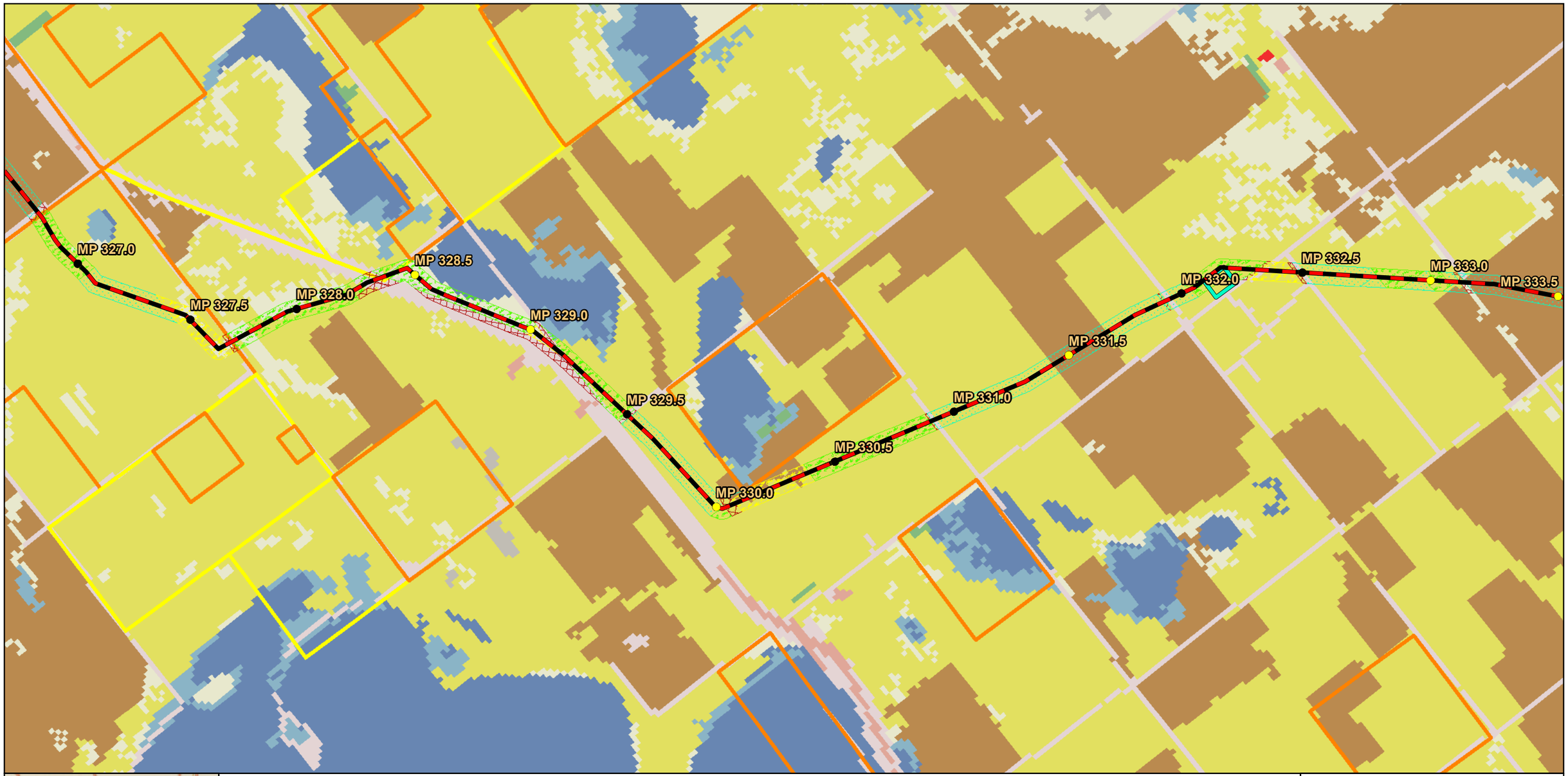

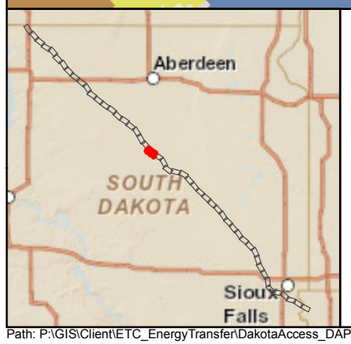

Milepost
Proposed Route

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USFWS Easements
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0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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South Dakota

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Milepost
Reroute Milepost
Proposed Route
Previous Route

USGS NLCD Type
- Open Water
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0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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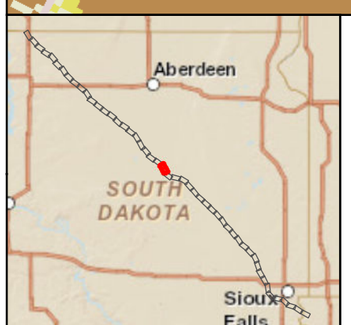

Milepost
Reroute Milepost
Proposed Route
Previous Route

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USFWS Fee Owned Land
Waterfowl Protection Area

USFWS Easements
Grassland
Grassland/Wetland
Wetland

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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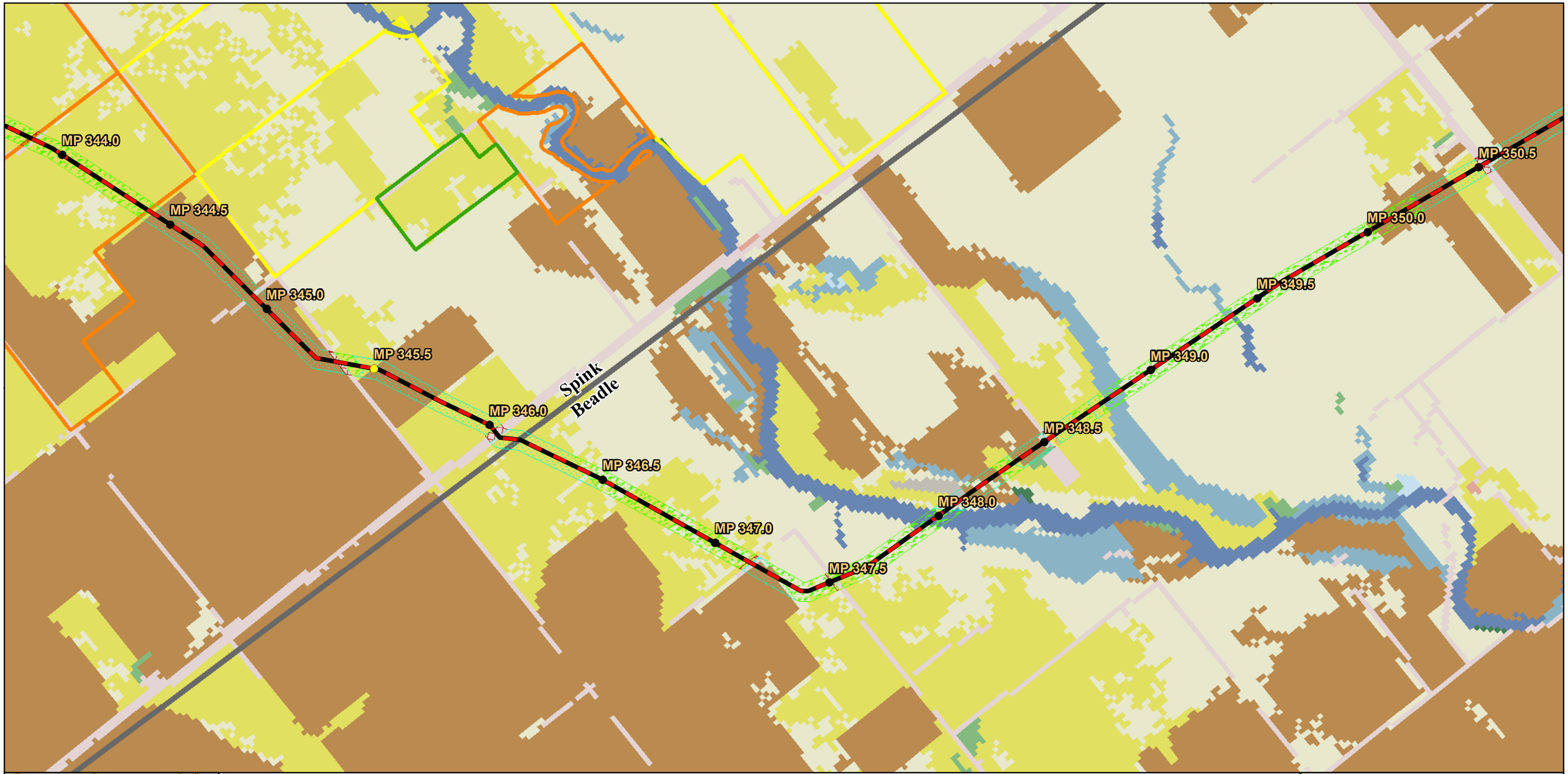

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Spink
Beadle

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- Grassland
- Grassland/Wetland
- Wetland

0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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Dakota Access Pipeline Project
USGS Landcover/Land Use Field Data
South Dakota

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Milepost
Proposed Route

USGS NLCD Type
- Open Water
- Developed, Open Space
- Developed, Low intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
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- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

Land Use Field Data Type
- Haylands
- Pasturelands and rangelands
- Undisturbed native grassland
- Irrigated lands
- Land use primarily for row and no-row crops in rotation
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- Residential
- Rural residences and farmsteads, family farms, and ranches

USFWS Fee Owned Land
- Waterfowl Protection Area

USFWS Easements
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0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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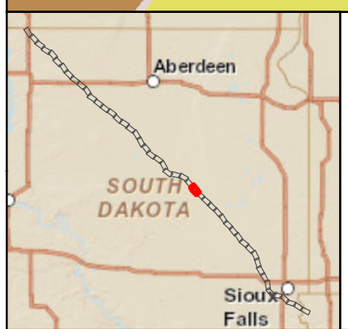

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Beadle

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Milepost
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DAKOTA ACCESS, LLC

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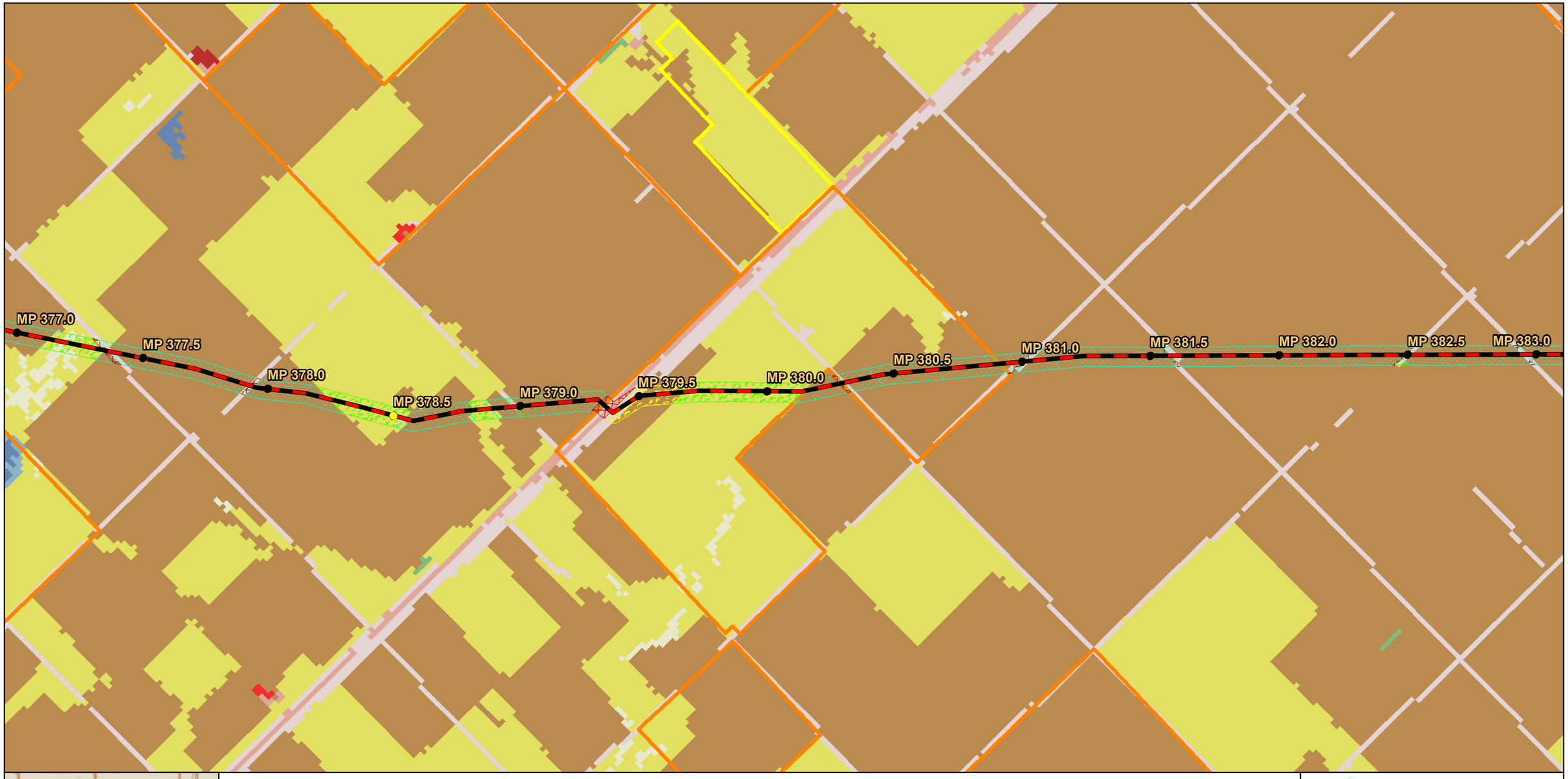

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USGS Landcover/Land Use Field Data
South Dakota

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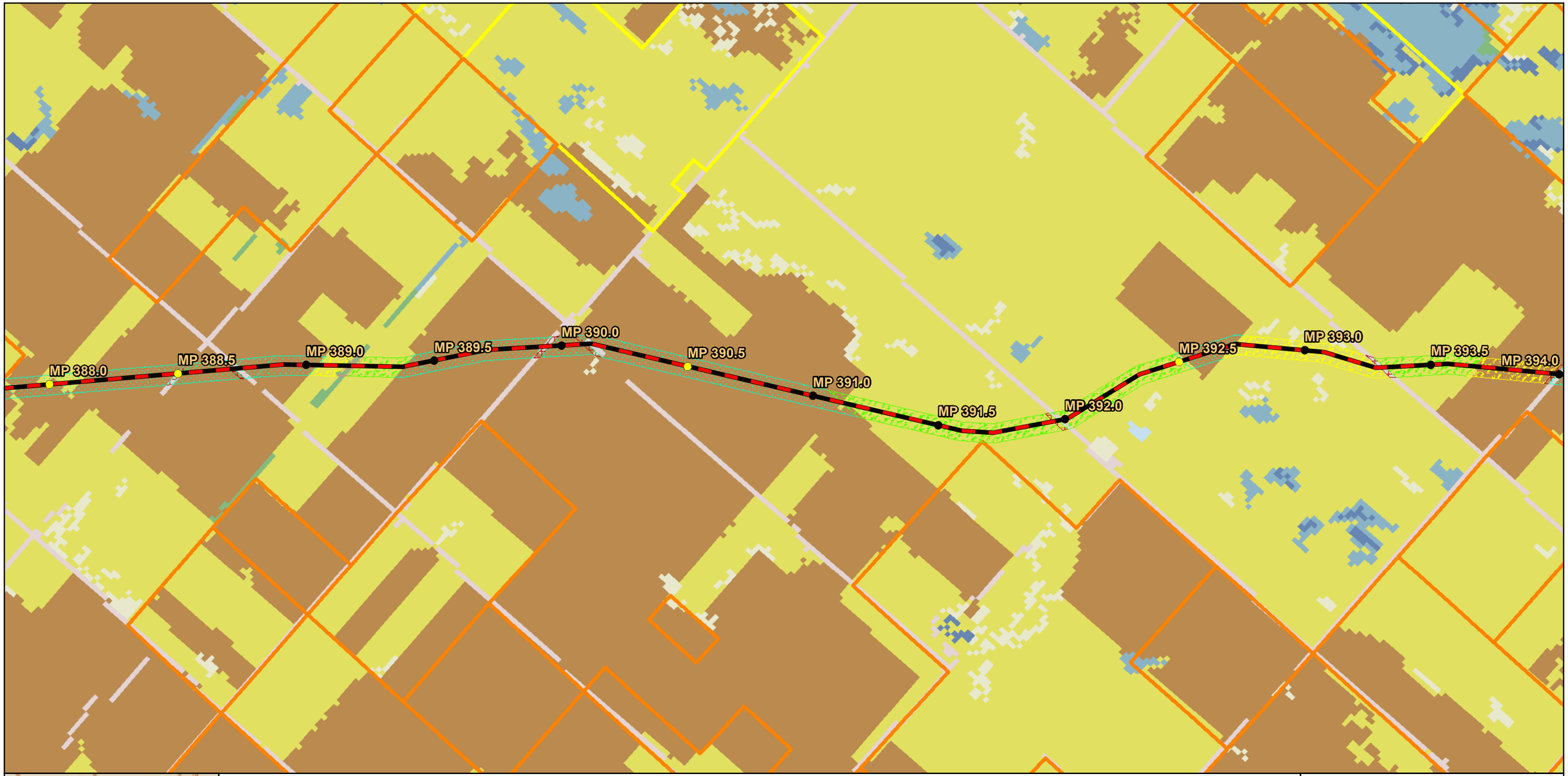

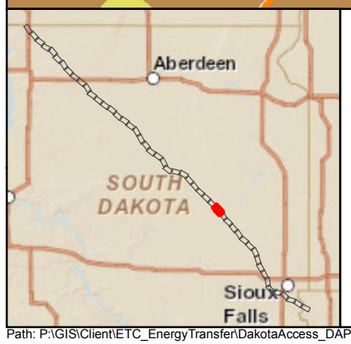

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0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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Kingsbury Miner

Milepost
Proposed Route

USGS NLCD Type
- Open Water
- Developed, Open Space
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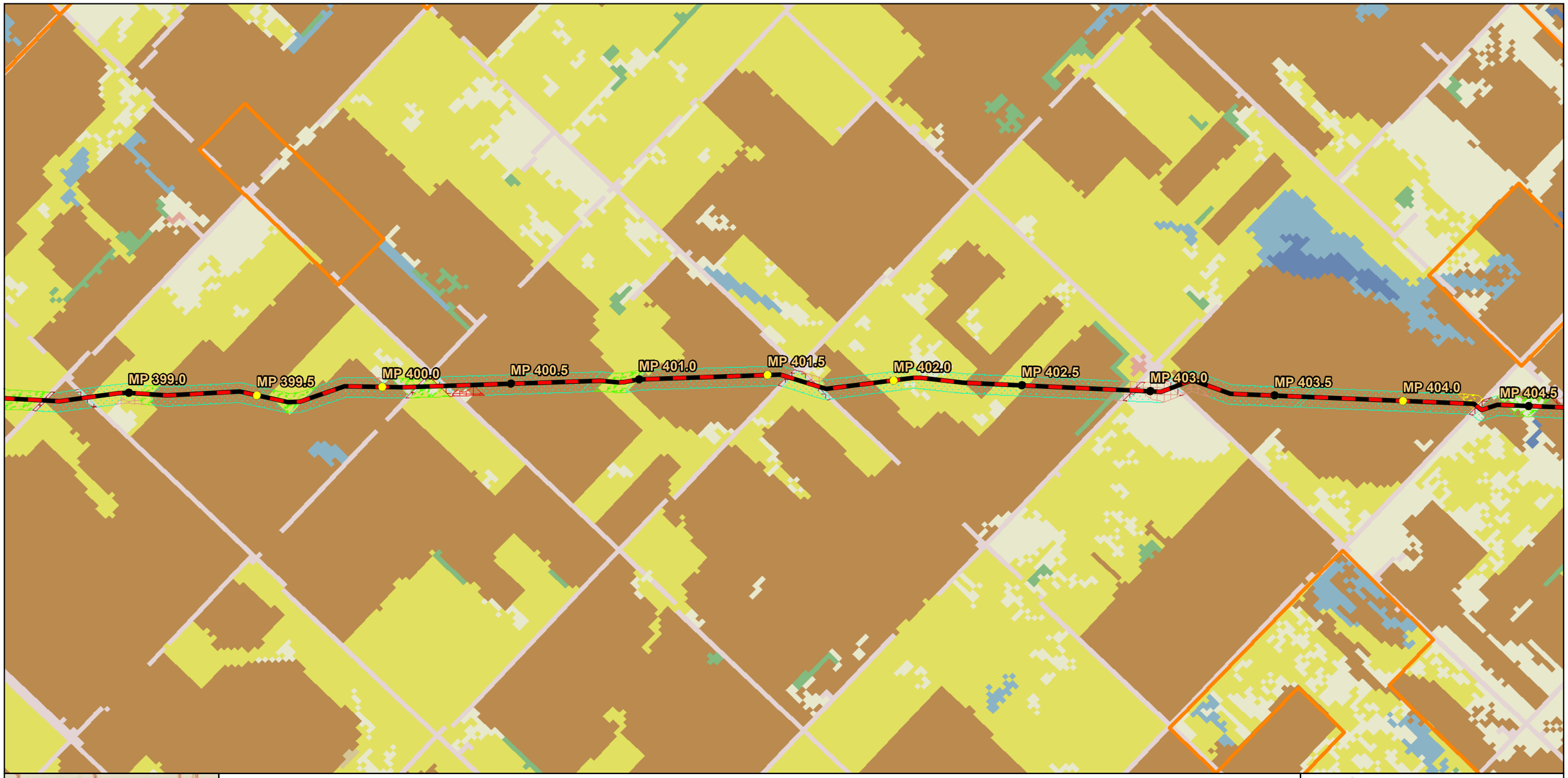

Milepost
Proposed Route

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0 2,000 4,000 6,000 8,000 Feet

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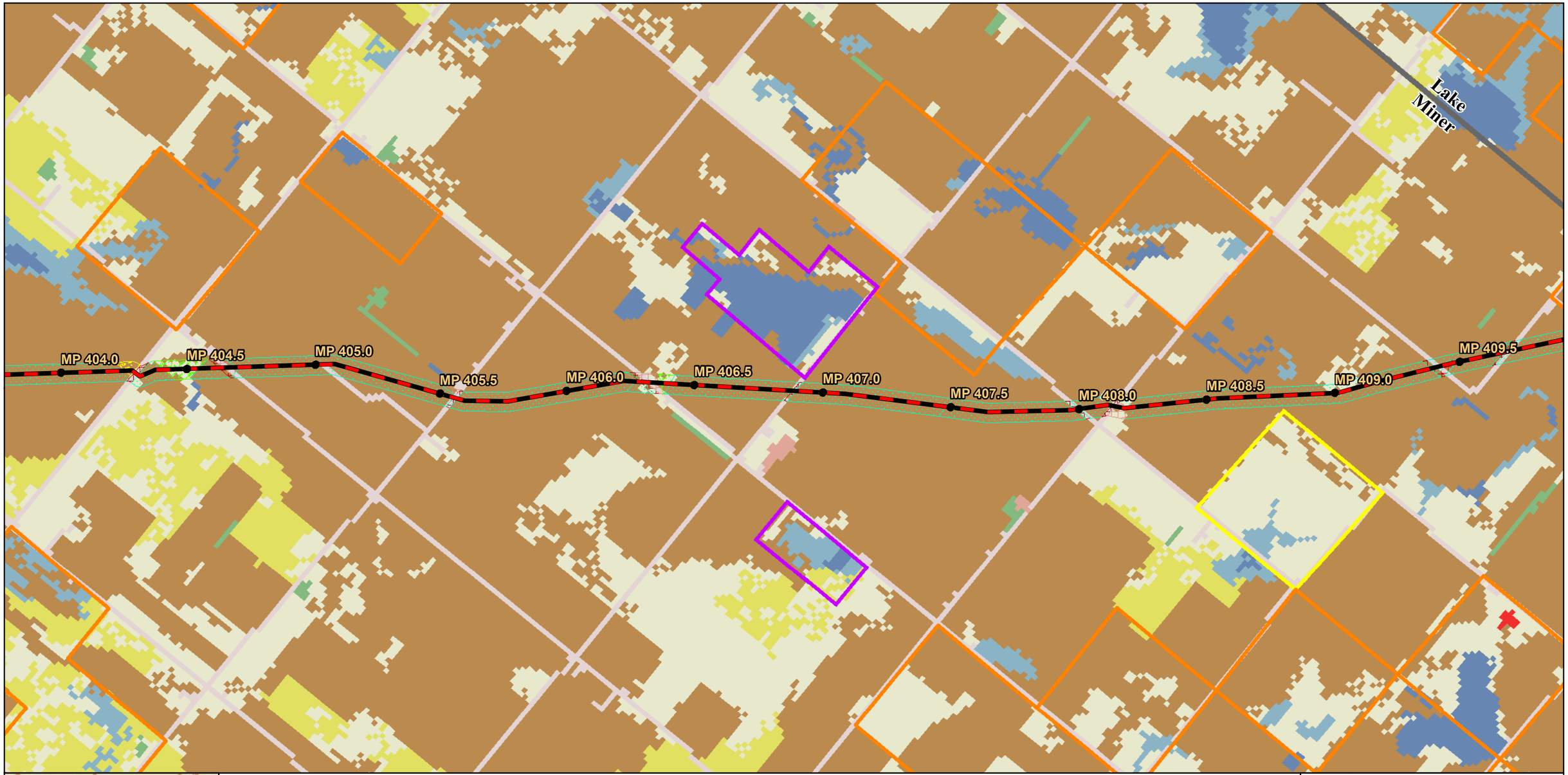

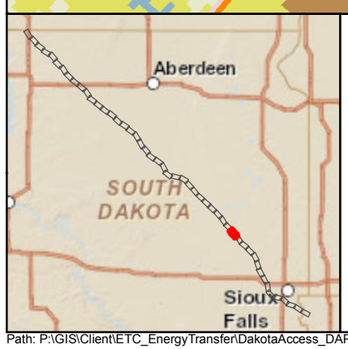

- Milepost
- Proposed Route

USGS NLCD Type

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USFWS Fee Owned Land

- Waterfowl Protection Area

USFWS Easements

- Grassland
- Grassland/Wetland
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0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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South Dakota

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Lake Miner

Milepost
Proposed Route

USGS NLCD Type
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USFWS Easements
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0 2,000 4,000 6,000 8,000 Feet

DAKOTA ACCESS, LLC

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South Dakota

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Milepost
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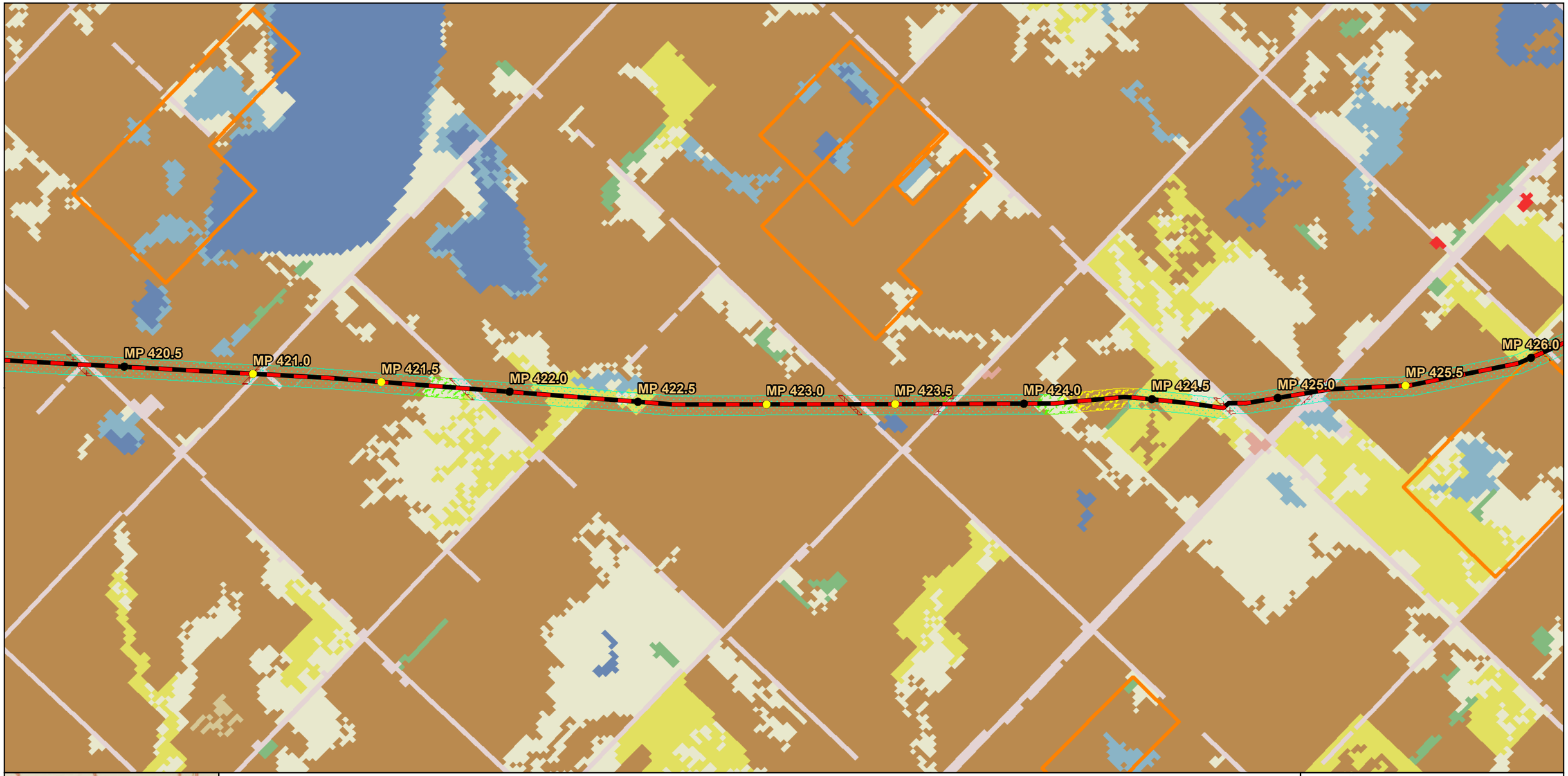

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Lake Minnehaha
Minnehaha
McCook
Lake McCook

Milepost
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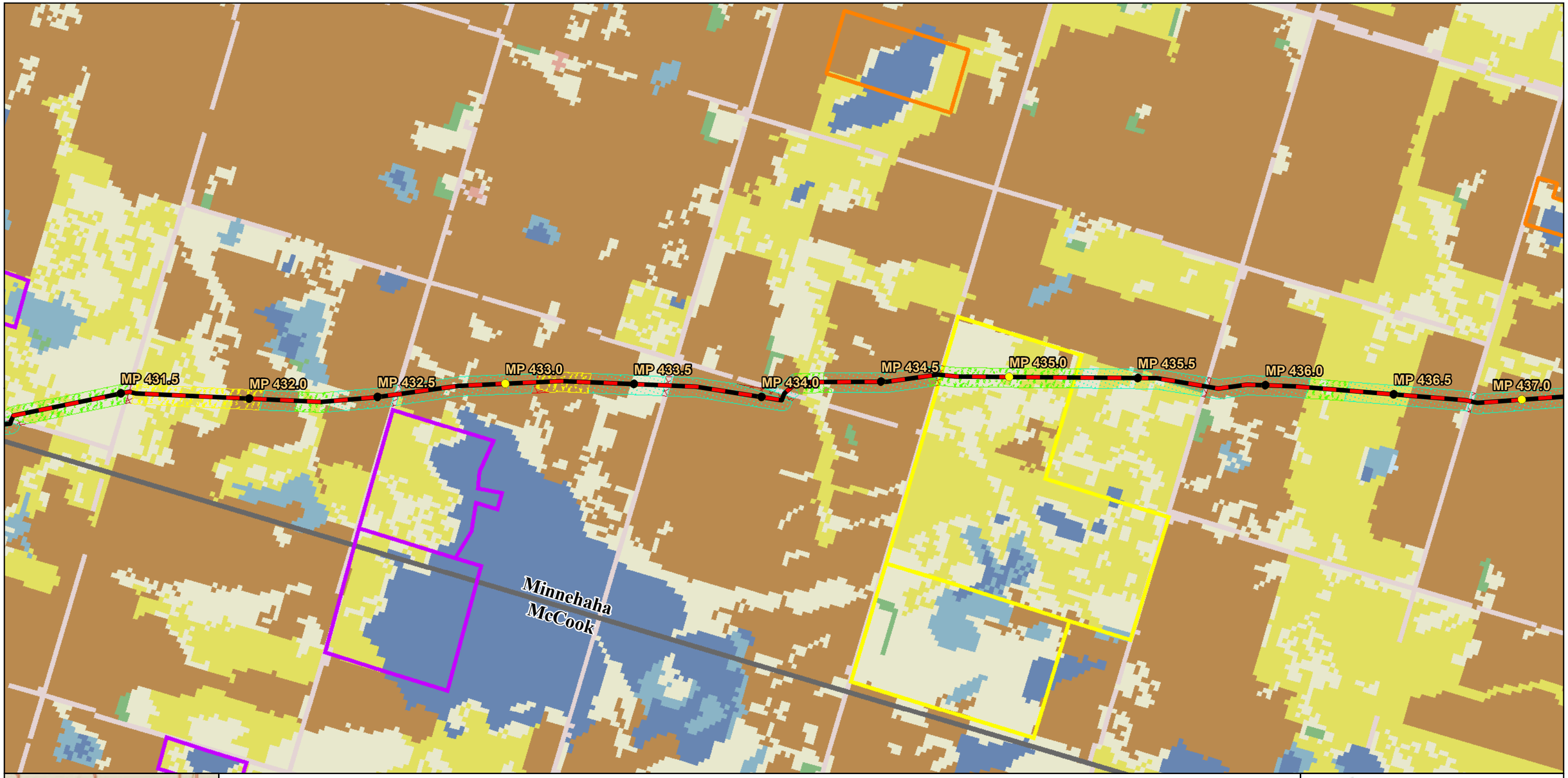

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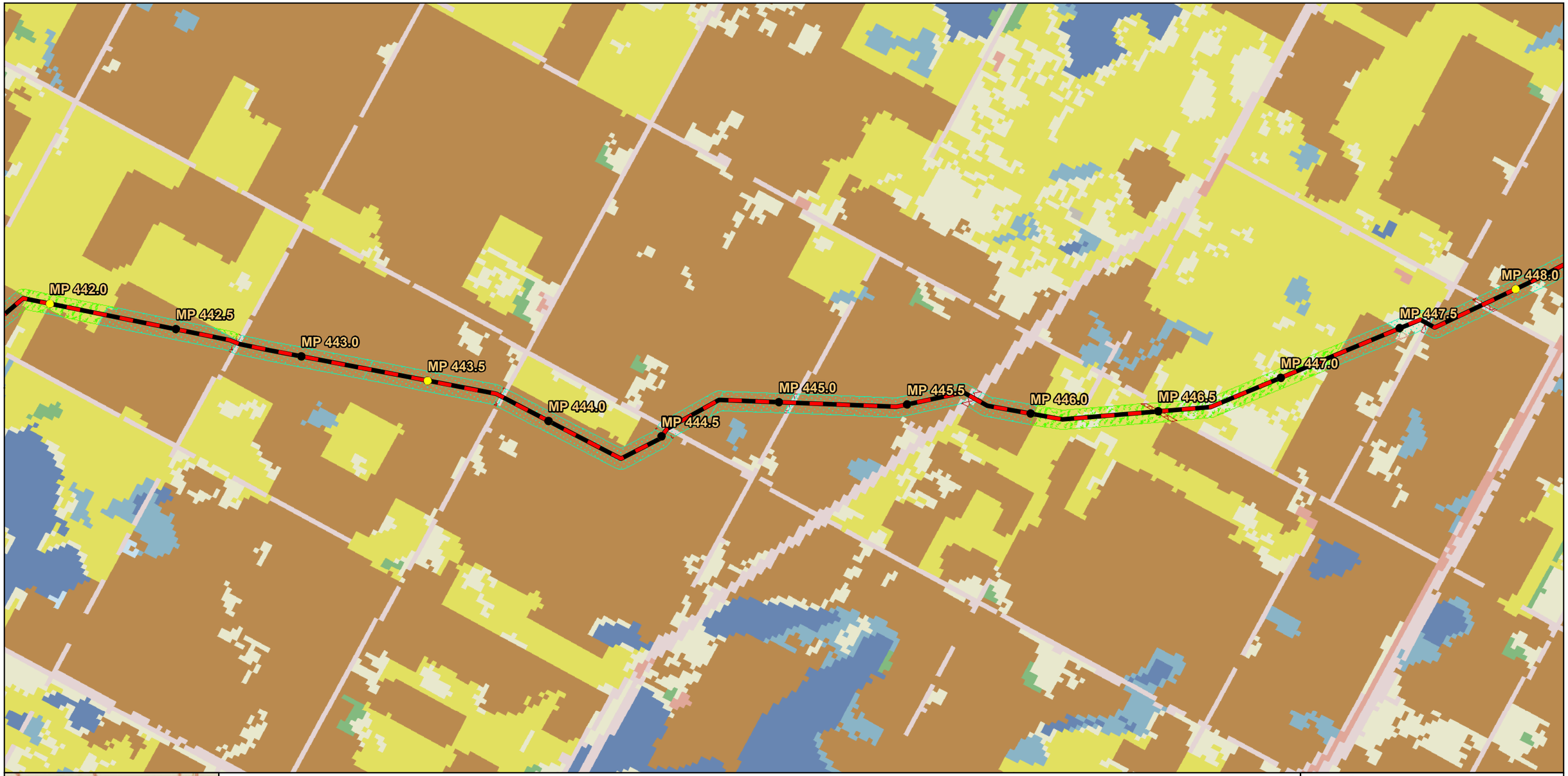

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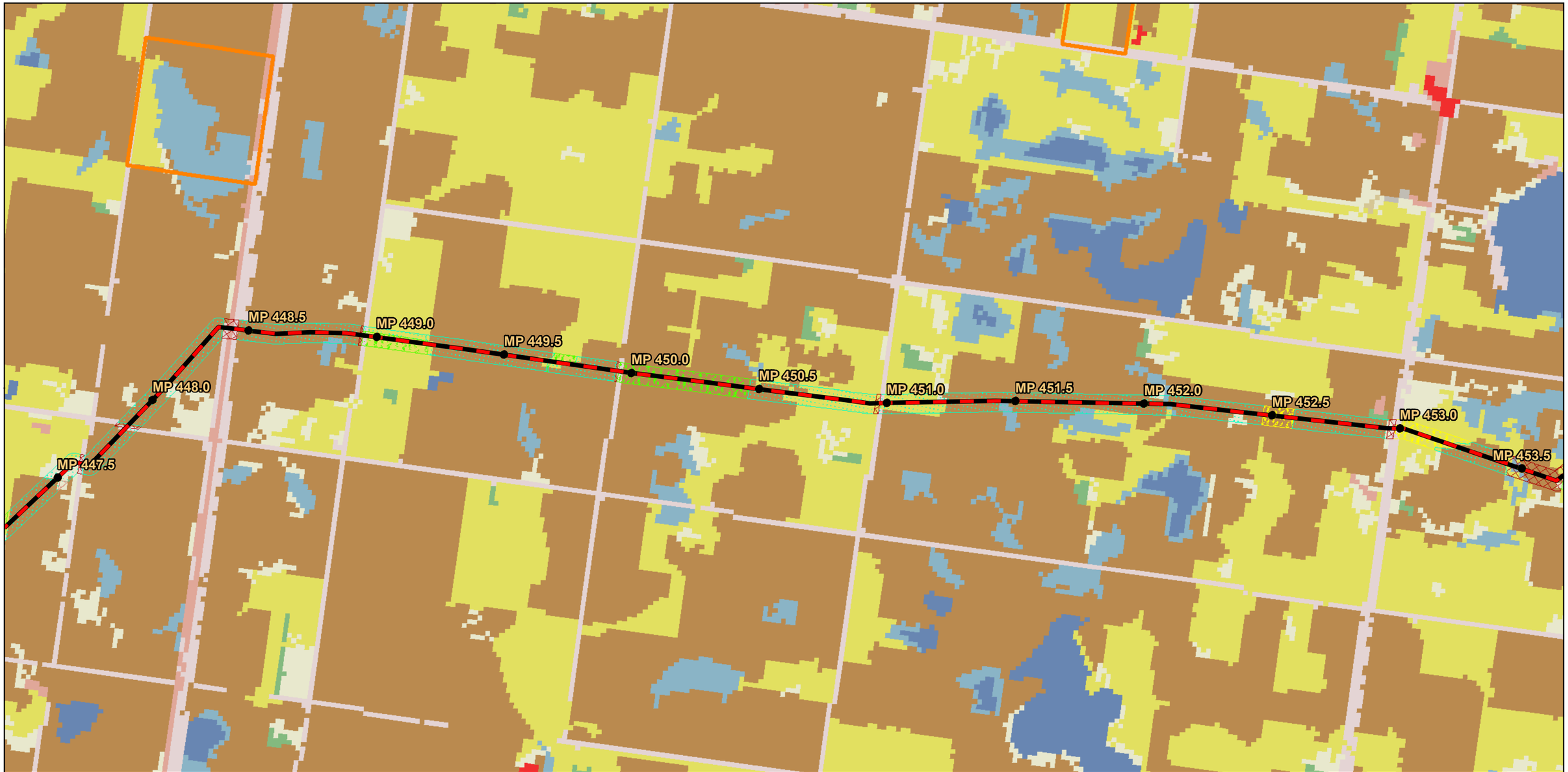

Milepost
Proposed Route

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- Developed, Open Space
- Developed, Low intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

Land Use Field Data Type
- Haylands
- Pasturelands and rangelands
- Undisturbed native grassland
- Irrigated lands
- Land use primarily for row and no-row crops in rotation
- Public, commercial, and institutional use
- Residential
- Rural residences and farmsteads, family farms, and ranches

USFWS Fee Owned Land
- Waterfowl Protection Area

USFWS Easements
- Grassland
- Grassland/Wetland
- Wetland

0 2,000 4,000 6,000 8,000 Feet

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USGS Landcover/Land Use Field Data
South Dakota

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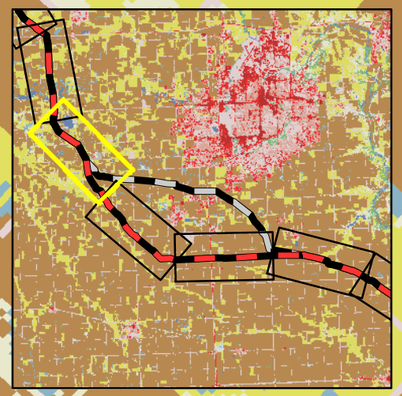
Turner



- Milepost
- Reroute Milepost
- Proposed Route
- Previous Route

USGS NLCD Type

- Open Water
- Developed, Open Space
- Developed, Low intensity
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- Developed, High Intensity
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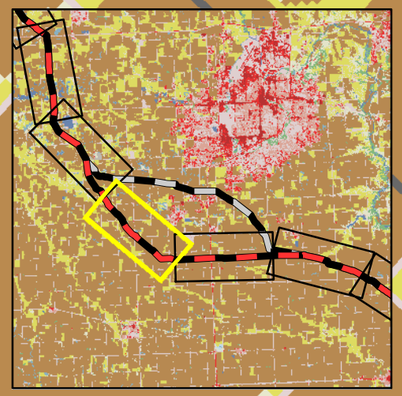

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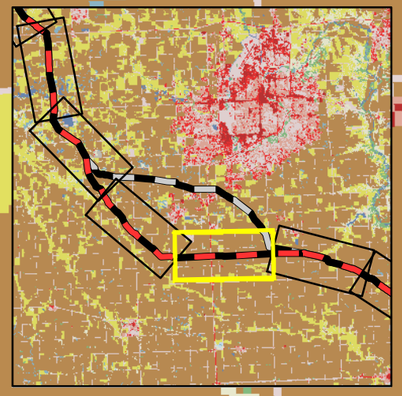

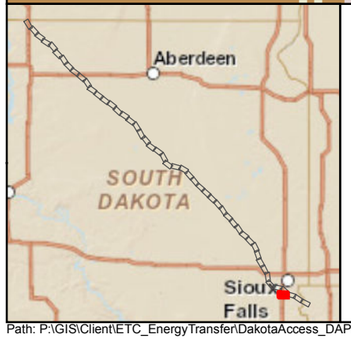

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Reroute Milepost
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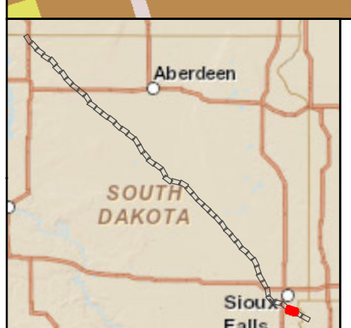

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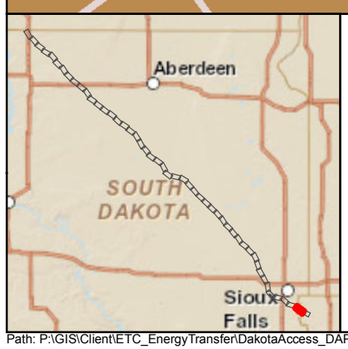

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DAKOTA ACCESS, LLC

Exhibit C

Supplementary Tables

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Soil Characteristics for Each Soil Map Unit within the Project Area

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol [a]**	**Pipeline Crossing Length (feet)**	**Prime Farmland [a]**	**Hydric Soils [a]**	**Compaction Potential [a]**	**Erosion Potential [a, c]**	**Steep Slopes [a, d]**	**Shallow Bedrock [a, e]**	**Shallow Natric Layer [a,f]**	**Re-vegetation Potential**
Pipeline										
Campbell County										
Tonka silt loam, undrained, 0 to 1 percent slopes	C001A	577	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Parnell silty clay loam, undrained, 0 to 1 percent slopes	C008A	375	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Heil silt loam, undrained, 0 to 1 percent slopes	C020A	488	Not Prime Farmland	Yes	High	Low	No	No	Yes	Low
Ludden silty clay loam, strongly saline, 0 to 1 percent slopes, occasionally flooded	C058A	168	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Zahl-Max loams, 15 to 25 percent slopes	C153E	1,556	Not Prime Farmland	Yes	High	High	No	No	No	Low
Vida very stony loam, 3 to 15 percent slopes	C172D	199	Not Prime Farmland	Yes	Moderate	Low	Yes	No	No	Low
Vida-Zahl loams, 6 to 9 percent slopes	C175C	14,532	Not Prime Farmland	Yes	High	Moderate	Yes	No	No	Low
Vida-Zahl loams, 6 to 15 percent slopes	C175D	328	Not Prime Farmland	Yes	High	Moderate	Yes	No	No	Low
Bowbells loam, 0 to 3 percent slopes	C201A	4,696	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Williams-Bowbells loams, 0 to 3 percent slopes	C210A	9,463	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Williams-Bowbells loams, 3 to 6 percent slopes	C210B	52,691	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Williams-Vida loams, 3 to 6 percent slopes	C212B	2,303	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Williams-Vida loams, 6 to 9 percent slopes	C212C	27,013	Farmland of Statewide Importance	Yes	High	Moderate	Yes	No	No	Moderate

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Hamerly loam, 0 to 3 percent slopes	C270A	970	Prime Farmland	Yes	High	Low	No	No	No	High
Farnuf loam, 0 to 2 percent slopes	C416A	897	Farmland of Statewide Importance	No	High	Low	No	No	No	High
Farnuf loam, 2 to 6 percent slopes	C416B	1,704	Farmland of Statewide Importance	No	High	Low	No	No	No	High
Straw-Fluvaquents channeled, complex, 0 to 2 percent slopes, frequently flooded	C491A	810	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Ranslo-Harriet loams, 0 to 2 percent slopes, occasionally flooded	C578A	1,049	Not Prime Farmland	Yes	High	Low	No	No	Yes	Low
Bryant silt loam, 2 to 6 percent slopes	C732B	1,175	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Bryant-Grassna silt loams, 0 to 2 percent slopes	C745A	953	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	High
Bryant-Grassna silt loams, 2 to 6 percent slopes	C745B	1,083	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	High
Williams-Noonan loams, 0 to 6 percent slopes	C772B	567	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Bowdle loam, 0 to 2 percent slopes	C810A	2,581	Farmland of Statewide Importance	No	High	Moderate	No	No	No	High
Bowdle loam, 2 to 6 percent slopes	C810B	5,755	Farmland of Statewide Importance	No	High	Moderate	No	No	No	High
Lehr loam, 0 to 2 percent slopes	C816A	3,710	Not Prime Farmland	Yes	High	Moderate	No	No	No	Moderate

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Lehr loam, 2 to 6 percent slopes	C816B	6,321	Not Prime Farmland	Yes	High	Moderate	No	No	No	Moderate
Vida very stony loam, 3 to 15 percent slopes	C819B	8,786	Not Prime Farmland	Yes	High	Moderate	No	No	No	Moderate
Wabek-Lehr-Appam complex, 9 to 25 percent slopes	C870E	203	Not Prime Farmland	Yes	High	High	Yes	No	No	Low
Wabek-Appam complex, 6 to 9 percent slopes	C874C	563	Not Prime Farmland	Yes	Moderate	High	No	No	No	Low
Wabek-Lehr complex, 6 to 9 percent slopes	C877C	1,993	Not Prime Farmland	Yes	Moderate	High	No	No	No	Low
Pits, gravel and sand, 0 to 60 percent slopes	C990F	243	Not Prime Farmland	No	Not Rated	High	Yes	No	No	Low
McPherson County										
Tonka-Nishon silt loams, 0 to 1 percent slopes	C004A	228	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Heil silt loam, undrained, 0 to 1 percent slopes	C020A	238	Not Prime Farmland	Yes	High	Low	No	No	Yes	Low
Vallers loam, undrained, 0 to 1 percent slopes	C022A	112	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Nishon-Heil silt loams, 0 to 1 percent slopes	C031A	326	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Vida-Williams loams, 3 to 6 percent slopes	C136B	1,364	Farmland of Statewide Importance	Yes	High	Moderate	No	No	No	High
Williams-Bowbells-Tonka, undrained complex, 0 to 6 percent slopes	C150B	1,730	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Vida-Williams-Bowbells loams, 3 to 15 percent slopes	C177D	1,294	Not Prime Farmland	Yes	High	Moderate	Yes	No	No	Moderate
Bowbells loam, 3 to 6 percent slopes	C201B	987	Prime Farmland	Yes	High	Low	No	No	No	High

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Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Williams-Bowbells loams, 0 to 3 percent slopes	C210A	1,622	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Williams-Bowbells loams, 3 to 6 percent slopes	C210B	7821	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Niobell-Noonan loams, 3 to 6 percent slopes	C661B	1,295	Not Prime Farmland	Yes	High	Moderate	No	No	No	Moderate
Bryant-Grassna silt loams, 0 to 2 percent slopes	C745A	5,121	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Bryant-Grassna silt loams, 2 to 6 percent slopes	C745B	7,395	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Bowdle loam, 0 to 2 percent slopes	C810A	2,317	Farmland of Statewide Importance	No	High	Low	No	No	No	Moderate
Lehr loam, 0 to 2 percent slopes	C816A	909	Not Prime Farmland	No	High	Moderate	No	No	No	Moderate
Lehr loam, 2 to 6 percent slopes	C816B	617	Not Prime Farmland	No	High	Moderate	No	No	No	Moderate
Lehr-Bowdle loams, 2 to 6 percent slopes	C817B	1,592	Not Prime Farmland	No	High	Moderate	No	No	No	Moderate
Edmunds County										
Tonka-Nishon silt loams, 0 to 1 percent slopes	C004A	3,290	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Parnell silty clay loam, undrained, 0 to 1 percent slopes	C008A	989	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Heil silt loam, undrained, 0 to 1 percent slopes	C020A	346	Not Prime Farmland	Yes	High	Low	No	No	Yes	Low
Williams-Bowbells-Tonka, undrained complex, 0 to 6 percent slopes	C150B	68,424	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High

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Vida-Zahl loams, 6 to 9 percent slopes	C175C	5,016	Not Prime Farmland	Yes	High	Moderate	Yes	No	No	Moderate
Vida-Williams-Bowbells loams, 3 to 15 percent slopes	C177D	147	Not Prime Farmland	Yes	High	Moderate	Yes	No	No	Moderate
Williams-Bowbells loams, 3 to 6 percent slopes	C210B	76,709	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Williams-Bowbells loams, 6 to 9 percent slopes	C210C	4,705	Farmland of Statewide Importance	Yes	Moderate	Moderate	No	No	No	High
Mondamin silty clay loam, 0 to 2 percent slopes	C420A	5,463	Prime Farmland if Irrigated	Yes	Low	Low	No	No	No	Moderate
Mondamin silty clay loam, 2 to 6 percent slopes	C420B	5,103	Prime Farmland if Irrigated	Yes	Low	Moderate	No	No	No	Moderate
Mondamin-Heil complex, 0 to 2 percent slopes	C430A	1,423	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Grassna silt loam, 0 to 2 percent slopes	C457A	174	Prime Farmland	Yes	High	Low	No	No	No	High
Niobell-Noonan loams, 3 to 6 percent slopes	C661B	1,379	Not Prime Farmland	Yes	High	Moderate	No	No	No	Moderate
Bowbells-Niobell loams, 0 to 3 percent slopes	C670A	5,584	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Bryant silt loam, 0 to 2 percent slopes	C732A	278	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Bryant silt loam, 2 to 6 percent slopes	C732B	6,955	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High

Exhibit C
Soil Characteristics for Each Soil Map Unit within the Project area

Map Unit Name	Map Unit Symbol [a]	Pipeline Crossing Length (feet)	Prime Farmland [a]	Hydric Soils [a]	Compaction Potential [a]	Erosion Potential [a, c]	Steep Slopes [a, d]	Shallow Bedrock [a, e]	Shallow Natric Layer [a,f]	Re-vegetation Potential
Temvik-Bryant complex, 2 to 6 percent slopes	C741B	1,463	Prime Farmland if Irrigated	Yes	Moderate	Low	No	No	No	Moderate
Temvik-Grassna silt loams, 2 to 6 percent slopes	C742B	1,209	Prime Farmland if Irrigated	Yes	Moderate	Low	No	No	No	Moderate
Bryant-Grassna silt loams, 2 to 6 percent slopes	C745B	2,062	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Bowdle loam, 2 to 6 percent slopes	C810B	138	Farmland of Statewide Importance	No	High	Moderate	No	No	No	High
Faulk County										
Tonka-Nishon silt loams, 0 to 1 percent slopes	C004A	3,707	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Parnell silty clay loam, undrained, 0 to 1 percent slopes	C008A	151	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Nishon silt loam, 0 to 1 percent slopes	C030A	2,964	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Zahl-Williams-Zahill complex, 6 to 9 percent slopes	C135C	538	Not Prime Farmland	Yes	High	Moderate	No	No	No	Moderate
Vida-Williams-Bowbells loams, 3 to 9 percent slopes	C138C	3,601	Farmland of Statewide Importance	Yes	High	Moderate	Yes	No	No	Moderate
Zahill-Straw complex, 2 to 25 percent slopes	C139E	697	Not Prime Farmland	Yes	High	High	Yes	No	No	Low
Williams-Bowbells-Tonka, undrained complex, 0 to 6 percent slopes	C150B	21,122	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Max-Arnegard loams, 0 to 3 percent slopes	C167A	666	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate

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Max-Arnegard-Zahl loams, 0 to 6 percent slopes	C168B	13,494	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Williams-Zahill-Bowbells loams, 3 to 15 percent slopes	C173D	4,654	Not Prime Farmland	Yes	High	Moderate	Yes	No	No	Low
Bowbells loam, 0 to 3 percent slopes	C201A	317	Prime Farmland	Yes	High	Low	No	No	No	High
Williams-Bowbells loams, 0 to 3 percent slopes	C210A	30,402	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Williams-Bowbells loams, 3 to 6 percent slopes	C210B	21,107	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Straw loam, 0 to 2 percent slopes	C490A	1,357	Prime Farmland	Yes	High	Low	No	No	No	High
Straw-Fluvaquents channeled, complex, 0 to 2 percent slopes, frequently flooded	C491A	2,050	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Noonan-Miranda loams, 0 to 6 percent slopes	C556B	4,199	Not Prime Farmland	Yes	High	Low	No	No	Yes	Moderate
Ranslo-Harriet loams, 0 to 2 percent slopes, occasionally flooded	C578A	1,095	Not Prime Farmland	Yes	High	Low	No	No	Yes	Moderate
Harriet loam, 0 to 2 percent slopes	C584A	426	Not Prime Farmland	Yes	High	Low	No	No	Yes	Moderate
Niobell-Noonan-Max loams, 0 to 3 percent slopes	C650A	4,985	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Niobell-Noonan loams, 0 to 3 percent slopes	C661A	3,790	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Williams-Niobell loams, 3 to 6 percent slopes	C667B	5,076	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Max-Niobell-Noonan loams, 3 to 6 percent slope	C672B	8,195	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Bryant-Grassna silt loams, 0 to 2 percent slopes	C745A	3,180	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Tally fine sandy loam, 0 to 2 percent slopes	C769A	2,932	Prime Farmland if Irrigated	Yes	High	Moderate	No	No	No	Moderate
Tally fine sandy loam, 2 to 6 percent slopes	C769B	203	Prime Farmland if Irrigated	Yes	High	Moderate	No	No	No	Moderate
Williams-Bowbells-Noonan loams, 0 to 3 percent slopes	C773A	2,567	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Bowdle loam, 0 to 2 percent slopes	C810A	2,814	Farmland of Statewide Importance	No	Low	Low	No	No	No	High
Lehr loam, 0 to 2 percent slopes	C816A	273	Not Prime Farmland	No	Low	Low	No	No	No	Moderate
Lehr loam, 2 to 6 percent slopes	C816B	212	Not Prime Farmland	No	High	Moderate	No	No	No	Moderate
Pits, gravel and sand, 0 to 60 percent slopes	C990F	540	Not Prime Farmland	No	Not Rated	Low	Yes	No	No	Low
Spink County										
Beadle-Stickney complex, 0 to 2 percent slopes	BeA	38,081	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Beadle-Stickney complex, 0 to 2 percent slopes, very stony	BfA	2,639	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Tonka silt loam, undrained, 0 to 1 percent slopes	C001A	272	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Tonka-Rimlap silt loams, 0 to 1 percent slopes	C010A	477	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Heil silt loam, undrained, 0 to 1 percent slopes	C020A	274	Not Prime Farmland	Yes	High	Low	No	No	Yes	Moderate

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Lowe loam, 0 to 2 percent slopes, occassionally flooded	C054A	2,460	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Zahl-Zahill loams, 15 to 40 percent slopes	C058A	479	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Zahl-Zahill complex, 15 to 40 percent slopes	C133F	164	Not Prime Farmland	Yes	High	High	Yes	No	No	Low
Williams-Niobell-Tonka complex, 0 to 6 percent slopes	C147B	6,410	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Max-Arnegard loams, 0 to 3 percent slopes	C167A	8,850	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Max-Arnegard-Zahl loams, 0 to 6 percent slopes	C168B	27,589	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Max-Zahl-Arnegard loams, 3 to 9 percent slopes	C168C	697	Farmland of Statewide Importance	Yes	High	Moderate	Yes	No	No	Moderate
Noonan-Miranda loams, 0 to 6 percent slopes	C556B	3,317	Not Prime Farmland	Yes	High	Low	No	No	Yes	Moderate
Miranda-Heil complex, 0 to 3 percent slopes	C558A	1,150	Not Prime Farmland	Yes	High	Low	No	No	Yes	Moderate
Ranslo loam, 0 to 2 percent slopes	C575A	610	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Niobell-Noonan loams, 0 to 3 percent slopes	C661A	2,409	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Williams-Niobell loams, 0 to 3 percent slopes	C667A	8,100	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Williams-Niobell loams, 3 to 6 percent slopes	C667B	498	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Niobell-Noonan-Heil complex, 0 to 3 percent slopes	C668A	2,647	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Crossplain-Tetonka complex, 0 to 1 percent slopes	Ct	619	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Delmont-Enet loams, 0 to 2 percent slopes	DeA	1,854	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Dudley-Jerauld silt loams, 0 to 2 percent slopes	Du	3,827	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Ethan-Hand loams, 9 to 20 percent slopes	EnD	3,203	Not Prime Farmland	Yes	High	High	No	No	No	Moderate
Cresbard-Cavour loams, 0 to 3 percent slopes	G124A	1,658	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Cavour-Ferney loams, 0 to 3 percent slopes	G129A	2,097	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Ferney-Heil, till substratum complex, 0 to 3 percent slopes	G133A	1,017	Not Prime Farmland	Yes	High	Low	No	No	Yes	Moderate
Forman-Cresbard-Tonka complex, 0 to 3 percent slopes	G136A	219	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Forman-Cresbard loams, 0 to 3 percent slopes	G139A	1,409	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Forman-Buse-Aastad loams, 1 to 6 percent slopes	G190B	5,910	Prime Farmland	Yes	High	Low	No	No	No	High
Forman-Buse-Aastad loams, 3 to 9 percent slopes	G190C	704	Farmland of Statewide Importance	Yes	High	Moderate	No	No	No	High
Aastad-Forman loams, 0 to 3 percent slopes	G193A	627	Prime Farmland	Yes	High	Low	No	No	No	High
Buse-Vida, moist-Forman loams, 9 to 25 percent slopes	G193E	514	Not Prime Farmland	Yes	High	High	Yes	No	No	Low
Aastad-Tonka complex, 0 to 3 percent slopes	G195A	375	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Bearden silt loam, saline, 0 to 2 percent slopes	G453A	484	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Aberdeen-Nahon-Heil silt loams, till substratum, 0 to 2 percent slopes	G476A	517	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Lowe loam, very poorly drained, 0 to 1 percent slopes, frequently flooded	G522A	238	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Lamoure silty clay loam, somewhat poorly drained, 0 to 1 percent slopes, frequently flooded	G533A	243	Prime Farmland if Drained	Yes	High	Moderate	No	No	No	Moderate
Playmoor silty clay loam, 0 to 2 percent slopes, frequently flooded	G543A	67	Not Prime Farmland	Yes	High	High	No	No	No	Low
Ranslo-Harriet loams, 0 to 2 percent slopes, occasionally flooded	G553A	903	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Ranslo silty clay loam, 0 to 1 percent slopes, occasionally flooded	G557A	605	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Great Bend-Beotia silt loams, 0 to 2 percent slopes	G720A	1,509	Prime Farmland	Yes	High	Low	No	No	No	High
Great Bend-Beotia silt loams, till substratum, 0 to 2 percent slopes	G721A	2,642	Prime Farmland	Yes	High	Low	No	No	No	High
Great Bend-Zell silt loams, 2 to 6 percent slopes	G722B	2,538	Prime Farmland	Yes	High	Low	No	No	No	High
Kranzburg-Cresbard silt loams, 0 to 2 percent slopes	G796A	1,657	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Harmony-Beotia silt loams, till substratum, 0 to 2 percent slopes	G863A	2,598	Prime Farmland	Yes	High	Low	No	No	No	High

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Harmony-Aberdeen silt loams, till substratum, 0 to 2 percent slopes	G865A	5,387	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Beotia-Rondell silt loams, 0 to 2 percent slopes	G872A	169	Prime Farmland	Yes	High	Low	No	No	No	High
Beotia-Winship silt loams, till substratum, 0 to 2 percent slopes	G874A	457	Prime Farmland	Yes	High	Low	No	No	No	High
Hand-Bonilla loams, 0 to 3 percent slopes	HcA	1,804	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Hand-Carthage fine sandy loams, 0 to 3 percent slopes	HdA	3,003	Prime Farmland if Irrigated	Yes	High	Moderate	No	No	No	Moderate
Hand-Ethan loams, 6 to 9 percent slopes	HfC	1,296	Farmland of Statewide Importance	Yes	High	Moderate	Yes	No	No	High
Hand-Ethan-Bonilla loams, 1 to 6 percent slopes	HgB	6,550	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Hand-Ethan-Bonilla loams, 2 to 9 percent slopes	HgC	700	Farmland of Statewide Importance	Yes	High	Moderate	No	No	No	High
Hand-Ethan-Carthage complex, 1 to 6 percent slopes	HhB	2,318	Prime Farmland if Irrigated	Yes	High	Moderate	No	No	No	Moderate
Hand-Talmo complex, 2 to 6 percent slopes	HjB	6,866	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Hand-Talmo complex, 6 to 9 percent slopes	HjC	2,281	Not Prime Farmland	Yes	High	Moderate	Yes	No	No	Low
Houdek-Ethan-Prosper loams, 1 to 6 percent slopes	HtB	809	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Houdek-Stickney complex, 0 to 2 percent slopes	HwA	1,497	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Houdek-Stickney-Tetonka complex, 0 to 2 percent slopes	HxA	3,053	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Hoven silt loam, 0 to 1 percent slopes	Hy	140	Not Prime Farmland	Yes	High	High	Low	No	No	Low
Jerauld-Hoven silt loams, 0 to 2 percent slopes	Jh	545	Not Prime Farmland	Yes	High	Low	No	No	Yes	Low
Stickney-Dudley silt loams, 0 to 2 percent slopes	St	2,314	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Stickney-Dudley-Hoven silt loams, 0 to 2 percent slopes	Su	5,628	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Tetonka silt loam, 0 to 1 percent slopes	Te	308	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Beadle County										
Beadle loam, 0 to 2 percent slopes	BaA	46,942	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Beadle loam, 2 to 6 percent slopes	BaB	18,082	Farmland of Statewide Importance	Yes	High	Moderate	No	No	No	High
Beadle loam, 6 to 9 percent slopes	BaC	3,832	Farmland of Statewide Importance	Yes	High	Moderate	Yes	No	No	Moderate
Beadle-Dudley complex, 0 to 2 percent slopes	BdA	13,192	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Betts stony loam, 6 to 40 percent slopes	BeD	2,667	Not Prime Farmland	No	High	Low	Yes	No	No	Low
Betts-Ethan loams, 9 to 21 percent slopes	BfD	3,993	Not Prime Farmland	No	High	High	Yes	No	No	Low

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Bon silt loam	Bo	1,508	Prime Farmland	Yes	High	Low	No	No	No	High
Bon silt loam, channeled	Bx	2,995	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Carthage fine sandy loam, 2 to 6 percent slopes	CaB	126	Farmland of Statewide Importance	Yes	Moderate	Moderate	No	No	No	High
Carthage fine sandy loam, 6 to 9 percent slopes	CaC	363	Farmland of Statewide Importance	Yes	Moderate	Moderate	Yes	No	No	Moderate
Carthage-Blendon fine sandy loams, 0 to 2 percent slopes	CbA	1,155	Farmland of Statewide Importance	Yes	Moderate	Moderate	No	No	No	Moderate
Davis loam, 2 to 9 percent slopes	DaB	2,881	Farmland of Statewide Importance	No	High	Low	No	No	No	High
Delmont loam, 0 to 2 percent slopes	DeA	181	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Dudley-Stickney silt loams, 0 to 3 percent slopes	DsA	10,617	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Dudley-Tetonka silt loams	DtA	2,573	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Egas silty clay loam	Eg	624	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Elsmere loamy fine sand, loamy substratum	Em	1,142	Not Prime Farmland	Yes	Moderate	Moderate	No	No	No	Moderate
Enet loam, 0 to 2 percent slopes	EnA	3,429	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Forestburg-Doger loamy fine sands, 0 to 3 percent slopes	FrA	996	Not Prime Farmland	Yes	High	Moderate	No	No	No	Moderate
Houdek-Prosper loams, 0 to 2 percent slopes	GbA	7,025	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol [a]**	**Pipeline Crossing Length (feet)**	**Prime Farmland [a]**	**Hydric Soils [a]**	**Compaction Potential [a]**	**Erosion Potential [a, c]**	**Steep Slopes [a, d]**	**Shallow Bedrock [a, e]**	**Shallow Natric Layer [a,f]**	**Re-vegetation Potential**
Bend-Edwin silt loams, 2 to 6 percent slopes	GzB	2,962	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Houdek-Ethan loams, 6 to 9 percent slopes	HeC	1,801	Farmland of Statewide Importance	Yes	High	Moderate	Yes	No	No	Moderate
Houdek-Prosper loams, 0 to 2 percent slopes	HoA	8,703	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Houdek-Prosper loams, 2 to 6 percent slopes	HoB	3,513	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Hoven silt loam	Hv	460	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
LaDelle silt loam	La	1,415	Prime Farmland	Yes	High	Low	No	No	No	High
Lane silt loam, 0 to 2 percent slopes	LnA	3,091	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Prosper-Davison loams, 0 to 3 percent slopes	PrA	1,570	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Shue loamy fine sand	Sh	380	Not Prime Farmland	Yes	Moderate	Moderate	No	No	No	Moderate
Spottswood loam	Sp	878	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Tetonka-Hoven silt loams	Te	721	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Edwin silt loam, 6 to 12 percent slopes	ZeC	529	Not Prime Farmland	No	High	High	Yes	No	No	Low
Kingsbury County										

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Beadle loam, 2 to 6 percent slopes	BdB	692	Prime Farmland if Irrigated	Yes	High	Moderate	No	No	No	Moderate
Beadle-Dudley complex, 0 to 2 percent slopes	BeA	1,629	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Bon loam	Bn	991	Prime Farmland	Yes	High	Low	No	No	No	High
Bon loam, channeled	Bo	1,229	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Clarno-Bonilla loams, 0 to 2 percent slopes	CbA	19,702	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Clarno-Ethan-Bonilla loams, 1 to 6 percent slopes	CeB	19,022	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Clarno-Ethan-Bonilla loams, 2 to 9 percent slopes	CeC	385	Farmland of Statewide Importance	Yes	High	Moderate	Yes	No	No	Moderate
Crossplain-Tetonka complex	Ct	5,894	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Delmont-Talmo loams, 2 to 6 percent slopes	DtB	605	Not Prime Farmland	Yes	High	Moderate	No	No	No	Moderate
Ethan-Bon, channeled, loams, 0 to 20 percent slopes	EoD	2,540	Not Prime Farmland	No	High	High	Yes	No	No	Low
Ethan-Clarno loams, 9 to 15 percent slopes	EtD	1,376	Not Prime Farmland	No	High	High	Yes	No	No	Low
Houdek-Prosper loams, 1 to 6 percent slopes	HpB	1,373	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Houdek-Stickney complex, 0 to 2 percent slopes	HsA	28,613	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High

Exhibit C
Soil Characteristics for Each Soil Map Unit within the Project area

Map Unit Name	Map Unit Symbol [a]	Pipeline Crossing Length (feet)	Prime Farmland [a]	Hydric Soils [a]	Compaction Potential [a]	Erosion Potential [a, c]	Steep Slopes [a, d]	Shallow Bedrock [a, e]	Shallow Natric Layer [a,f]	Re-vegetation Potential
Houdek-Stickney complex, 2 to 6 percent slopes	HsB	2,344	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Houdek-Stickney-Tetonka complex	Ht	22,045	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Stickney-Dudley silt loams	St	368	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Stickney-Dudley-Hoven silt loams	Sv	6,524	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Miner County										
Arlo clay loam	Ar	265	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Baltic silty clay loam	Ba	597	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Bon silt loam	Bo	1,002	Prime Farmland	Yes	High	Low	No	No	No	High
Clarno-Bonilla loams, 0 to 3 percent slopes	CfA	17,587	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Clarno-Bonilla loams, 1 to 6 percent slopes	CfB	8,985	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Clarno-Crossplain loams, 0 to 2 percent slopes	CgA	30,699	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Clarno-Ethan complex, 2 to 6 percent slopes	CkB	1,159	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Clarno-Stickney-Tetonka complex, 0 to 2 percent slopes	CnA	152	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Crossplain-Tetonka complex	Ct	10,595	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Enet-Delmont loams, 0 to 4 percent slopes	EdA	2,439	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Ethan-Clarno complex, 6 to 9 percent slopes	EgC	331	Farmland of Statewide Importance	Yes	High	Moderate	Yes	No	No	Moderate
Clarno-Stickney-Tetonka complex, 0 to 2 percent slopes	La	411	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Tetonka silt loam	Te	504	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Lake County										
Badus silty clay loam	Ba	974	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Clarno-Ethan loams, 9 to 16 percent slopes	Bc	346	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Beadle-Dudley complex, 0 to 2 percent slopes	BdA	144	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Clarno loam, 0 to 2 percent slopes	CaA	778	Prime Farmland	Yes	High	Low	No	No	No	High
Clarno loam, 2 to 6 percent slopes	CaB	6,891	Prime Farmland	Yes	High	Low	No	No	No	High
Clarno loam, 6 to 9 percent slopes	CaC	1,817	Farmland of Statewide Importance	Yes	High	Moderate	No	No	No	High
Clarno-Ethan loams, 2 to 6 percent slopes	CeB	649	Prime Farmland	Yes	High	Low	No	No	No	High

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Clarno-Ethan loams, 6 to 9 percent slopes	CeC	7,462	Farmland of Statewide Importance	Yes	High	Moderate	Yes	No	No	Moderate
Clarno-Ethan loams, 9 to 16 percent slopes	CeD	3,138	Not Prime Farmland	Yes	High	Moderate	Yes	No	No	Low
Egan silty clay loam, 6 to 9 percent slopes	EaC	3,206	Farmland of Statewide Importance	Yes	High	Moderate	Yes	No	No	Moderate
Egan-Beadle complex, 0 to 2 percent slopes	EbA	969	Prime Farmland	Yes	High	Low	No	No	No	High
Egan-Beadle complex, 2 to 6 percent slopes	EbB	10,790	Prime Farmland	Yes	High	Low	No	No	No	High
Egan-Beadle complex, 6 to 9 percent slopes	EbC	3,995	Farmland of Statewide Importance	Yes	High	Moderate	Yes	No	No	Moderate
Egan-Ethan complex, 2 to 6 percent slopes	Eeb	1,985	Prime Farmland	Yes	High	Low	No	No	No	High
Egan-Ethan complex, 6 to 9 percent slopes, eroded	EeC2	4,220	Not Prime Farmland	Yes	High	Moderate	Yes	No	No	Low
Egan-Viborg silty clay loams, 0 to 3 percent slopes	EgA	1,306	Prime Farmland	Yes	High	Low	No	No	No	High
Egan-Wentworth silty clay loams, 2 to 6 percent slopes	EhB	13,703	Prime Farmland	Yes	High	Low	No	No	No	High
Ethan-Betts loams, 21 to 40 percent slopes	EoF	249	Not Prime Farmland	No	High	High	Yes	No	No	Low
Ethan-Clarno loams, 16 to 21 percent slopes	ErE	652	Not Prime Farmland	No	High	High	Yes	No	No	Low
Ethan-Davis stony complex, 3 to 21 percent slopes	EsE	3,708	Not Prime Farmland	Yes	High	Low	Yes	No	No	Low
Ethan-Davis stony complex, 3 to 21 percent slopes	EtD	1,033	Not Prime Farmland	Yes	High	Low	Yes	No	No	Low
Houdek-Prosper loams, 0 to 3 percent slopes	HpA	2,050	Prime Farmland	Yes	High	Low	No	No	No	High

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Lamo silty clay loam	La	407	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Worthing silty clay loam, ponded	Mar	302	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Prosper loam, 0 to 2 percent slopes	PrA	2,209	Prime Farmland	Yes	High	Low	No	No	No	High
Rauville silty clay loam	Ra	753	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Huntimer silty clay loam, 0 to 2 percent slopes	ScA	3,781	Prime Farmland	Yes	High	Low	No	No	No	High
Huntimer silty clay loam, 2 to 6 percent slopes	SdB	5,537	Prime Farmland	Yes	High	Low	No	No	No	High
Stickney-Tetonka complex, 0 to 2 percent slopes	StA	503	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Talmo-Delmont loams, 6 to 21 percent slopes	TdE	205	Not Prime Farmland	Yes	High	High	Yes	No	No	Moderate
Tetonka silt loam	Te	1,505	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Viborg silty clay loam, 0 to 2 percent slopes	VbA	2,825	Prime Farmland	Yes	High	Low	No	No	No	High
Viborg-Egan silty clay loams, 2 to 6 percent slopes	VgB	1,984	Prime Farmland	Yes	High	Low	No	No	No	High
Wentworth-Egan silty clay loams, 0 to 2 percent slopes	WeA	406	Prime Farmland	Yes	High	Low	No	No	No	High
Whitewood silty clay loam	Wh	5,997	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Worthing silty clay loam	Wo	2,130	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
McCook County										

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Egan-Ethan complex, 5 to 9 percent slopes	EaC	2,041	Farmland of Statewide Importance	Yes	High	Moderate	No	No	No	High
Huntimer silty clay loam, 0 to 2 percent slopes	HuA	560	Prime Farmland	Yes	High	Low	No	No	No	High
Wentworth silty clay loam, 0 to 2 percent slopes	WaA	1,081	Prime Farmland	Yes	High	Low	No	No	No	High
Wentworth silty clay loam, 2 to 5 percent slopes	WbB	1,067	Prime Farmland	Yes	High	Low	No	No	No	High
Wentworth-Ethan complex, 2 to 5 percent slopes	WcB	1,190	Prime Farmland	Yes	High	Low	No	No	No	High
Whitewood silt loam	Wh	393	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Worthing silty clay loam	Wo	2,746	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Minnehaha County										
Alcester silty clay loam, 2 to 6 percent slopes	AcB	400	Prime Farmland	No	High	Low	No	No	No	High
Baltic silty clay loam, 0 to 1 percent slopes	Ba	1,191	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Betts-Ethan loams, 15 to 40 percent slopes	BeE	140	Not Prime Farmland	Yes	High	High	Yes	No	No	Low
Chancellor silty clay loam, 0 to 1 percent slopes	Cb	621	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Chancellor-Tetonka complex, 0 to 1 percent slopes	Cc	6,775	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Davison-Crossplain clay loams, 0 to 2 percent slopes	Dd	4,335	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Egan-Ethan complex, 2 to 6 percent slopes	EaB	1,400	Prime Farmland	Yes	High	Low	No	No	No	High

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Egan-Ethan-Trent complex, 1 to 6 percent slopes	EeB	52,056	Prime Farmland	Yes	High	Low	No	No	No	High
Egan-Trent silty clay loams, 0 to 2 percent slopes	EfA	1,243	Prime Farmland	Yes	High	Low	No	No	No	High
Egan-Wentworth-Trent silty clay loams, 1 to 6 percent slopes	EgB	9,562	Prime Farmland	Yes	High	Low	No	No	No	High
Ethan-Betts loams, 9 to 15 percent slopes	EpD	688	Not Prime Farmland	Yes	High	High	Yes	No	No	Low
Ethan-Clarno loams, 6 to 25 percent slopes, very stony	EsE	1,302	Not Prime Farmland	Yes	High	Low	Yes	No	No	Low
Ethan-Clarno loams, 9 to 15 percent slopes	EtD	7,427	Not Prime Farmland	Yes	High	High	Yes	No	No	Low
Ethan-Egan complex, 6 to 9 percent slopes	EuC	25,140	Farmland of Statewide Importance	Yes	High	Moderate	Yes	No	No	Moderate
Ethan, very stony-Egan complex, 2 to 9 percent slopes	ExC	915	Not Prime Farmland	Yes	High	High	Yes	No	No	Low
Huntimer silty clay loam, 0 to 2 percent slopes	HuA	5,483	Prime Farmland	Yes	High	Low	No	No	No	High
Huntimer silty clay loam, 2 to 6 percent slopes	HuB	2,576	Prime Farmland	Yes	High	Low	No	No	No	High
Lamo silty clay loam, 0 to 1 percent slopes	La	174	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Obert silty clay loam, 0 to 1 percent slopes	Ob	350	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Salmo silty clay loam, 0 to 1 percent slopes	Sa	1,139	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Tetonka silt loam, 0 to 1 percent slopes	Te	209	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Wakonda-Chancellor silty clay loams, 0 to 2 percent slopes	Wa	2,824	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Wentworth-Chancellor-Wakonda silty clay loams, 0 to 2 percent slopes	WcA	1947	Prime Farmland	Yes	High	Low	No	No	No	High
Wentworth-Trent silty clay loams, 0 to 2 percent slopes	WhA	862	Prime Farmland	Yes	High	Low	No	No	No	High
Whitewood silty clay loam, 0 to 2 percent slopes	Wk	462	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Worthing silty clay loam, 0 to 1 percent slopes	Wo	1,482	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Worthing-Davison complex, 0 to 2 percent slopes	Wr	4,981	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Turner County										
Baltic silty clay loam, 0 to 1 percent slopes	Ba	1,134	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Chancellor-Tetonka silty clay loams	Ca	206	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Delmont-Enet loams, 2 to 6 percent slopes	DeB	278	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Dempster-Graceville silty clay loams, 1 to 5 percent slopes	DgB	72	Prime Farmland	Yes	High	Low	No	No	No	High
Egan-Ethan complex, 2 to 6 percent slopes	EeB	2,733	Prime Farmland	Yes	High	Low	No	No	No	High
Egan-Wentworth-Trent silty clay loams, 1 to 6 percent slopes	EgB	4,986	Prime Farmland	Yes	High	Low	No	No	No	High
Ethan-Egan complex, 5 to 9 percent slopes	EtC	824	Farmland of Statewide Importance	Yes	High	Moderate	No	No	No	High

Exhibit C Soil Characteristics for Each Soil Map Unit within the Project area										
Map Unit Name	**Map Unit Symbol** [a]	**Pipeline Crossing Length (feet)**	**Prime Farmland** [a]	**Hydric Soils** [a]	**Compaction Potential** [a]	**Erosion Potential** [a, c]	**Steep Slopes** [a, d]	**Shallow Bedrock** [a, e]	**Shallow Natric Layer** [a,f]	**Re-vegetation Potential**
Huntimer silty clay loam, 0 to 2 percent slopes	HuA	923	Prime Farmland	Yes	High	Low	No	No	No	High
Tetonka silt loam	Te	489	Prime Farmland if Drained	No	High	Low	No	No	No	Moderate
Lincoln County										
Alcester silty clay loam, 0 to 2 percent slopes	AcA	262	Prime Farmland	Yes	High	Low	No	No	No	High
Bon soils, frequently flooded	Bo	849	Not Prime Farmland	No	High	Low	No	No	No	Moderate
Chancellor-Tetonka silty clay loams	Ca	12,119	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Chancellor-Viborg silty clay loams	Cd	10,857	Prime Farmland if Drained	Yes	High	Low	No	No	No	Moderate
Chancellor-Wakonda-Tetonka complex	Ch	1,141	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Davis loam	Da	868	Prime Farmland	Yes	High	Low	No	No	No	High
Delmont loam, 2 to 6 percent slopes	DeB	1,108	Prime Farmland if Irrigated	Yes	High	Low	No	No	No	Moderate
Delmont and Talmo soils, 2 to 9 percent slopes	DkB	585	Not Prime Farmland	Yes	High	Low	No	No	No	Moderate
Egan silty clay loam, 3 to 6 percent slopes	EaB	11,345	Prime Farmland	Yes	High	Low	No	No	No	High
Egan-Chancellor silty clay loams, 0 to 4 percent slopes	EcB	4,508	Farmland of Statewide Importance	Yes	High	Low	No	No	No	High
Egan-Shindler complex, 2 to 6 percent slopes	EsB	9,013	Prime Farmland	Yes	High	Low	No	No	No	High

Exhibit C
Soil Characteristics for Each Soil Map Unit within the Project area

Map Unit Name	Map Unit Symbol [a]	Pipeline Crossing Length (feet)	Prime Farmland [a]	Hydric Soils [a]	Compaction Potential [a]	Erosion Potential [a, c]	Steep Slopes [a, d]	Shallow Bedrock [a, e]	Shallow Natric Layer [a,f]	Re-vegetation Potential

[a] As designated by the Natural Resources Conservation Service.
[b] Represents total length (in feet) crossed by the pipeline facilities.
[c] Erosion Potential – Based on land capability class and subclass: High (subclass Ve-VIIIe), Moderate (subclass IIIe-IVe), and Low (remaining subclasses).
[d] Steep Slopes - Represents soils with slopes greater than 8 percent.
[e] Shallow bedrock – Represents soils with unconsolidated rock 60 inches or less from the surface.
[e] Shallow Natric layers – Represents subsoil layers with a large accumulation of sodium salts that can reduce plant growth within 18 inches or less from the surface.

Waterbodies Crossed by the Project

Exhibit C Waterbodies Crossed by the Dakota Access Project					
Approximate Milepost[a]	**Waterbody Name**	**Flow Regime**	**State Classification**	**Supports Use Designation**	**Crosses Centerline**
Campbell County					
210.6	Unnamed Tributary of Lake Pocasse	Ephemeral	-	-	Yes
211.0	Unnamed Tributary of Lake Pocasse	Ephemeral	-	-	Yes
211.7	Unnamed Tributary of Spring Creek	Ephemeral	-	-	Yes
212.6	Unnamed Tributary of Spring Creek	Ephemeral	-	-	Yes
212.8	Unnamed Tributary of Spring Creek	Ephemeral	-	-	Yes
212.9	Unnamed Tributary of Spring Creek	Intermittent	-	-	Yes
213.6	Unnamed Tributary of Spring Creek	Ephemeral	-	-	Yes
214.0	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
214.3	Unnamed Pond	Open water	-	-	No
215.0	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
215.8	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
216.1	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
216.1	Unnamed Pond	Open water	-	-	No
216.7	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
216.8	Unnamed Tributary of Spring Creek	Ephemeral	-	-	Yes
217.6	Unnamed Tributary of Spring Creek	Ephemeral	-	-	Yes
218.4	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
218.5	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
219.0	Spring Creek	Perennial	-	-	Yes
219.5	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
219.8	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
222.0	Unnamed Pond	Open water	-	-	Yes
222.2	Unnamed Tributary of McClarem Lake	Ephemeral	-	-	Yes
223.7	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
224.7	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes

Exhibit C Waterbodies Crossed by the Dakota Access Project					
Approximate Milepost[a]	**Waterbody Name**	**Flow Regime**	**State Classification**	**Supports Use Designation**	**Crosses Centerline**
226.1	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
228.4	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
229.8	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
232.7	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
234.1	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
238.8	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
McPherson County					
243.5	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
Edmunds County					
247.1	Unnamed Pond	Open water	-	-	No
251.4	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
254.3	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
255.4	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
257.6	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
257.9	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
267.9	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
276.1	Unnamed Tributary of Stafford Dam	Ephemeral	-	-	Yes
277.7	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
280.6	Unnamed Tributary of North Fork Snake Creek	Ephemeral	-	-	Yes
281.5	Unnamed Tributary of North Fork Snake Creek	Ephemeral	-	-	Yes
Faulk County					
283.5	Unnamed Tributary of North Fork Snake Creek	Intermittent	-	-	Yes
287.3	Unnamed Tributary of North Fork Snake Creek	Ephemeral	-	-	Yes
288.9	Unnamed Tributary of North Fork Snake Creek	Intermittent	-	-	Yes
291.0	Unnamed Tributary of North Fork Snake Creek	Intermittent	-	-	Yes
292.3	Unnamed Tributary of North Fork Snake Creek	Ephemeral	-	-	Yes

Exhibit C Waterbodies Crossed by the Dakota Access Project					
Approximate Milepost[a]	**Waterbody Name**	**Flow Regime**	**State Classification**	**Supports Use Designation**	**Crosses Centerline**
292.7	Unnamed Tributary of North Fork Snake Creek	Intermittent	-	-	Yes
293.0	Unnamed Tributary of North Fork Snake Creek	Ephemeral	-	-	Yes
293.8	Unnamed Pond	Intermittent	-	-	No
293.9	North Fork Snake Creek	Perennial	-	-	Yes
300.3	Unnamed Tributary of South Fork Snake Creek	Intermittent	-	-	Yes
301.7	Unnamed Pond	Open water	-	-	No
302.1	Unnamed Tributary of South Fork Snake Creek	Intermittent	-	-	No
302.6	Unnamed Tributary of South Fork Snake Creek	Intermittent	-	-	Yes
303.3	Unnamed Tributary of South Fork Snake Creek	Intermittent	-	-	Yes
305.0	Unnamed Tributary of South Fork Snake Creek	Ephemeral	-	-	Yes
305.0	Unnamed Pond	Open water	-	-	No
305.9	South Fork Snake Creek	Perennial	-	-	Yes
305.9	Unnamed Tributary of South Fork Snake Creek	Ephemeral	-	-	Yes
Spink County					
315.9	Dove Creek	Perennial	-	-	Yes
321.2	Agricultural Ditch	Ephemeral	-	-	Yes
322.4	Turtle Creek	Perennial	Fish/Wildlife Prop, Rec, Stock; Irrigation Waters; Limited Contract Recreation; Warmwater Marginal Fish Life	Full Support; Full Support; Nonsupport; Non Support	HDD[b]
324.5	Unnamed Tributary of Turtle Creek	Intermittent	-	-	Yes
328.7	Unnamed Pond	Open water	-	-	No
335.7	Unnamed Tributary of James River	Intermittent	-	-	Yes
A0.7	Unnamed Tributary of James River	Intermittent	-	-	Yes
A1.7	Unnamed Tributary of James River	Intermittent	-	-	Yes
A2.9	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
A4.7	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes

Exhibit C Waterbodies Crossed by the Dakota Access Project					
Approximate Milepost[a]	**Waterbody Name**	**Flow Regime**	**State Classification**	**Supports Use Designation**	**Crosses Centerline**
Beadle County					
348.0	James River	Perennial	Fish/Wildlife Prop, Red, Stock; Irrigation Waters; Limited Contact Recreation; Warmwater Semipermanent Fish Life	Full Support; Full Support Nonsupport Nonsupport	HDD[b]
348.2	Unnamed Tributary of James River	Intermittent	-	-	Yes
349.4	Unnamed Tributary of James River	Intermittent	-	-	Yes
351.1	Unnamed Tributary of James River	Ephemeral	-	-	Yes
352.1	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
352.5	Foster Creek	Perennial	-	-	Yes
353.2	Unnamed Tributary of Foster Creek	Intermittent	-	-	Yes
353.8	Unnamed Tributary of Foster Creek	Intermittent	-	-	Yes
356.1	Unnamed Tributary of Lake Byron	Intermittent	-	-	Yes
357.8	Unnamed Tributary of Lake Byron	Intermittent	-	-	Yes
358.4	Unnamed Tributary of Lake Byron	Ephemeral	-	-	Yes
358.7	Unnamed Tributary of Lake Byron	Intermittent	-	-	Yes
359.0	Unnamed Tributary of Lake Byron	Intermittent	-	-	Yes
360.2	Unnamed Pond	Open water	-	-	No
361.9	Unnamed Tributary of Unnamed lake	Intermittent	-	-	Yes
363.0	Shue Creek	Perennial	-	-	Yes
363.7	Unnamed Tributary of Shue Creek	Ephemeral	-	-	No
364.7	Unnamed Tributary of Shue Creek	Ephemeral	-	-	Yes
364.8	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
365.1	Unnamed Tributary of Shue Creek	Intermittent	-	-	Yes
366.5	Unnamed Tributary of Shue Creek	Intermittent	-	-	Yes
367.9	Pearl Creek	Intermittent	-	-	Yes
369.0	Unnamed Pond	Open water	-	-	No

Exhibit C Waterbodies Crossed by the Dakota Access Project					
Approximate Milepost[a]	**Waterbody Name**	**Flow Regime**	**State Classification**	**Supports Use Designation**	**Crosses Centerline**
371.0	Middle Pearl Creek	Intermittent	-	-	Yes
372.2	Unnamed Tributary of Middle Pearl Creak	Intermittent	-	-	Yes
373.2	Unnamed Tributary of Middle Pearl Creek	Intermittent	-	-	Yes
373.8	Unnamed Tributary of Middle Pearl Creek	Intermittent	-	-	Yes
374.0	Unnamed Pond	Open water	-	-	No
Kingsbury County					
375.3	South Fork Pearl Creek	Intermittent	-	-	Yes
375.4	South Fork Pearl Creak	Intermittent	-	-	No
375.5	Unnamed Tributary of South Fork Pearl Creek	Intermittent	-	-	Yes
377.2	Unnamed Tributary of South Fork Pearl Creek	Intermittent	-	-	Yes
378.4	Unnamed Pond	Open water	-	-	No
378.8	Unnamed Tributary of Lake Iroquois	Intermittent	-	-	Yes
379.7	Unnamed Tributary of Lake Iroquois	Intermittent	-	-	Yes
385.8	Red Stone Creek	Intermittent	-	-	Yes
387.5	Unnamed Tributary of Red Stone Creek	Intermittent	-	-	Yes
388.6	Unnamed Tributary of Red Stone Creek	Intermittent	-	-	Yes
389.3	Unnamed Pond	Open water	-	-	No
391.5	Rock Creek	Intermittent	-	-	No
391.7	Rock Creek	Intermittent	-	-	Yes
392.4	Unnamed Tributary of Unnamed Pond	Intermittent	-	-	Yes
393.3	Unnamed Pond	Open water	-	-	Yes
395.0	West Fork Vermillion River	Intermittent	-	-	Yes
Miner County					
396.7	Unnamed Tributary of West Fork Vermillion River	Intermittent	-	-	Yes
398.6	Unnamed Tributary of West Fork Vermillion River	Intermittent	-	-	Yes
399.2	Unnamed Tributary of West Fork Vermillion River	Ephemeral	-	-	Yes

Exhibit C Waterbodies Crossed by the Dakota Access Project					
Approximate Milepost[a]	**Waterbody Name**	**Flow Regime**	**State Classification**	**Supports Use Designation**	**Crosses Centerline**
399.7	Unnamed Tributary of West Fork Vermillion River	Ephemeral	-	-	Yes
400.8	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
400.9	Unnamed Tributary of West Fork Vermillion River	Intermittent	-	-	Yes
401.6	Unnamed Tributary of West Fork Vermillion River	Ephemeral	-	-	Yes
401.8	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
402.0	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
402.5	Unnamed Stream	Intermittent	-	-	Yes
403.3	Unnamed Tributary of West Fork Vermillion River	Ephemeral	-	-	Yes
403.5	Unnamed Tributary of West Fork Vermillion River	Ephemeral	-	-	Yes
403.7	Unnamed Pond	Open water	-	-	No
403.9	Unnamed Tributary of West Fork Vermillion River	Ephemeral	-	-	Yes
404.0	Unnamed Tributary of West Fork Vermillion River	Ephemeral	-	-	Yes
404.5	Unnamed Tributary West Fork Vermillion River	Intermittent	-	-	Yes
404.8	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
407.6	Agricultural Irrigation ditch	Ephemeral	-	-	Yes
408.2	Unnamed Tributary of Otter Lake	Ephemeral	-	-	Yes
409.3	Unnamed Pond	Open water	-	-	No
409.6	Unnamed Tributary of Otter Lake	Ephemeral	-	-	Yes
410.4	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
Lake County					
410.7	Unnamed Pond	Open water	-	-	No
410.7	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
410.9	Unnamed Pond	Open water	-	-	No
410.9	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
411.0	Unnamed Pond	Open water	-	-	No
411.0	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes

Exhibit C Waterbodies Crossed by the Dakota Access Project					
Approximate Milepost[a]	**Waterbody Name**	**Flow Regime**	**State Classification**	**Supports Use Designation**	**Crosses Centerline**
411.1	Unnamed Pond	Open water	-	-	No
412.0	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
412.3	Unnamed Pond	Open water	-	-	No
412.6	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
412.8	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
412.9	Agricultural Irrigation Ditch	Ephemeral	-	-	No
413.0	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
413.3	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
413.3	Unnamed Pond	Open water	-	-	No
413.9	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
414.0	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
414.1	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
414.2	Agricultural Irrigation Ditch	Ephemeral		-	Yes
414.7	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
414.8	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
414.9	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
415.0	Unnamed Pond	Open water	-	-	No
415.0	Roadside Ditch	Ephemeral	-	-	Yes
415.2	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
415.3	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
415.4	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
415.4	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
415.6	Unnamed Tributary of East Fork Vermillion River	Intermittent	-	-	Yes
415.6	Unnamed Pond	Open water	-	-	No
415.7	East Fork Vermillion River	Perennial	-	-	Yes
415.8	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes

Exhibit C Waterbodies Crossed by the Dakota Access Project					
Approximate Milepost[a]	Waterbody Name	Flow Regime	State Classification	Supports Use Designation	Crosses Centerline
416.2	Unnamed Tributary of East Fork Vermillion River	Intermittent	-	-	Yes
416.4	Unnamed Tributary of East Fork Vermillion River	Intermittent	-	-	Yes
416.5	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
416.7	Unnamed Tributary of East Fork Vermillion River	Intermittent	-	-	Yes
416.9	Unnamed Tributary of Unnamed Pond	Intermittent	-	-	Yes
417.0	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
417.1	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
417.3	Unnamed Tributary of Unnamed East Fork Vermillion River	Ephemeral	-	-	Yes
417.5	Unnamed Tributary of Unnamed East Fork Vermillion River	Intermittent	-	-	Yes
417.1	Unnamed Tributary of Unnamed East Fork Vermillion River	Ephemeral	-	-	Yes
417.1	Unnamed Tributary of Unnamed East Fork Vermillion River	Ephemeral	-	-	Yes
417.9	Unnamed Tributary of Unnamed East Fork Vermillion River	Intermittent	-	-	Yes
418.2	Unnamed Tributary of Unnamed East Fork Vermillion River	Intermittent	-	-	Yes
418.5	Unnamed Tributary of Unnamed East Fork Vermillion River	Intermittent	-	-	Yes
418.8	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
419.1	Unnamed Tributary of Unnamed East Fork Vermillion River	Intermittent	-	-	Yes
419.2	Unnamed Tributary of Unnamed East Fork Vermillion River	Ephemeral	-	-	Yes
419.4	Unnamed Tributary of Unnamed East Fork Vermillion River	Intermittent	-	-	Yes
419.8	Unnamed Tributary of Unnamed East Fork Vermillion River	Ephemeral	-	-	Yes
419.9	Unnamed Tributary of Unnamed East Fork Vermillion River	Ephemeral	-	-	Yes

Exhibit C Waterbodies Crossed by the Dakota Access Project					
Approximate Milepost[a]	**Waterbody Name**	**Flow Regime**	**State Classification**	**Supports Use Designation**	**Crosses Centerline**
420.2	Unnamed Tributary of Unnamed East Fork Vermillion River	Intermittent	-	-	Yes
420.4	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
420.5	Unnamed Tributary of Unnamed East Fork Vermillion River	Ephemeral	-	-	Yes
421.5	Unnamed Tributary of Unnamed East Fork Vermillion River	Ephemeral	-	-	Yes
421.6	Unnamed Tributary of Unnamed East Fork Vermillion River	Ephemeral	-	-	Yes
421.8	Unnamed Tributary of Unnamed East Fork Vermillion River	Ephemeral	-	-	Yes
422.2	Unnamed Tributary of Unnamed East Fork Vermillion River	Intermittent	-	-	Yes
424.0	Agricultural Irrigation Ditch	Ephemeral	-	-	No
424.2	Unnamed Tributary of Unnamed East Fork Vermillion River	Intermittent	-	-	Yes
424.8	Unnamed Tributary of Unnamed East Fork Vermillion River	Ephemeral	-	-	Yes
425.1	Unnamed Tributary of Unnamed East Fork Vermillion River	Ephemeral	-	-	Yes
426.2	Unnamed Tributary of North Buffalo Creek	Ephemeral	-	-	Yes
426.9	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
427.6	Unnamed Tributary of North Buffalo Creek	Intermittent	-	-	Yes
427.7	Unnamed Tributary of North Buffalo Creek	Intermittent	-	-	Yes
428.9	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
429.1	Unnamed Tributary of Unnamed Pond	Ephemeral	-	-	Yes
McCook County					
430.1	Unnamed Tributary of Buffalo Lake	Intermittent	-	-	Yes
430.8	Unnamed Tributary of Buffalo Lake	Intermittent	-	-	Yes
Minnehaha County					
431.2	Unnamed Tributary of Buffalo Lake	Intermittent	-	-	Yes

Exhibit C Waterbodies Crossed by the Dakota Access Project					
Approximate Milepost[a]	Waterbody Name	Flow Regime	State Classification	Supports Use Designation	Crosses Centerline
431.8	Unnamed Tributary of Buffalo Lake	Intermittent	-	-	Yes
432.3	Unnamed Tributary of Buffalo Lake	Intermittent	-	-	Yes
433.3	Unnamed Tributary of West Branch Skunk Creek	Ephemeral	-	-	Yes
433.7	Unnamed Tributary of West Branch Skunk Creek	Ephemeral	-	-	Yes
434.2	Unnamed Tributary of West Branch Skunk Creek	Intermittent	-	-	Yes
434.9	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
435.2	Unnamed Tributary of West Branch Skunk Creek	Ephemeral	-	-	Yes
435.4	Unnamed Tributary of West Branch Skunk Creek	Ephemeral	-	-	Yes
435.8	Unnamed Tributary of West Branch Skunk Creek	Ephemeral	-	-	Yes
435.9	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
436.2	West Branch Skunk Creek	Intermittent	-	-	Yes
436.2	Unnamed Pond	Open water	-	-	No
436.4	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
437.2	Unnamed Tributary of West Branch Skunk Creek	Intermittent	-	-	Yes
439.4	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
439.5	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
439.7	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
440.7	Unnamed Tributary of West Branch Skunk Creek	Ephemeral	-	-	Yes
442.0	Unnamed Tributary of West Branch Skunk Creek	Intermittent	-	-	Yes
442.3	Unnamed Tributary of West Branch Skunk Creek	Intermittent	-	-	Yes
445.4	Unnamed Tributary of West Branch Skunk Creek	Intermittent	-	-	Yes
446.0	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
446.3	Unnamed Tributary of Skunk Creek	Intermittent	-	-	Yes
446.4	Unnamed Pond	Open water	-	-	No
447.1	Unnamed Tributary of Skunk Creek	Intermittent	-	-	Yes
447.8	Unnamed Tributary of Skunk Creek	Intermittent	-	-	Yes

Exhibit C Waterbodies Crossed by the Dakota Access Project					
Approximate Milepost[a]	**Waterbody Name**	**Flow Regime**	**State Classification**	**Supports Use Designation**	**Crosses Centerline**
448.1	Unnamed Tributary of Skunk Creek	Intermittent	-	-	Yes
448.8	Unnamed Tributary of Skunk Creek	Intermittent	-	-	Yes
449.0	Unnamed Tributary of Skunk Creek	Intermittent	-	-	Yes
449.4	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
449.7	Unnamed Tributary of Skunk Creek	Intermittent	-	-	Yes
450.8	Unnamed Tributary of Skunk Creek	Intermittent	-	-	Yes
452.1	Unnamed Tributary of Wall Lake	Intermittent	-	-	Yes
452.4	Unnamed Tributary of Wall Lake	Intermittent	-	-	Yes
453.5	Unnamed Tributary of Wall Lake	Intermittent	-	-	Yes
453.9	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
454.0	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
454.6	Unnamed Tributary of Unnamed Pond	Intermittent	-	-	Yes
455.4	Unnamed Tributary of Skunk Creek	Intermittent	-	-	Yes
455.8	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
Turner County					
B0.1	Unnamed Tributary of Skunk Creek	Intermittent	-	-	Yes
Lincoln County					
472.2	Unnamed Tributary of Nine Mile Creek	Ephemeral	-	-	No
473.0	Agricultural Irrigation Ditch	Ephemeral	-	-	No
473.7	Unnamed Tributary of Nine Mile Creek	Intermittent	-	-	Yes
474.0	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
474.6	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
475.0	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
476.4	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
477.0	Unnamed Tributary of Big Sioux River	Intermittent	-	-	Yes
478.7	Agricultural Irrigation Ditch	Ephemeral	-	-	No

Exhibit C Waterbodies Crossed by the Dakota Access Project					
Approximate Milepost[a]	**Waterbody Name**	**Flow Regime**	**State Classification**	**Supports Use Designation**	**Crosses Centerline**
478.9	Unnamed Tributary of Big Sioux River	Intermittent	-	-	No
480.3	Unnamed Tributary of Big Sioux River	Intermittent	-	-	Yes
481.5	Unnamed Tributary of Big Sioux River	Ephemeral	-	-	Yes
481.6	Big Sioux River	Perennial	Fish/Wildlife Prop, Rec, Stock; Immersion Recreation; Irrigation Waters; Limited Contact Recreation, Warmwater Semipermanent fish life	Full Support; Nonsupport; Full Support; Nonsupport; Nonsupport	HDD[b]
B2.9	Unnamed Tributary of Beaver Creek	Intermittent	-	-	Yes
B3.2	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
B4.3	Unnamed Tributary of Beaver Creek	Intermittent	-	-	Yes
B4.4	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
B5.2	Unnamed Tributary of Beaver Creek	Ephemeral	-	-	Yes
B5.9	Unnamed Tributary of Beaver Creek	Intermittent	-	-	Yes
B8.1	Unnamed Tributary of Beaver Creek	Intermittent	-	-	Yes
B8.9	Unnamed Tributary of Beaver Creek	Intermittent	-	-	Yes
B9.5	Unnamed Tributary of Beaver Creek	Intermittent	-	-	Yes
B10.6	Unnamed Tributary of Beaver Creek	Intermittent	-	-	Yes
B10.7	Unnamed Tributary of Beaver Creek	Intermittent	-	-	Yes
B11.1	Agricultural Irrigation Ditch	Ephemeral	-	-	Yes
B11.5	Unnamed Tributary of Beaver Creek	Intermittent	-	-	Yes
B12.9	Unnamed Tributary of Beaver Creek	Intermittent	-	-	Yes
B15.1	Unnamed Tributary of Nine Mile Creek	Intermittent	-	-	Yes
B15.4	Unnamed Tributary of Nine Mile Creek	Intermittent	-	-	Yes

[a] Mileposts proceeded with the letter A reference the reroute in Spink County, and mileposts proceeded with the letter B reference the reroute in Turner and Lincoln counties.
[b] HDD= Waterbody will be crossed via horizontal directional drill (HDD).

Federal and State Listed Threatened and Endangered Species in South Dakota

Federally Listed Threatened and Endangered Species in South Dakota						
Common Name	**Scientific Name**	**Federal Status**	**Federal County Listing**	**Potential Impact**	**Habitat Requirement**	**Determination of Effect**
Mammals						
Northern long-eared bat	*Myotis septentrionalis*	PE	Beadle, Campbell, Edmunds, Faulk, Kingsbury, Lake, Lincoln, McCook, McPherson, Miner, Minnehaha, Spink, Turner	No effect	Summer roosting habitat underneath bark or in crevices of live and dead trees. Winter habitat includes caves and mines with large entrances.	The range of this species is located at the eastern border of the state (NatureServe, 2014). Forested areas within this part of the Project are limited to the Big Sioux River crossing. The Big Sioux River will be crossed via HDD, therefore no impacts to forested areas are anticipated.
Birds						
Interior least tern	*Sterna antillarum athalassos*	E	Campbell	No effect	Interior least tern nesting habitat includes open shorelines, riverine sandbars, and mudflats along Missouri and Mississippi Rivers drainages.	The Project does not cross the Missouri River within South Dakota. No suitable habitat within the Project area.
Piping plover	*Charadrius melodus*	T	Campbell, Kingsbury	No effect	Sandy or gravelly beaches and sandbars or alkaline wetlands.	No suitable nesting habitat was identified during Project field surveys. Critical habitat for the piping plover is along the Missouri River; the Project does not cross the Missouri River within South Dakota. This species is highly mobile and would likely avoid the construction area.
Red knot	*Calidris canutus rufa*	PT	Beadle, Campbell, Edmunds, Faulk, Kingsbury, Lake, Lincoln, McCook, McPherson, Miner, Minnehaha, Spink, Turner	No effect	Breeds in the Arctic tundra areas, such as sparsely vegetated habitat. When non-breeding they prefer primarily intertidal, marine habitats, coastal inlets, estuaries, and bays.	No suitable habitat within the Project area.
Sprague's pipit	*Anthus spragueii*	C	Campbell, McPherson	No effect	Prefer native grasslands of intermediate height and sparse to intermediate vegetation density, low forb density, and little bare ground but low litter depth. Introduced grasslands may be utilized, but to a much lesser extent. Nests on the ground from early May to mid-October.	Breeding habitat range is in the northern part of the state. Some of the of the Project area may be within this range; however, there are no occurrences documented within the Project area (SDNHP, 2014 and eBird, 2014)

Federally Listed Threatened and Endangered Species in South Dakota						
Common Name	**Scientific Name**	**Federal Status**	**Federal County Listing**	**Potential Impact**	**Habitat Requirement**	**Determination of Effect**
Whooping crane	*Grus americana*	E	Beadle, Campbell, Clark, Edmunds, Faulk, Kingsbury, McCook, McPherson, Miner, Spink, Turner	No effect	During migration, this species utilizes wetlands and cropland ponds for feeding and roosting. Seasonal and semi-permanent wetlands are the most commonly used.	The Project area is within the migratory range of this species (Cornell Lab of Ornithology, 2014). Only one whooping crane occurrence record is located in Kingsbury County within one mile of the Project (SDNHP, 2014). This species is highly mobile and would likely avoid construction.
Fishes						
Pallid sturgeon	*Scaphirhynchus albus*	E	Campbell, Lincoln	No effect	Prefer a fast flowing turbid river with a firm sand or gravel bottom. Areas at the end of chutes or sandbars are commonly used for feeding.	The Missouri River (Campbell County) will not be crossed in South Dakota, and the Big Sioux River (Lincoln County) will be crossed via HDD, therefore no impacts will occur to this species.
Topeka shiner	*Notropis topeka*	E	Beadle, Kingsbury, Lake, Lincoln, McCook, Miner, Minnehaha, Spink, Turner	Not likely to adversely affect	Found in small prairie streams that exhibit perennial or nearly perennial flow. Substrate usually is clean gravel, cobble, or sand.	Nine streams crossed by the Project may contain this species as identified by the USFWS. Two of these streams (James and Big Sioux Rivers) will be crossed via HDD. Consultation with the U.S. Fish and Wildlife Service is necessary. Mitigation measures to be used during construction of the pipeline within identified streams are under development.
Invertebrates						
Dakota skipper	*Hesperia dacotae*	T	Edmunds, McPherson	No effect	Dakota skippers only utilize high quality undisturbed (i.e., remnant, uncultivated) prairie; including, wet tallgrass prairie and dry mixed grass prairie.	No native grasslands were identified within Edmunds and McPherson County during field surveys.
Vascular Plants						
Western prairie fringed orchid	*Platanthera praeclara*	T	Lake, Lincoln, McCook, Miner, Minnehaha, Turner	No effect	Prefers moist tallgrass prairie and sedge meadows are appropriate habitat for the western prairie fringed orchid.	Suitable habitat present within Project area, however the species seems to have been extirpated from South Dakota.

E= Endangered
T= Threatened
PE=Proposed Endangered
PT= Proposed Threatened
C= Candidate

State Listed Threatened and Endangered Species in South Dakota					
Common Name	**Scientific Name**	**State Status[a]**	**Potential Impact**	**Habitat Requirement**	**Determination of Effect**
Mammals					
Black-footed ferret	*Mustela nigripes*	E	No impact anticipated	Associated exclusively with large (10,000 acres or more) prairie dog towns. Use burrows for shelter and feed on prairie dogs and other species within the habitat.	Historically, the species was present within the state; however, large prairie dog complexes needed to support a black-footed ferret population do not currently exist within the Project area.
Northern river otter	*Lontra canadensis*	T	No impact anticipated	Rivers with high quality water and an abundant food supply.	Within the Project area, this species has been documented within the Big Sioux River and James River watersheds (South Dakota Game, Fish, and Parks [SDGFP], 2014a and South Dakota Natural Heritage Program [SDNHP], 2014). However, both of these rivers will be crossed via HDD, therefore avoiding impacts to the riverine habitats utilized by the otter.
Swift fox	*Vulpes velox*	T	No impact anticipated	Prefer short or mixed grass prairies with flat to gently rolling terrain and sparse vegetation that allows for good mobility and visibility.	Although historically the range of this species was within the Project area, the species does not currently reside within the Project area (NatureServe, 2014).
Birds					
American dipper	*Cinclus mexicanus*	T	No impact anticipated	Cold and clear, fast-moving streams with gravel, stone, or sand bottoms which support invertebrates. Streams with structures over the water such as waterfalls, rocks and boulders are needed for nesting.	The range of this species is not within the Project area (Cornell Lab of Ornithology, 2014).
Bald eagle	*Haliaeetus leucocephalus*	T	No impact anticipated	Breeds and winters in areas close to a coast, river or lake. Prefers conifers for nesting and roosting and tends to avoid areas with high human traffic.	There are few forested areas along the pipeline route for nesting. Occurrence data from the SDNHP documented a nest approximately one mile from the Project area. Field surveys did not identify bald eagles within the Project area. This species is highly mobile and would likely avoid construction.
Eskimo curlew	*Numenius borealis*	E	No impact anticipated	Variety of grassland habitats.	The Project area is within the migratory range of this species (NatureServe, 2014). This species is highly mobile and would likely avoid construction.
Interior least tern	*Sterna antillarum athalassos*	E	No impact anticipated	Interior least tern nesting habitat includes open shorelines, riverine sandbars, and mudflats along Missouri and Mississippi Rivers drainages.	The Project does not cross the Missouri River within South Dakota. No suitable habitat within the Project area.
Osprey	*Pandion haliaetus*	T	No impact anticipated	Prefer habitat near water including, saltmarshes, rivers, ponds, and reservoirs. Osprey places their nest in open areas on poles, channel markers, and dead trees, often over water.	The Project area is within the migratory range of this species (Cornell Lab of Ornithology, 2014). This species is highly mobile and would likely avoid construction.

State Listed Threatened and Endangered Species in South Dakota					
Common Name	**Scientific Name**	**State Status[a]**	**Potential Impact**	**Habitat Requirement**	**Determination of Effect**
Peregrine falcon	*Falco peregrines*	E	No impact anticipated	Inhabits any open habitat with a wide view of the surrounding area, close proximity to water and rocky cliffs or even tall buildings available for nesting.	No nesting habitat is within the Project area (NatureServe, 2014). This species is highly mobile and would likely avoid the construction area.
Piping plover	*Charadrius melodus*	T	No impact anticipated	Sandy or gravelly beaches and sandbars or alkaline wetlands.	No suitable nesting habitat was identified during Project field surveys. Critical habitat for the piping plover is along the Missouri River; the Project does not cross the Missouri River within South Dakota. This species is highly mobile and would likely avoid the construction area.
Whooping crane	*Grus americana*	E	No impact anticipated	During migration, this species utilizes wetlands and cropland ponds for feeding and roosting. Seasonal and semi-permanent wetlands are the most commonly used.	The Project area is within the migratory range of this species (Cornell Lab of Ornithology, 2014). Only one whooping crane occurrence record is located in Kingsbury County within one mile of the Project (SDNHP, 2014). This species is highly mobile and would likely avoid construction.
Reptiles					
Eastern hognose snake	*Heterodon platirhinos*	T	No impact anticipated	Prefer woodlands with sandy soil, fields, farmland and coastal areas.	The range of this species is not located within the Project area (NatureServe, 2014).
False map turtle	*Graptemys pseudogeographica*	T	No impact anticipated	Inhabits slow moving rivers, river sloughs, oxbow lakes, lakes and reservoirs containing abundant aquatic vegetation and basking sites.	The range of this species within South Dakota is limited to the Missouri River area. The Project enters South Dakota east of the Missouri River (NatureServe, 2014).
Lined snake	*Tropidoclonion lineatum*	E	No impact anticipated	Prefers open prairie hillsides and rocky, woodland areas	The range of this species within South Dakota is limited to the southeast corner of the state. Suitable habitat may be present within the Project area; however, this species is highly mobile and would likely avoid construction.
Fishes					
Banded killifish	*Fundulus diaphanous*	E	No impact anticipated	Habitat ranges from quiet waters of lakes and ponds with ample vegetation to muddy streams without vegetation.	The current species habitat range is not located within the Project area (SDGFP, 2014b).
Blacknose shiner	*Notropis heterolepis*	E	No impact anticipated	Prefers clear, cool streams with sand and gravel beds, and deep pools with abundant vegetation both in the water and on lands bordering the streams. This species has only been found in two pristine streams located in south-central South Dakota.	No suitable habitat within the Project area.

State Listed Threatened and Endangered Species in South Dakota					
Common Name	**Scientific Name**	**State Status[a]**	**Potential Impact**	**Habitat Requirement**	**Determination of Effect**
Finescale dace	*Chrosomus neogaeus*	E	No impact anticipated	Occur most often in cool, clear mountain streams and less often in lakes, reservoirs, or large rivers. Prefer moderate water velocities, associate with a variety of substrates.	The Project area is outside of the current species range (NatureServe, 2014).
Longnose sucker	*Catostomus catostomus*	T	No impact anticipated	Found in cool, spring-fed streams where it feeds on the bottom on crustaceans, snails, insect larvae, and larvae.	The Project area is outside of the current species range (NatureServe, 2014).
Northern pearl dace	*Margariscus nachtriebi*	T	No impact anticipated	Occurs in cool bogs, ponds, lakes, and clear streams.	The species distribution is not located within the Project area. Limited to Counties within southwestern South Dakota (U.S. Geological Survey, 2014)
Northern redbelly dace	*Chrosomus eos*	T	No impact anticipated	Prefers areas with beds of aquatic vegetation in spring-fed streams.	Believed to be extirpated from the Big Sioux drainage (SDGFP, 2014c)
Pallid sturgeon	*Scaphirhynchus albus*	E	No impact anticipated	Prefer a fast flowing turbid river with a firm sand or gravel bottom. Areas at the end of chutes or sandbars are commonly used for feeding.	The Missouri River (Campbell County) will not be crossed in South Dakota, and the Big Sioux River (Lincoln County) will be crossed via HDD, therefore no impacts will occur to this species.
Sicklefin chub	*Macrhybopsis meeki*	E	No impact anticipated	Prefer large, turbid rivers with a diversity of depths and velocities forming braided channels, sand bars, sand flats, and gravel bars.	No suitable habitat within the Project area.
Sturgeon chub	*Macrhybopsis gelida*	T	No impact anticipated	Prefer large, turbid rivers with a range of depths and velocities forming braided channels, gravel bars, and sand flats and bars.	No suitable habitat within the Project area.

E= Endangered
T= Threatened
[a] South Dakota state listed species do not have county listings, they are listed state-wide.

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