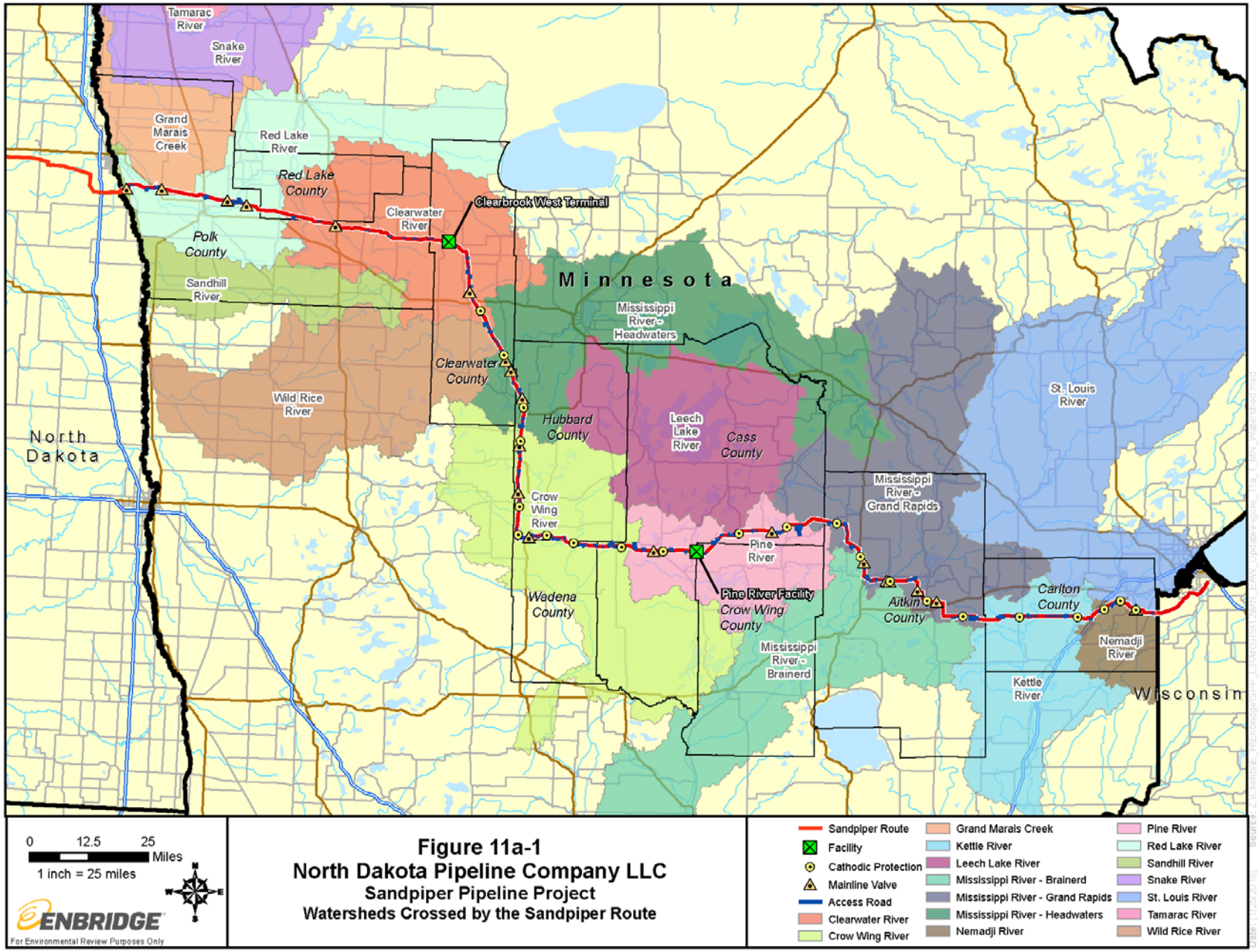

Figure 11a-1
North Dakota Pipeline Company LLC
Sandpiper Pipeline Project
Watersheds Crossed by the Sandpiper Route

Western Lake Superior Basin

The Western Lake Superior Basin covers 9,126 square miles in Minnesota and Wisconsin. The Western Lake Superior Basin is Minnesota's only basin that is on a Great Lake coastline. Much of the land within the basin is forested, with very little agriculture due to the cool climate and poor soils (Rosberg et al. 2000). Streams within the basin flow to Lake Superior, which discharges into Lake Huron, and ultimately flows into the St. Lawrence Seaway via Lakes Erie and Ontario.

Watershed Districts

SPP would cross the Wild Rice and Red Lake Watershed Districts in Minnesota. The primary purpose of watershed districts is to conserve the water resources within their jurisdiction through land use planning, flood control, drainage ditch maintenance, and other conservation practices. SPP also crosses 21.6 miles of the Big Sandy Lake Watershed Management Project in Aitkin and Carlton counties, which includes Big Sandy Lake and Lake Minnewawa. Neither lake is crossed by SPP.

Waterbodies

The following section describes the waterbodies crossed by SPP.

NDPC conducted waterbody field surveys within the SPP environmental survey area between 2013 and 2015 to identify locations and widths of waterbodies (i.e., lakes, streams, rivers, and drainage ditches). Hydrographic spatial data (i.e., National Hydrography Dataset) was used to identify waterbodies impacted by SPP when survey data was not available. Specially designated waterbodies are discussed below.

NDPC identified 176 waterbodies crossed by the SPP route, including 80 perennial streams, 62 intermittent streams, and 34 ephemeral streams. Of these waterbodies, 52 are designated as Public Waters by MDNR, two are MDNR-designated wild rice waters (Hay Creek in Hubbard County and Shell River in Wadena County), and eight are considered Section 10 navigable waters. Waterbodies crossed by the SPP route are summarized in Table 11a-2 by county and in Table 11a-3 by watershed. A list of individual waterbodies crossed by the SPP route is included in Appendix D.

Table 11a-2
Summary of Waterbodies Crossed by the Sandpiper Pipeline Project by County – Pipeline

County	Perennial	Intermittent	Ephemeral	MDNR Public Water-courses [a]	Wild & Scenic Rivers	MN State Canoe Routes [b]	Trout Streams & Tributaries [b]	Section 10 Navigable Waters [c]	Wild Rice Waters [d]
Polk County	8	20	5	10	--	3	--	3	--
Red Lake County	2	5	3	--	--	--	--	--	--
Clearwater County	12	2	1	10	--	1	--	--	--
Hubbard County	9	--	--	8	--	--	2	--	1
Wadena County	3	--	--	2	--	1	--	--	1
Cass County	14	6	1	5	--	1	1	--	--
Crow Wing County	3	--	--	--	--	--	--	--	--
Aitkin County	18	20	14	7	--	1	--	2	--
Carlton County	11	9	10	10	--	--	3	3	--
TOTAL	**80**	**62**	**34**	**52**	**--**	**7**	**6**	**8**	**2**

[a] NDPC has verified jurisdiction of Public Waters Inventory ("PWI") features with MDNR staff. In some instances, PWI features catalogued as watercourses were delineated as wetlands during field surveys and are not therefore not represented in the list of waterbody crossings in Appendix D. Each crossing is counted as "1" feature; therefore, impacts may be overstated.

[b] The data was generated by NDPC using publicly available data from the Minnesota Geospatial Commons (MNGeo 2016). Counts of the features crossed by each route were developed using spatial analysis tools within ArcGIS. Each crossing is counted as "1" feature; therefore, impacts may be overstated.

[c] Red River of the North and Red Lake River (two crossings) (Polk County); Mississippi River and Sandy River (Aitkin County); Kettle River, West Branch Moose River, and Moose River (Carlton County).

[d] Hay Creek (Hubbard County) and Shell River (Wadena County).

Table 11a-3
Summary of Waterbodies Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project by Watershed – Pipeline

Watershed Name		Perennial	Intermittent	Ephemeral	MDNR Public Water-courses [a]	Wild & Scenic Rivers	MN State Canoe Routes [b]	Trout Streams & Tributaries [b]	Section 10 Navigable Waters [c]	Wild Rice Waters [d]
Sandhill River	SPP	--	--	--	--	--	--	--	--	--
	L3R [e]	--	--	--	--	--	--	--	--	--
	Cumulative	--	--	--	--	--	--	--	--	--
Grand Marais Creek	SPP	--	6	--	--	--	--	--	--	--
	L3R [e]	--	3	--	--	--	--	--	--	--
	Cumulative	--	9	--	--	--	--	--	--	--
Red Lake River	SPP	5	12	1	6	--	3	--	3	--
	L3R [e]	1	22	2	2	--	1	--	--	--
	Cumulative	6	34	3	8	--	4	--	3	--

Table 11a-3
Summary of Waterbodies Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project by Watershed – Pipeline

Watershed Name		Perennial	Intermittent	Ephemeral	MDNR Public Water-courses [a]	Wild & Scenic Rivers	MN State Canoe Routes [b]	Trout Streams & Tributaries [b]	Section 10 Navigable Waters [c]	Wild Rice Waters [d]
Clearwater River	SPP	14	8	8	11	--	--	--	--	--
	L3R [e]	11	31	1	10	--	--	--	--	--
	Cumulative	22	39	8	18	--	--	--	--	--
Wild Rice River	SPP	1	--	--	--	--	--	--	--	--
	L3R [e]	1	--	--	--	--	--	--	--	--
	Cumulative	1	--	--	--	--	--	--	--	--
Mississippi River – Headwaters	SPP	3	1	--	3	--	1	1	--	--
	L3R [e]	3	2	--	3	--	1	1	--	--
	Cumulative	3	2	--	3	--	1	1	--	--
Crow Wing River	SPP	13	3	--	9	--	1	1	--	2
	L3R [e]	13	3	--	9	--	1	1	--	2
	Cumulative	13	3	--	9	--	1	1	--	2
Pine River	SPP	10	2	--	4	--	1	1	--	--
	L3R [e]	10	2	--	4	--	1	1	--	--
	Cumulative	10	2	--	4	--	1	1	--	--
Leech Lake River	SPP	1	--	--	--	--	--	--	--	--
	L3R [e]	1	--	--	--	--	--	--	--	--
	Cumulative	1	--	--	--	--	--	--	--	--
Mississippi River – Grand Rapids	SPP	21	21	15	7	--	1	--	2	--
	L3R [e]	21	23	15	7	--	1	--	2	--
	Cumulative	21	23	15	7	--	1	--	2	--
Mississippi River – Brainerd	SPP	1	--	--	3	--	--	--	--	--
	L3R [e]	1	--	--	3	--	--	--	--	--
	Cumulative	1	--	--	3	--	--	--	--	--
Kettle River	SPP	9	8	--	7	--	--	1	3	--
	L3R [e]	9	8	--	7	--	--	1	3	--
	Cumulative	9	8	--	7	--	--	1	3	--
Nemadji River	SPP	2	--	2	2	--	--	2	--	--
	L3R [e]	2	--	6	2	--	--	2	--	--
	Cumulative	2	--	6	2	--	--	2	--	--

Table 11a-3 Summary of Waterbodies Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project by Watershed – Pipeline										
Watershed Name		Perennial	Intermittent	Ephemeral	MDNR Public Water-courses [a]	Wild & Scenic Rivers	MN State Canoe Routes [b]	Trout Streams & Tributaries [b]	Section 10 Navigable Waters [c]	Wild Rice Waters [d]
St. Louis River	SPP	--	1	8	--	--	--	--	--	--
	L3R [e]	--	1	8	--	--	--	--	--	--
	Cumulative	--	1	8	--	--	--	--	--	--
	TOTAL									
	SPP	**80**	**62**	**34**	**52**	**--**	**7**	**6**	**8**	**2**
	L3R [e]	**73**	**95**	**32**	**47**	**--**	**5**	**6**	**5**	**2**
	Cumulative	**89**	**121**	**40**	**61**	**--**	**8**	**6**	**8**	**2**

[a] NDPC has verified jurisdiction of PWI features with MDNR staff. In some instances, PWI features catalogued as watercourses were delineated as wetlands during field surveys and are not therefore not represented in the list of waterbody crossings in Appendix D. Each crossing is counted as "1" feature; therefore, impacts may be overstated.

[b] The data was generated by NDPC using publicly available data from the Minnesota Geospatial Commons (MNGeo 2016). Counts of the features crossed by each route were developed using spatial analysis tools within ArcGIS. Each crossing is counted as "1" feature; therefore, impacts may be overstated.

[c] Red River of the North and Red Lake River (two crossings) (Polk County); Mississippi River and Sandy River (Aitkin County); Kettle River, West Branch Moose River, and Moose River (Carlton County).

[d] Hay Creek (Hubbard County) and Shell River (Wadena County).

[e] L3R impacts are provided where L3R is within the same Hydrologic Unit Code ("HUC") 8 watershed as SPP.

In addition, temporary access roads would cross 12 waterbodies including one perennial, 10 intermittent, and three ephemeral waterbodies (Tables 11a-4 and 11a-5). One intermittent waterbody would be impacted by a permanent access road to a mainline valve at MP 325.1. NDPC may install bridges to cross the waterbodies which may require temporary instream supports. None of these waterbodies are specially designated.

The Clearbrook Terminal, Pine River Facility, mainline valves, cathodic protection, and permanent access roads would not cross any waterbodies.

Table 11a-4 Summary of Waterbodies Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project by County – Access Roads			
County	Perennial	Intermittent	Ephemeral
Polk County	--	1 [a]	1
Red Lake County	--	1	--
Clearwater County [b]	--	2	2
Cass County	1	--	--
Aitkin County	--	3	--
Carlton County	--	2	--
TOTAL	**1**	**9**	**3**

Table 11a-4 Summary of Waterbodies Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project by County – Access Roads			
County	Perennial	Intermittent	Ephemeral

[a] Includes a waterbody crossed by permanent access road to mainline valve near MP 325.1

[b] Temporary access roads located east of SPP MP 379.2 (L3R MP 912.3) would be utilized for both SPP and L3R. Temporary access roads located in Polk, Red Lake, and Clearwater counties west of these MPs would apply to SPP only.

Table 11a-5
Summary of Waterbodies Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project by Watershed – Access Roads

Watershed Name [a]		Perennial	Intermittent	Ephemeral
Red Lake River	SPP	--	--	--
	L3R [b]	--	1	--
	Cumulative	--	1	--
Clearwater River	SPP	--	4 [c]	3
	L3R [b]	--	--	2
	Cumulative	--	4	3
Crow Wing River	SPP	1	--	--
	L3R [b]	1	--	--
	Cumulative	1	--	--
Mississippi River – Brainerd	SPP	--	3	--
	L3R [b]	--	3	--
	Cumulative	--	3	--
Kettle River	SPP	--	2	--
	L3R [b]	--	2	--
	Cumulative	--	2	--
TOTAL	**SPP**	**1**	**9**	**3**
	L3R [b]	**1**	**8**	**2**
	Cumulative	**1**	**10**	**3**

[a] Temporary access roads located east of SPP MP 379.2 (L3R MP 912.3) would be utilized for both SPP and L3R. Temporary access roads located in Polk, Red Lake, and Clearwater Counties west of these MPs would apply to SPP only.

[b] L3R impacts are provided where L3R is within the same HUC 8 watershed as SPP.

[c] Includes a waterbody crossed by permanent access road to mainline valve near MP 325.1

The EIS will further describe potential impacts to the following water resources:

- Outstanding Resource Value Waters
- Impaired Waters
- Special Waters
- MDNR Public Water Watercourses
- Infested Waters
- Other Known Sensitive Crossings

Wetlands

The following section describes the wetlands crossed by SPP.

NDPC conducted wetland delineation surveys within approximately 95 percent of the SPP environmental survey area between 2013 and 2015 to identify the wetlands that would be impacted by SPP. Wetlands were identified and mapped in general accordance with the Great Plains, Midwest, and Northcentral and Northeast Regional Supplements of the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987). NDPC would conduct remaining wetland delineations within the SPP environmental survey area in 2016, pending landowner approval. Where field-verified survey data were not available, National Wetlands Inventory ("NWI") data was used to identify potential wetlands that would be crossed by the SPP route. A list of individual wetlands crossed by the SPP route is provided in Appendix E.

Through a combination of NWI and field data, it was determined that the SPP route would cross approximately 79.9 miles of wetlands (see Table 11a-6).

Table 11a-6
Summary of Wetland Types Crossed by the Sandpiper Pipeline Project by County – Pipeline

County	Wetland Type [a]	Distance (miles)
Polk	PEM	4.8
	PFO	0.7
	PSS	0.5
	PUB	0.0
Polk Total [b]		**6.0**
Red Lake	PEM	1.9
	PFO	0.0
	PSS	0.6
	PUB	0.0
Red Lake Total [b]		**2.4**
Clearwater	PEM	7.1
	PFO	2.4
	PSS	1.0
	PUB	0.1
Clearwater Total [b]		**10.6**
Hubbard	PEM	3.6
	PFO	1.1
	PSS	1.6
	PUB	0.0

Table 11a-6 Summary of Wetland Types Crossed by the Sandpiper Pipeline Project by County – Pipeline		
County	Wetland Type [a]	Distance (miles)
Hubbard Total [b]		**6.3**
Wadena	PEM	0.7
	PFO	0.0
	PSS	0.3
	PUB	0.0
Wadena Total [b]		**1.0**
Cass	PEM	5.0
	PFO	3.1
	PSS	1.9
	PUB	0.1
Cass Total [b]		**10.2**
Crow Wing	PEM	0.9
	PFO	0.1
	PSS	0.3
	PUB	0.1
Crow Wing Total [b]		**1.4**
Aitkin	PEM	10.0
	PFO	9.5
	PSS	8.1
	PUB	0.0
Aitkin Total [b]		**27.7**
Carlton	PEM	2.5
	PFO	6.7
	PSS	5.0
	PUB	0.0
Carlton Total [b]		**14.3**
Grand Total [b]		**79.9**

[a] PEM = Palustrine Emergent; PSS = Palustrine Scrub Shrub; PFO = Palustrine Forested; PUB = Palustrine Unconsolidated Bottom (Cowardin et al. 1979).
[b] Numbers may not total consistently due to rounding.

Table 11a-7 presents MDNR Public Water Wetlands that would be crossed by the SPP route.

Table 11a-7 MDNR Public Water Wetlands and Basins Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project – Pipeline					
Name	PWI Classification	SPP		L3R [a]	
		MP	Crossing Length (miles)	MP	Crossing Length (miles)
Unnamed Wetland	Wetland	--	--	853.7	0.1
Unnamed Wetland	Wetland	379.4	0.1	912.6	0.1
Mud	Basin	397.5	0.1	930.7	0.1
Unnamed Wetland	Wetland	427.8	0.2	961.0	0.1

Table 11a-7 MDNR Public Water Wetlands and Basins Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project – Pipeline					
Name	PWI Classification	SPP		L3R [a]	
		MP	Crossing Length (miles)	MP	Crossing Length (miles)
Portage	Basin	431.8	<0.1	965.0	0.1
Frandsen Wetland	Wetland	452.5	0.3	985.5	0.2
Unnamed Basin	Basin	469.5	<0.1	1002.7	0.0
Peterson Basin	Basin	492.7	0.3	1025.8	0.1
Scout Camp Pond Wetland	Wetland	505.5	<0.1	1038.5	0.1
[a] L3R impacts are provided where L3R is within the same HUC 8 watershed as SPP.					

The EIS will further describe potential impacts to wetland features, including MDNR Public Water Wetlands.

ii. Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

Groundwater

A description of groundwater resources potentially impacted by SPP, is provided in the following sections, and was previously provided in Section 8.0 of NDPC's Supplemental EIR submitted to the MPUC on January 30, 2014.

The primary source of water for private, public, commercial, and industrial uses near SPP is groundwater pumped from wells. Most lakes, rivers, and many wetlands near SPP are hydraulically connected with the water table and are typically a surface expression of the water table. The SPP route traverses glaciated terrain dominated by thick glacial drift deposits of glacial till and outwash, overlying primarily Precambrian crystalline bedrock. Although groundwater is present in both the glacial drift and underlying bedrock, the glacial drift tends to be most used for water production in the vicinity due to its greater accessibility and the presence of permeable sediments. Well productivity and groundwater quality varies greatly across the SPP environmental survey area owing to the wide variability seen in surface geology (see Section 10.a).

Groundwater features that could present challenges during construction activities, such as artesian conditions, will also be addressed in the EIS.

Aquifers

An aquifer is a geologic unit (or a combination of geologic units) that is capable of yielding usable quantities of water. Aquifers are typically composed of thick, laterally continuous deposits of permeable sand, gravel, or bedrock that is composed of permeable sandstone,

limestone, or is highly fractured. Portions of geologic units that are not capable of yielding usable quantities of water generally are termed “aquitards” and are either too thin to accommodate wells or are composed of low-permeability materials, such as silt, clay, or crystalline bedrock. Unlike geologic units, aquifers and aquitards are not typically given formal names, but they are often referenced by the geologic units that comprise them.

Glacial Aquifers

Unconsolidated permeable glacial deposits and recent alluvial deposits are the most important groundwater source within the SPP environmental survey area. These deposits consist primarily of glacial sand and/or gravel outwash, ice-contact deposits, or sand and gravel alluvium that was deposited along existing streams. Most glacial aquifers are classified as “surficial aquifers” because the water table is located in these deposits. The surficial glacial aquifers vary in thickness from a few feet to over 300 feet and can produce water up to 3,000 gallons per minute or more, depending on the thickness and extent of the saturated deposits.

Surficial aquifers are an important source of groundwater throughout the SPP environmental survey area and can provide adequate water volumes to supply municipalities and irrigation systems. Surficial aquifers generally yield good quality water. However, there may be naturally occurring constituents, such as iron and manganese, at concentrations above secondary drinking water standards (i.e., levels that affect taste, color, and odor but not human health). In some areas, there may also be naturally high levels of constituents such as arsenic.

Surficial glacial aquifers receive recharge by infiltrating precipitation and snow melt. Perched wetland deposits may also provide some minor additional recharge. Groundwater in the surficial glacial aquifers generally flows from upland areas (e.g., topographic highs) to lakes and streams. Many lakes and streams near SPP are in direct hydraulic connection with the surficial glacial aquifers and the open water of these features are typically at the same elevation as the water table. Groundwater from surficial aquifers discharges to lakes, where some water evaporates, and rivers. Evapotranspiration from plants is also a mechanism of discharge.

In some locales near SPP, there may be “buried” glacial aquifers. Buried glacial aquifers are unconsolidated, permeable sand and gravel deposits that are separated from the ground surface or from overlying surficial glacial aquifers by a laterally continuous layer of lower permeability silt and/or clay that functions as an aquitard. Buried glacial aquifers are typically “confined” (i.e., the water level in a confined aquifer well rises above the top of the aquifer), and in some cases wells that are installed in buried glacial aquifers flow freely without pumping. Flowing wells are most commonly encountered where a buried glacial aquifer is tapped in a topographic low; the well flows because the static water level is above the ground surface. Buried glacial aquifers are recharged primarily by downward leakage through the aquitard, and discharge from these aquifers takes place by upward leakage in the vicinity of groundwater discharge zones (e.g., rivers).

Cretaceous Aquifers

Fine sandstone and shale of Cretaceous age are present in two areas that are traversed by SPP in Cass and Aitkin counties. These rocks are likely the stratigraphic equivalent of the Dakota Sandstone (present in southwestern Minnesota), and are typically 200 to 350 feet below ground surface and are overlain by glacial deposits. Because they are thin and of relatively low

permeability, the Cretaceous aquifer near SPP yields only domestic quantities of water (i.e., 10 to 25 gallons per minute) and is used only in a few rural locations. The water quality of the Cretaceous aquifer is typically poor compared to glacial aquifers and has naturally elevated levels of arsenic in many parts of Minnesota.

Precambrian Aquifers

SPP is located over Precambrian aquifers comprised of undifferentiated granite, greenstone, and slate from central Minnesota to the northwest and Proterozoic metasediments from central to eastern Minnesota. These aquifers can yield limited supplies of water to rural domestic and livestock wells where fractures, faults, and weatherized zones provide porosity and permeability. Wells in these aquifers are generally completed at depths ranging from 30 to 400 feet and generally yield between 1 and 25 gallons per minute (Adolphson et al. 1981).

Depth to Groundwater

Depth to groundwater was determined by reviewing static depth-to-water measurements available for 1,391 of the 1,564 wells in the Minnesota Well Index ("MWI") database within 1 mile of the SPP centerline. However, not all of these values are water table measurements because many of the wells are not completed in the water-table aquifer. Water levels from wells completed in confined aquifers (e.g., buried sand and gravel aquifers, deep bedrock aquifers) are not indicative of the depth to water that would be encountered by an excavation. Depth-to-water table data were compiled for 278 likely water table wells within 1 mile of the SPP centerline. These wells include Quaternary wells explicitly identified as water table wells in the MWI database and bedrock wells for which the depth to water was greater than the depth to bedrock, indicating an unconfined aquifer. Based on the data available, the depth to the water table for these 278 wells ranges from 0 to 158 feet over the entire corridor. Groundwater commonly occurs within 10 feet of the ground surface in southwestern Hubbard County and central Carlton County. Shallow water tables may also exist across SPP for which data are not available.

Wellhead Protection Area

Public and non-public community water supply source-water protection in Minnesota is administered by MDH through the Wellhead Protection program. Wellhead Protection Areas ("WHPA") for public and community water-supply wells are delineated on the basis of a zone of capture for 10-year groundwater time-of-travel to the well. A Drinking Water Supply Management Area ("DWSMA") is delineated around the WHPAs using geographically definable boundaries, such as roads, section lines, etc. Within the DWSMA, the water-supply provider conducts an inventory of potential contamination sources and develops management practices and monitoring strategies to mitigate well contamination.

Wells

Locations of known wells and associated well construction records are included in the MWI database. A second MWI database exists for "unlocated" wells for which exact coordinates are unknown. The geographic information system ("GIS") layer of the unlocated wells places them at the center of the most accurate Public Land Survey System ("PLSS") reference (e.g., quarter-section). Both databases were queried to find wells that may potentially be impacted by SPP. The location of wells within and adjacent to the pipeline ROW, based on the MWI databases and other identified sources will be provided in the EIS.

b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.

i. Wastewater - For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

2) If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.

3) If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges.

Wastewater

Wastewater is generally defined as any type of water that has been used in a capacity such that it is no longer considered fit for human consumption, such as liquid sewage or chemical toilet waste.

Pipeline, Mainline Valves, Cathodic Protection Areas, and Access Roads

Potential sources of wastewater related to construction and operation of SPP route, mainline valves, cathodic protection areas, and access roads are limited to liquid sewage or chemical toilet waste generated by use of portable toilets. Wastewater generated by use of portable toilets would be transported via truck to a licensed facility for proper disposal. Upon completion of construction, no sanitary and/or municipal/domestic wastewater would be produced or treated. Hydrostatic test discharges are regulated and would be approved through the MPCAs NPDES permitting program, addressed in the following Stormwater Section. Operation of the pipeline would not generate wastewater.

Associated Facilities

Clearbrook West Terminal and Pine River Facility

Wastewater generated by use of portable toilets during construction of the Clearbrook West Terminal and Pine River Facility would be transported via truck to a licensed facility for proper disposal. Upon completion of construction, portable toilet facilities would be removed.

The Clearbrook West Terminal will require the construction and operation of a septic system. The Pine River Facility would not tie into a Publically Owned Treatment Works ("POTW") and wastewater would be hauled off-site, if necessary.

Tanks at the Clearbrook West Terminal would require hydrostatic testing. Hydrostatic test discharges are regulated and would be approved through the MPCAs NPDES permitting program. Details of hydrostatic testing and discharges is provided below and will be further described in the EIS.

Tanks are inspected on a 10-20 year inspection cycle. Prior to cleaning and inspection, product is pumped from the tanks to the pipeline. Liquid and any sludge remaining after normal pump-out are vacuumed out and the tank is degassed by forced ventilation before a final sludge removal and rinse-out. If necessary, diesel fuel is used as a diluent/cutter stock to loosen sludge. Final tank rinse is water and possibly some detergent to remove final residue or staining. Wastewater from the final tank rinse is not discharged; rather, it is hauled offsite to a licensed facility for oil/water separation and oil recycling.

ii. Stormwater - Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential Best Management Practices ("BMP") site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.

A list of receiving waterbodies within one mile of the SPP route that could potentially receive runoff is included in Appendix F.

iii. **Water appropriation - Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.**

Water Appropriation

MDNR regulates water appropriations activities that exceed withdrawal of more than 10,000 gallons of water per day or 1 million gallons per year through the MDNR's General Permit 1997 0005. All appropriation sites would be reviewed by the MDNR prior to issuance of a Water Appropriations Permit.

Pipeline, Mainline Valves, Cathodic Protection, and Access Roads

Hydrostatic Testing and Dust Control

49 Code of Federal Regulations ("CFR") Part 195; Subpart E requires hydrostatic testing of new pipelines and facilities. NDPC would test the strength and structural integrity of the new pipeline prior to placing SPP in operation in accordance with 49 CFR Part 195, Subpart E and NDPC internal standards and specifications. The pipeline testing process would involve filling a segment of the pipeline with water and maintaining a prescribed pressure for a specified amount of time. The length of individual test segments would be determined by topography and water availability. Hydrostatic testing of mainline pipe would be conducted after backfilling. The testing process for tankage involves filling the tank with water and performing a 24-hour hold. The amount of test water used for the hold is generally equivalent to the nominal capacity of the tank.

Trench Dewatering

Trench dewatering is considered an appropriations activity regulated by MDNR if the action would exceed the 10,000 gallons per day threshold.

iv. Surface Waters

(1) Wetlands - Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed, and identify those probable locations.

(2) Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

Wetlands

Construction of the SPP route and associated facilities would impact approximately 959.2 acres of wetlands, of which only 1.0 acres would be permanently filled wetlands. The construction workspace width was reduced to 95 feet (inclusive of the 50 foot permanent ROW width) at wetland crossings to reduce impacts (refer to Figures 6-1 and 6-2). Final acreages would be determined pending completion of wetland field surveys and evaluation of workspace in wetland areas. Relevant wetland management plans and a discussion of potentially affected wetland types will be provided in the EIS. In addition, potential impacts and associated mitigation measures for wetlands will be developed in the EIS. Impacts could be related to pipeline and associated infrastructure construction and operation, as well as potential crude oil releases. Various approaches for evaluating the impacts of crude oil releases to water resources, including wetlands and groundwater are described in the DSDD and will be major technical reports included in the EIS.

Pipeline

A summary of the wetland types crossed and the area affected by the SPP route are presented in Table 11b-1.

Table 11b-1 Wetland Impacts for the Sandpiper Pipeline Project and Line 3 Replacement Project by Watershed – Pipeline										
Watershed Name	Temporary Impacts (acres) [a]					Permanent Conversion (acres) [a, b]				
	PEM	PSS [c]	PFO [d]	PUB	Total	PEM	PSS [c]	PFO [d]	PUB	Total
Sandhill River										
SPP [e]	0.7	-	-	-	**0.7**	-	-	0.2	-	**0.2**
L3R [f]	-	-	-	-	**-**	-	-	-	-	**0.0**
Cumulative [g]	0.7	-	-	-	**0.7**	-	-	0.2	-	**0.2**
Grand Marais Creek										
SPP [e]	0.4		-	0.2	**0.6**	-			-	**0.0**
L3R [f]	2.7		-	-	**2.7**	-			-	**0.0**
Cumulative [g]	3.0		-	0.2	**3.2**	-			-	**0.0**
Red Lake River										
SPP [e]	19.2	2.3	-	0.0	**21.4**	-	2.0	0.3	-	**2.3**
L3R [f]	23.5	0.5	-	0.2	**24.3**	-	0.2	2.0	-	**2.2**
Cumulative [g]	42.7	2.7	-	0.3	**45.7**	-	2.3	2.3	-	**4.5**
Clearwater River										
SPP [e]	95.2	8.9	-	1.5	**105.6**	-	7.3	26.9	-	**34.2**
L3R [f]	104.7	7.6	-	4.0	**116.3**	-	6.5	10.1	-	**16.5**
Cumulative [g]	175.8	10.7	-	4.1	**190.6**	-	12.0	29.6	-	**41.6**
Wild Rice River										
SPP [e]	17.6	3.1	-	0.2	**20.9**	-	1.5	3.2	-	**4.7**
L3R [f]	16.9	2.3	-	0.2	**19.4**	-	2.8	3.1	-	**5.9**
Cumulative [g]	18.8	1.9	-	0.2	**20.9**	-	3.5	3.7	-	**7.2**
Mississippi River – Headwaters										
SPP [e]	19.8	4.3	-	0.2	**24.3**	-	3.0	16.6	-	**19.6**
L3R [f]	23.9	3.8	-	0.2	**27.9**	-	4.2	12.8	-	**17.0**
Cumulative [g]	21.7	2.8	-	0.3	**24.8**	-	5.8	20.3	-	**26.1**
Crow Wing River										
SPP [e]	52.0	11.8	-	0.5	**64.3**	-	13.4	19.5	-	**33.0**
L3R [f]	57.6	11.5	-	0.6	**69.7**	-	14.6	13.7	-	**28.4**
Cumulative [g]	60.3	8.8	-	0.6	**69.8**	-	21.4	24.3	-	**45.6**
Pine River										
SPP [e]	47.0	8.8	-	2.7	**58.5**	-	9.1	25.4	-	**34.5**
L3R [f]	54.3	8.9	-	2.7	**66.0**	-	9.4	17.2	-	**26.6**
Cumulative [g]	52.9	6.1	-	3.1	**62.1**	-	14.3	29.1	-	**43.3**
Leech Lake River										
SPP [e]	-	-	-	-	**-**	-	-	1.4	-	**1.4**
L3R [f]	0.6	-	-	-	**0.6**	-	-	0.7	-	**0.7**
Cumulative [g]	-	-	-	-	**-**	-	-	1.5	-	**1.5**
Mississippi River – Grand Rapids										
SPP [e]	103.5	38.9	-	0.6	**142.9**	-	40.8	101.0	-	**141.9**
L3R [f]	142.4	39.3	-	0.6	**182.3**	-	40.8	62.4	-	**103.2**

Table 11b-1
Wetland Impacts for the Sandpiper Pipeline Project and Line 3 Replacement Project by Watershed – Pipeline

Watershed Name	Temporary Impacts (acres) [a]					Permanent Conversion (acres) [a, b]				
	PEM	PSS [c]	PFO [d]	PUB	Total	PEM	PSS [c]	PFO [d]	PUB	Total
Cumulative [g]	125.6	35.8	-	0.6	**162.0**	-	61.9	125.6	-	**187.5**
Mississippi River – Brainerd										
SPP [e]	21.4	8.9	-	-	**30.3**	-	8.7	18.1	-	**26.7**
L3R [f]	28.5	8.6	-	-	**37.1**	-	9.5	10.3	-	**19.7**
Cumulative [g]	24.8	8.2	-	-	**32.9**	-	13.5	21.8	-	**35.3**
Kettle River										
SPP [e]	19.7	22.1	-	0.1	**41.9**	-	23.7	61.1	-	**84.8**
L3R [f]	43.6	22.2	-	0.1	**65.8**	-	23.4	37.6	-	**61.0**
Cumulative [g]	22.0	14.7	-	0.1	**36.8**	-	37.5	69.5	-	**107.0**
Nemadji River										
SPP [e]	6.1	6.6	-	0.1	**12.8**	-	7.0	18.7	-	**25.7**
L3R [f]	13.0	6.8	-	0.1	**19.8**	-	6.0	12.8	-	**18.8**
Cumulative [g]	6.6	5.4	-	0.1	**12.1**	-	10.1	22.8	-	**33.0**
St. Louis River										
SPP [e]	3.1	1.3	-	0.4	**4.8**	-	0.9	0.5	-	**1.4**
L3R [f]	5.4	1.3	-	0.4	**7.2**	-	0.8	0.6	-	**1.4**
Cumulative [g]	5.7	1.1	-	0.4	**7.2**	-	1.3	0.7	-	**1.9**
TOTAL [h]										
SPP [e]	**405.5**	**117.0**	**-**	**6.5**	**528.9**	**-**	**117.5**	**292.8**	**-**	**410.3**
L3R [f]	**517.1**	**112.8**	**-**	**9.2**	**639.1**	**-**	**118.4**	**183.1**	**-**	**301.5**
Cumulative [g]	**560.6**	**98.2**	**-**	**10.0**	**668.8**	**-**	**183.6**	**351.3**	**-**	**534.9**
GRAND TOTAL [h]										
SPP [i]	**939.2**									
L3R [j]	**940.6**									
Cumulative [k]	**1203.6**									

[a] PEM = Palustrine Emergent; PSS = Palustrine Scrub Shrub; PFO = Palustrine Forested; PUB = Palustrine Unconsolidated Bottom (Cowardin et al. 1979).

[b] Permanent conversion impacts consist of the area within the new permanent ROW where the pipeline corridor would be maintained by periodic clearing activities.

[c] PSS impacts are only for the area within the temporary construction workspace where woody vegetation would be allowed to naturally regenerate.

[d] Assumes the portion of the L3R construction workspace that overlaps with existing NDPC permanent ROW has already been cleared; therefore, forested wetland impacts are presented as PEM.

[e] Calculations based on the SPP 45-foot-wide temporary workspace (wetlands) and ATWS for temporary impacts and SPP 50-foot permanent ROW for permanent conversion.

[f] Where L3R is within the same HUC 8 watershed as SPP, calculations based on the 45-foot-wide temporary workspace (wetlands) and ATWS for temporary impacts and L3R 50-foot-wide permanent ROW for permanent conversion.

[g] Calculations based on a combined SPP and L3R 30-foot-wide temporary workspace (wetlands) and ATWS for temporary impacts and SPP and L3R 75-foot-wide permanent ROW for permanent conversion.

[h] The sum of addends may not total correctly due to rounding.

[i] Calculations based on the SPP 95-foot-wide construction workspace (wetlands) and ATWS inclusive of the SPP 50-foot permanent ROW.

[j] Where L3R is within the same HUC 8 watershed as SPP, calculations based on the 95-foot-wide construction workspace (wetlands) and ATWS inclusive of the L3R 50-foot-wide permanent ROW.

Table 11b-1 Wetland Impacts for the Sandpiper Pipeline Project and Line 3 Replacement Project by Watershed – Pipeline										
Watershed Name	Temporary Impacts (acres) [a]					Permanent Conversion (acres) [a, b]				
	PEM	PSS [c]	PFO [d]	PUB	Total	PEM	PSS [c]	PFO [d]	PUB	Total
[k] Calculations based on a combined SPP and L3R 105-foot-wide construction workspace (wetlands) and ATWS inclusive of the combined SPP and L3R 75-foot-wide permanent ROW.										

Associated Facilities

Clearbrook West Terminal and Pine River Facility

Construction of the Clearbrook West Terminal would result in permanent wetland impacts on less than 0.1 acres of PEM wetland. There would be no wetland impacts at the Pine River Facility. Table 11b-2 summarizes cumulative permanent wetland fill impacts.

Table 11b-2
Permanent Fill for the Sandpiper Pipeline Project and Line 3 Replacement Project – Facilities [a]

County	Facility [b]	SPP MP Location	L3R MP Location	Major Watershed (HUC 8)	Wetland Type [c]	SPP Total Permanent Fill (acres)	L3R Total Permanent Fill (acres)	Cumulative Total Permanent Fill (acres)
Clearwater	Clearbrook West Terminal	374.5	N/A	Clearwater River	PEM	<0.1	N/A	<0.1
	L3R Clearbrook Terminal	N/A	909.4	Clearwater River	PEM	N/A	1.8	1.8
Cass	Pine River Facility [b]	483.0	N/A	Pine River	--	--	--	--
Aitkin	L3R Palisade Pump Station	N/A	1061.7	Mississippi River – Brainerd	PSS PEM PFO	N/A	0.5 4.6 0.6	0.5 4.6 0.6
Carlton	L3R Cromwell Pump Station	N/A	1106.4	Kettle River	PSS PEM	N/A	<0.1 0.2	<0.1 0.2
					TOTAL [d]	<0.1	**7.7**	**7.7**

[a] L3R impacts are provided where L3R is within the same HUC 8 watershed as SPP.

[b] There would be no wetland impacts at the SPP Pine River facility.

[c] PEM = Palustrine Emergent; PSS = Palustrine Scrub Shrub; PFO = Palustrine Forested; PUB = Palustrine Unconsolidated Bottom (Cowardin et al. 1979)

[d] The sum of addends may not total correctly due to rounding.

Mainline Valves

Table 11b-3 summarizes the mainline valves which would require permanent wetland fill impacts. Mainline valves would be located within the construction workspace; therefore, temporary impacts and permanent conversion are accounted for in Table 11b-1 above, while permanent fill impacts are accounted for in Table 11b-3.

Table 11b-3 Permanent Fill for the Sandpiper Pipeline Project and Line 3 Replacement Project – Mainline Valves [a]								
County	Facility [b]	SPP MP Location	L3R MP Location	Major Watershed (HUC 8)	Wetland Type [c]	SPP Total Permanent Fill (acres)	L3R Total Permanent Fill (acres)	Cumulative Total Permanent Fill (acres)
Aitkin	Mainline Valve	528.6	1061.7	Mississippi River – Brainerd	PEM	0.1	<0.1	0.1
	Mainline Valve	536.7	1069.8	Mississippi River – Grand Rapids	PSS	0.1	0.1	0.1
	Mainline Valve	545.6	1078.7	Mississippi River – Grand Rapids	PSS	0.1	0.1	0.1
	Mainline Valve	551.3	1084.4	Mississippi River – Grand Rapids	PEM	0.1	0.1	0.1
					TOTAL [d]	**0.3**	**0.3**	**0.3**

[a] L3R impacts are provided where L3R is within the same HUC 8 watershed as SPP. Mainline valves located east of SPP MP 379.2 (L3R MP 912.3) would be utilized for both SPP and L3R.

[b] There would be no wetland impacts at the SPP Pine River facility.

[c] PEM = Palustrine Emergent; PSS = Palustrine Scrub Shrub; PFO = Palustrine Forested; PUB = Palustrine Unconsolidated Bottom (Cowardin et al. 1979)

[d] The sum of addends may not total correctly due to rounding.

Cathodic Protection

Cathodic protection areas would temporarily impact an additional 1.3 acres of wetlands (refer to Table 11b-4). The same cathodic protection associated with SPP would be used for L3R; therefore, there would be no cumulative wetland impacts.

Table 11b-4 Wetland Impacts for the Sandpiper Pipeline Project and Line 3 Replacement Project – Cathodic Protection [a]				
County	Major Watershed (HUC 8)	Wetland Type [b]	Temporary Wetland Impact (acres) [c]	Permanent Conversion (acres) [d]
Clearwater	Mississippi River – Headwaters	PFO	0.0	0.1
Hubbard	Crow Wing River	PEM	0.1	0.0
Cass	Mississippi River – Grand Rapids	PSS PEM	0.2 0.2	0.0 0.0
Carlton	Kettle River	PSS PEM	<0.1 0.5	0.0 0.0
Carlton	Nemadji River	PEM	<0.1	0.0
Carlton	St. Louis River	PEM	<0.1	0.0
		Total [e]	**1.2**	**0.1**
		Grand Total [e]	**1.3**	

Table 11b-4 Wetland Impacts for the Sandpiper Pipeline Project and Line 3 Replacement Project – Cathodic Protection [a]				
County	Major Watershed (HUC 8)	Wetland Type [b]	Temporary Wetland Impact (acres) [c]	Permanent Conversion (acres) [d]

[a] L3R impacts are provided where L3R is within the same HUC 8 watershed as SPP. Cathodic protection located east of SPP MP 379.2 (L3R MP 912.3) would be utilized for both SPP and L3R.

[b] PEM = Palustrine Emergent; PSS = Palustrine Scrub Shrub; PFO = Palustrine Forested; PUB = Palustrine Unconsolidated Bottom (Cowardin et al. 1979)

[c] Includes the area of wetland impact within the construction workspace for cathodic protection.

[d] Permanent conversion impacts includes forested wetland areas within cathodic protection areas.

[e] The sum of addends may not total correctly due to rounding.

Access Roads

Approximately 17.7 acres of temporary fill would be necessary on access roads (refer to Table 11b-5).

Table 11b-5
Wetland Impacts for the Sandpiper Pipeline Project and Line 3 Replacement Project – Temporary Access Roads

Watershed Name [a]	Temporary Impacts (acres) [b]					Permanent Conversion (acres) [b, f]				
	PEM	PSS	PFO	PUB	**Total**	PEM	PSS	PFO	PUB	**Total**
Red Lake River										
SPP [c]	<0.1	-	-	-	**<0.1**	-	-	-	-	**-**
L3R [d]	-	-	-	-	**-**	-	-	-	-	**-**
Cumulative [e]	<0.1	-	-	-	**<0.1**	-	-	-	-	**-**
Clearwater River										
SPP [c]	0.8	0.2	-	<0.1	**1.0**	-	-	0.1	-	**0.1**
L3R [d]	0.9	0.1	-	<0.1	**1.0**	-	-	<0.1	-	**<0.1**
Cumulative [e]	1.1	0.2	-	<0.1	**1.3**	-	-	0.1	-	**0.1**
Wild Rice River										
SPP [c]	<0.1	<0.1	-	-	**<0.1**	-	-	-	-	**-**
L3R [d]	<0.1	<0.1	-	-	**<0.1**	-	-	-	-	**-**
Cumulative [e]	<0.1	<0.1	-	-	**<0.1**	-	-	-	-	**-**
Mississippi River – Headwaters										
SPP [c]	0.3	0.1	-	-	**0.4**	-	-	<0.1	-	**<0.1**
L3R [d]	0.3	0.1	-	-	**0.4**	-	-	<0.1	-	**<0.1**
Cumulative [e]	0.3	0.1	-	-	**0.4**	-	-	<0.1	-	**<0.1**
Crow Wing River										
SPP [c]	0.8	0.5	-	-	**1.3**	-	-	0.1	-	**0.1**
L3R [d]	0.8	0.5	-	-	**1.3**	-	-	0.1	-	**0.1**
Cumulative [e]	0.8	0.5	-	-	**1.3**	-	-	0.1	-	**0.1**

Table 11b-5 Wetland Impacts for the Sandpiper Pipeline Project and Line 3 Replacement Project – Temporary Access Roads										
Watershed Name [a]	Temporary Impacts (acres) [b]					Permanent Conversion (acres) [b, f]				
	PEM	PSS	PFO	PUB	**Total**	PEM	PSS	PFO	PUB	**Total**
Pine River										
SPP [c]	0.2	0.6	-	<0.1	**0.8**	-	-	0.5	-	**0.5**
L3R [d]	0.2	0.6	-	<0.1	**0.8**	-	-	0.5	-	**0.5**
Cumulative [e]	0.2	0.6	-	<0.1	**0.8**	-	-	0.5	-	**0.5**
Mississippi River – Grand Rapids										
SPP [c]	2.1	1.8	-	-	**3.9**	-	-	5.4	-	**5.4**
L3R [d]	2.1	1.8	-	-	**3.9**	-	-	5.4	-	**5.4**
Cumulative [e]	2.1	1.8	-	-	**3.9**	-	-	5.4	-	**5.4**
Mississippi River – Brainerd										
SPP [c]	0.1	0.2	-	-	**0.3**	-	-	0.4	-	**0.4**
L3R [d]	0.1	0.2	-	-	**0.3**	-	-	0.4	-	**0.4**
Cumulative [e]	0.1	0.2	-	-	**0.3**	-	-	0.4	-	**0.4**
Kettle River										
SPP [c]	1.4	1.3	-	-	**2.7**	-	-	<0.1	-	**<0.1**
L3R [d]	1.4	1.3	-	-	**2.7**	-	-	<0.1	-	**<0.1**
Cumulative [e]	1.4	1.3	-	-	**2.7**	-	-	<0.1	-	**<0.1**
Nemadji River										
SPP [c]	<0.1	0.3	-	-	**0.3**	-	-	0.3	-	**0.3**
L3R [d]	<0.1	0.3	-	-	**0.3**	-	-	0.3	-	**0.3**
Cumulative [e]	<0.1	0.3	-	-	**0.3**	-	-	0.3	-	**0.3**
St. Louis River										
SPP [c]	0.1	<0.1	-	-	**0.1**	-	-	<0.1	-	**<0.1**
L3R [d]	0.1	<0.1	-	-	**0.1**	-	-	<0.1	-	**<0.1**
Cumulative [e]	0.1	<0.1	-	-	**0.1**	-	-	<0.1	-	**<0.1**
TOTAL [g]										
SPP [c]	**5.8**	**5.0**	**-**	**<0.1**	**10.8**	**-**	**-**	**6.9**	**-**	**6.9**
L3R [d]	**5.9**	**4.9**	**-**	**<0.1**	**10.9**	**-**	**-**	**6.7**	**-**	**6.7**
Cumulative [e]	**6.1**	**5.0**	**-**	**<0.1**	**11.1**	**-**	**-**	**6.9**	**-**	**6.9**
GRAND TOTAL [g]										
SPP [c]	**17.7**									
L3R [d]	**17.6**									
Cumulative [e]	**18.0**									

[a] There would be no wetland impacts related to temporary access roads in Sandhill River, Grand Marais Creek, or Leech Lake River watersheds.

[b] PEM = Palustrine Emergent; PSS = Palustrine Scrub Shrub; PFO = Palustrine Forested; PUB = Palustrine Unconsolidated Bottom (Cowardin et al. 1979)

Table 11b-5 Wetland Impacts for the Sandpiper Pipeline Project and Line 3 Replacement Project – Temporary Access Roads										
Watershed Name [a]	Temporary Impacts (acres) [b]					Permanent Conversion (acres) [b, f]				
	PEM	PSS	PFO	PUB	**Total**	PEM	PSS	PFO	PUB	**Total**

[c] Acreage is based on a 30-foot-wide workspace along temporary access roads.

[d] Where L3R is within the same HUC 8 watershed as SPP, acreage is based on a 30-foot-wide workspace along temporary access roads.

[e] Temporary access roads located east of SPP MP 379.2 (L3R MP 912.3) would be utilized for both SPP and L3R. Temporary access roads located in Clearwater County west of these MPs would apply to SPP only.

[f] Permanent conversion impacts includes forested wetland areas along new temporary access roads.

[g] The sum of addends may not total correctly due to rounding.

Approximately 0.7 acres of permanent wetland fill would be required to install permanent access roads. Refer to Table 11b-6 for a summary of wetlands impacted by type.

Table 11b-6
Permanent Wetland Fill for the Sandpiper Pipeline Project and Line 3 Replacement Project – Permanent Access Roads [a]

County	Facility	SPP MP Location	L3R MP Location	Major Watershed (HUC 8)	Wetland Type [b]	SPP Total Permanent Fill (acres)	L3R Total Permanent Fill (acres)	Cumulative Total Permanent Fill (acres)
Clearwater	Mainline Valve Access Road	403.9	937.1	Mississippi River - Headwaters	PFO PEM	<0.1 0.1	<0.1 0.1	<0.1 0.1
Cass	Mainline Valve Access Road	466.7	999.9	Crow Wing River	PSS	<0.1	<0.1	<0.1
Aitkin	Mainline Valve Access Road	528.6	1061.7	Mississippi River - Brainerd	PEM	0.2	0.2	0.2
	Mainline Valve Access Road	536.7	1069.8	Mississippi River – Grand Rapids	PFO PSS	0.1 0.2	0.1 0.2	0.1 0.2
	Mainline Valve Access Road	537.4	1070.5	Mississippi River – Grand Rapids	PEM	<0.1	<0.1	<0.1
	Mainline Valve Access Road	545.6	1078.7	Mississippi River – Grand Rapids	PSS	0.1	0.1	0.1
	Mainline Valve Access Road	551.3	1084.4	Mississippi River – Grand Rapids	PEM	0.1	0.1	0.1
					TOTAL [c]	**0.7**	**0.7**	**0.7**

[a] L3R impacts are provided where L3R is within the same HUC 8 watershed as SPP. Permanent access roads located east of SPP MP 379.2 (L3R MP 912.3) would be utilized for both SPP and L3R.

[c] PEM = Palustrine Emergent; PSS = Palustrine Scrub Shrub; PFO = Palustrine Forested; PUB = Palustrine Unconsolidated Bottom (Cowardin et al. 1979)

[d] The sum of addends may not total correctly due to rounding.

Groundwater

Wells

A search of the MWI database found 19 wells within 200 feet of the pipeline centerline. These wells are listed below in Table 11b-7. Only one of these wells, unique number 653274, was within the construction workspace; however, the MWI database indicates that this well has been abandoned. The log for well 653274 is included in Appendix G.

Table 11b-7
Wells and Boreholes Identified within 200 Feet of the Sandpiper Pipeline Project and Line 3 Replacement Project – Pipeline [a]

Unique Well Number	County	SPP MP	Distance from SPP Centerline (feet)	Direction from Pipeline Centerline	Use
634034	Polk	352.1	182	North	Domestic
803707	Clearwater	405.0	159	West	Abandoned
428418	Hubbard	414.2	80	East	Domestic
764345	Hubbard	424.3	81	East	Domestic
653274	Hubbard	424.3	5	East	Abandoned
742992	Hubbard	433.4	84	East	Domestic
406036	Hubbard	439.7	62	East	Domestic
803710	Hubbard	440.7	35	West	Abandoned
803728	Hubbard	449.1	181	North	Other
803712	Hubbard	449.3	170	North	Abandoned
471978	Hubbard	451.2	160	Northeast	Irrigation
809309	Wadena	461.7	138	North	Unknown
746479	Cass	480.0	190	North	Domestic
605979	Cass	480.0	108	North	Domestic
613232	Cass	505.4	189	North	Domestic
734107	Carlton	567.1	186	South	Domestic
726887	Carlton	588.9	116	Northwest	Domestic
552658	Carlton	595.5	186	North	Domestic
673690	Carlton	599.8	139	North	Domestic

[a] L3R is co-located between 25 to 40 feet from SPP at the locations identified in this table.

12. Contamination/Hazardous Materials/Wastes:

a. Pre-project site conditions - Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

A description of contaminated groundwater resources affected by SPP, is provided in the following sections, and was previously provided in Sections 8.3 and 8.4.2 of NDPC's Supplemental EIR submitted to the MPUC on January 30, 2014.

PRE-PROJECT SITE CONDITIONS

Pipeline

The MPCA's "What's in My Neighborhood" ("WIMN") and the MDA's database were used to identify potential environmental hazards within 0.5 mile of the SPP centerline. The MPCA WIMN database includes federal regulatory listings, such as Comprehensive Environmental Response, Compensation, and Liability Information System ("CERCLIS"), (or potential National Priority List sites); and Resource Conservation and Recovery Act sites. State listings includes the Permitted Solid Waste Facilities; Unpermitted Dumps; Closed Landfill Program; Contaminated Soil Treatment Facility; Leak Sites; and the State Assessment Program. The MDA WIMN database includes old emergencies which were closed prior to March 1, 2004.

The following types of sites/facilities listed in the MPCA WIMN database were eliminated from further consideration as the listings alone are not indicative of a release to the environment: sites permitted for construction or industrial stormwater discharge, feedlots, and waste water dischargers.

Inactive or closed listings were also eliminated from further analysis. Ten closed old emergency listings were identified within the MDA's WIMN database and eliminated from the review. Table 12a-1 includes the MPCA's WIMN sites eliminated from further consideration given their inactive status. MPCA WIMN inactive leak and CERCLIS sites' publically available information was reviewed to confirm the likelihood of encountering existing soil or groundwater contamination that could be impacted by construction or operation of the pipeline.

Table 12a-1
Inactive MPCA WIMN Regulatory Listings within 0.5-Mile of the Sandpiper Pipeline Project and Line 3 Replacement Project Centerlines [a]

County	City	Site/Facility Name	MP		Distance from Centerline (feet)		Listing Type
			SPP	L3R	SPP	L3R	
Carlton	Wrenshall	Former Conoco Lakehead Pipeline Terminal	599.7	1132.8	276	301	Leak Site
Polk	Trail	Sidney Finseth Property	357.6	N/A	466	N/A	Contaminated Soil Treatment Facility

Table 12a-1 Inactive MPCA WIMN Regulatory Listings within 0.5-Mile of the Sandpiper Pipeline Project and Line 3 Replacement Project Centerlines [a]							
County	City	Site/Facility Name	MP		Distance from Centerline (feet)		Listing Type
Carlton	Carlton	Dek Rebuilders	591.3	843.6	1,047	1,056	Hazardous Waste, Small to Minimal QG
Carlton	Wrenshall	P & M Trucking	600	1132.8	1,299	1,274	Hazardous Waste, Small to Minimal QG
Aitkin	Palisade	Robinson Store & Ab Service	531.5	1127.9	1,385	1,360	Leak Site
Carlton	Wrenshall	Wrenshall Public School PBR	600.3	1127.9	1,435	1,410	Landfill, Permitted By Rule
Carlton	Wrenshall	Wrenshall Dump	598	1127.9	1,660	1,703	Leak Site
Carlton	Carlton	Tietz Implement	591.6	1127.9	1,721	1,746	Hazardous Waste, Small to Minimal QG
Clearwater	Clearbrook	Flint Hills Resources Pine Bend Clearbrook Tankage	378.9	N/A	1,727	N/A	Hazardous Waste, Small to Minimal QG
Clearwater	Bagley	Friborg Residence	385.7	963.4	2,169	2,194	Leak Site
Clearwater	Clearbrook	Good Samaritan Center - Clearbrook	377.4	N/A	2,193	N/A	Hazardous Waste, Small to Minimal QG
Carlton	Wrenshall	Conoco Inc Lakehead Tank Farm	599.7	875.9	2,223	2,198	CERCLIS Site
Polk	Fisher	Gordons Repair	308.1	N/A	unknown [b]	N/A	Tank Site
Polk	Fisher	Independent School District 600	308.1	N/A	unknown [b]	N/A	Tank Site
Polk	Fisher	Bygland Lutheran Church	308.1	N/A	unknown [b]	N/A	Tank Site
Carlton	Carlton	Mn/DOT Proj 0910-26 (Th210)	594.8	N/A	unknown [b]	N/A	Tank Site
Carlton	Carlton	Conoco Terminal	594.8	N/A	unknown [b]	N/A	Tank Site
Carlton	Carlton	Bw Smith Property	594.8	N/A	unknown [b]	N/A	Tank Site
Carlton	Carlton	Carlton Co Sheriffs Dept	594.8	N/A	unknown [b]	N/A	Tank Site
Carlton	Carlton	Carlton Feed Mill	594.8	N/A	unknown [b]	N/A	Tank Site
Carlton	Carlton	Dahlen Transport Inc	594.8	N/A	unknown [b]	N/A	Tank Site
Carlton	Carlton	Big T Truck Center	594.8	N/A	unknown [b]	N/A	Hazardous Waste, Small to Minimal QG
Carlton	Carlton	Carlton Section Building	594.8	N/A	unknown [b]	N/A	Tank Site
Carlton	Mahtowa	Mahtowa Gas Co/Como Oil	583.3	N/A	unknown [b]	N/A	Tank Site

[a] Impacts provided for L3R are for the co-located portion only.

[b] Inactive sites are included in MPCA's WIMN database as zip code county centroids; therefore exact location and distance to the centerline are unknown.

Source: MPCA's WIMN Database (https://www.pca.state.mn.us/data/whats-my-neighborhood)

Table 12a-2 summarizes the 26 active sites with potential for environmental impact that were identified within 0.5 mile of the SPP centerline. Of these sites, 17 were determined to be more than 500 feet from the SPP centerline and therefore are not anticipated to impact or be impacted by SPP. The remaining nine sites include three small to minimal hazardous waste generators, five above and below ground tanks, and one permitted by rule landfill.

These nine sites georeferenced within the WIMN database are located as zip code centroids, six of which mapped within the permanent ROW near MP 594. Aerial photographs were reviewed and it was determined these six features are not physically present within the permanent ROW and therefore are not mapped correctly. Additionally, no releases from the hazardous waste generators or storage tanks were reported. Therefore, no WIMN database listings are indicative of a release within the permanent ROW.

The remaining three sites georeferenced within the WIMN database as zip code centroids, which mapped within a 0.5-mile and near MP 594 are not indicative of releases. No releases from the storage tanks and no violations from the permitted by rule landfill were reported.

Table 12a-2
Potentially Contaminated Sites within 0.5-Mile of the Sandpiper Pipeline Project and Line 3 Replacement Project Centerlines [a]

County	City	Site/Facility Name	MP		Distance from Centerline (feet)		Listing Type
			SPP	L3R	SPP	L3R	
Hubbard	Park Rapids	Autocraft	436.4	1086.6	602	627	Hazardous Waste, Small to Minimal QG
Cass	Outing	Crooked Lake Dump	503.8	877.9	972	947	Multiple Activities (State Assessment Site, Unpermitted Dump Site)
Hubbard	Park Rapids	Revammp Engineering	435.6	926.8	985	960	Hazardous Waste, Small to Minimal QG
Carlton	Mahtowa	Doug's Auto Works	586	1013	1,168	1,193	Hazardous Waste, Small to Minimal QG
Clearwater	Clearbrook	Riviana Foods Inc - Clearbrook Facility	377	N/A	1,361	N/A	Tank Site
Carlton	Moose Lake	Minnesota Sex Offender Program Moose Lake	572.8	1073.3	1,458	1,483	Hazardous Waste, Small to Minimal QG
Cass	Backus	Grinning Bear Demolition Landfill	479.8	1133	1,474	1,499	Landfill, Open
Carlton	Wrenshall	Northern Natural Gas Co	599.8	880.3	1,596	1,621	Tank Site
Carlton	Wrenshall	Northern Natural Gas Co - Wrenshall LNG Plant	599.8	967.7	1,604	1,629	Multiple Activities (Hazardous Waste, Small to Minimal QG, Tank Site)
Clearwater	Clearbrook	Koch Pipeline Co LP – Clearbrook	378.9	N/A	1,727	N/A	Multiple Activities (Hazardous Waste, Large QG, Leak Site)

Table 12a-2 Potentially Contaminated Sites within 0.5-Mile of the Sandpiper Pipeline Project and Line 3 Replacement Project Centerlines [a]							
County	City	Site/Facility Name	MP		Distance from Centerline (feet)		Listing Type
			SPP	L3R	SPP	L3R	
Clearwater	Bagley	Clearwater County Demolition Debris Land Disposal	387.9	843.6	1,728	1,705	Multiple Activities (Landfill, Open, Hazardous Waste, Small to Minimal QG)
Polk	Crookston	Crookston Dump	319.4	N/A	1,740	N/A	Multiple Activities (State Assessment Site, Unpermitted Dump Site)
Hubbard	Park Rapids	Headwaters Country Club Dump	432.9	1086	1,760	1,785	Multiple Activities (State Assessment Site, Unpermitted Dump Site)
Carlton	Wrenshall	Wrenshall Fire Dept	597.5	1127.9	1,885	1,910	Hazardous Waste, Small to Minimal QG
Hubbard	Park Rapids	Buck Stop	421.7	876.1	2,157	2,182	Tank Site
Clearwater	Clearbrook	Good Samaritan Society – Clearbrook	377.5	N/A	2,257	N/A	Multiple Activities (Hazardous Waste, Small to Minimal QG, Tank Site)
Hubbard	Lake Alice Township	Lake Alice Township Dump	414.7	897.5	2,351	2,326	Multiple Activities (State Assessment Site, Unpermitted Dump Site)
Polk	Fisher	Mark Egeland Inc	~308.1	N/A	unknown [b]	N/A	Tank Site
Polk	Fisher	Sugro Inc	~308.1	N/A	unknown [b]	N/A	Tank Site
Polk	Fisher	B Wagner Farms	~308.1	N/A	unknown [b]	N/A	Landfill, Permitted By Rule
Carlton	Carlton	Carlton Storage	~594.8	N/A	unknown [b]	N/A	Tank Site
Carlton	Carlton	Murphy Bros Inc	~594.8	N/A	unknown [b]	N/A	Hazardous Waste, Small to Minimal QG
Carlton	Carlton	ISD 93	~594.8	N/A	unknown [b]	N/A	Hazardous Waste, Small to Minimal QG
Carlton	Carlton	Northern Natural Gas Compressor Sta	~594.8	N/A	unknown [b]	N/A	Tank Site
Carlton	Barnum	Carlton County Highway Dept	~594.8	N/A	unknown [b]	N/A	Tank Site
Carlton	Carlton	Carlton city of – garage	~594.8	N/A	unknown [b]	N/A	Hazardous Waste, Small to Minimal QG

Table 12a-2 Potentially Contaminated Sites within 0.5-Mile of the Sandpiper Pipeline Project and Line 3 Replacement Project Centerlines [a]							
County	City	Site/Facility Name	MP		Distance from Centerline (feet)		Listing Type
			SPP	L3R	SPP	L3R	

[a] Impacts provided for L3R are for the co-located portion only.

[b] Inactive sites are included in MPCA's WIMN database as zip code county centroids; therefore exact location and distance to the centerline are unknown.

Source: MPCA's WIMN Database (https://www.pca.state.mn.us/data/whats-my-neighborhood)

SPP is located adjacent to existing oil pipelines such as NDPC's Line 81, existing pipelines within Minnesota Pipe Line Company's ROW, and existing pipelines within Enbridge's Mainline corridor. No pipeline spills or releases have been reported in MPCA's WIMN in the vicinity of these existing co-located pipelines in Minnesota.

Associated Facilities

The MPCA's and MDA's WIMN databases were reviewed to identify potential environmental hazards within the 0.5 mile of the SPP centerline as described above, which would encompass the mainline valves, cathodic protection systems, and access roads associated with SPP. Therefore, the potential environmental hazards described for the SPP route are applicable to these associated facilities.

Clearbrook West Terminal and Pine River Facility

The MPCA's and MDA's WIMN databases were used to identify potential spills or releases of hazardous materials within 0.5 mile of the Clearbrook West Terminal and Pine River Facility fence lines. The review did not identify any additional sites, other than those identified within the search conducted for the SPP pipeline described above.

The EIS will further discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. The EIS will also identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards.

b. Project related generation/storage of solid wastes - Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.

SOLID WASTES

Pipeline

Pipeline construction activities would generate solid waste, including erosion control devices ("ECDs") no longer in use, excess soils and rocks, timber slash, garbage generated by construction crews, timber mat debris, and other construction-related materials.

Associated Facilities

Activities related to the construction of SPP associated facilities would generate solid waste including cardboard, plastic, and other packaging materials used to ship new equipment and supplies.

The EIS will further discuss any potential environmental effects from solid waste handling, storage and disposal, as well as identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste.

c. **Project related use/storage of hazardous materials - Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any above or below ground tanks to store petroleum or other materials. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.**

HAZARDOUS MATERIALS

Pipeline

Hazardous materials required for construction activities include gasoline, hydraulic fluid, pipeline and tank coatings (e.g., epoxy), and welding rods.

The project will transport crude oil during operation which is considered a hazardous material. Various approaches to evaluate the impacts of a crude oil release (large volume and small or pinhole leaks) will be applied to the applicant's preferred alternative and the alternative route alignments. Impact assessments will be based on literature reviews on large and small release volumes, including relevant case studies; a general analysis of impacts from a release to resources along the preferred and alternative routes, including impacts to groundwater, the probability of a release, and site specific modeling of representative sites that can be used to make general comparisons to other locations. Resources to be considered in the analysis include, but are not limited to residential structures, populated areas, water and biological resources, cultural resources, and High Consequence Areas (HCAs).

High consequence areas (HCAs) are areas and features where a release may have the most significant adverse consequences. HCAs for hazardous liquid pipelines include:

- Populated areas – including both high population areas (called "urbanized areas" by the US Census Bureau) and other populated areas (areas referred to by the Census Bureau as a "designated place").
- Drinking water sources – including those supplied by surface water or wells and where a secondary source of water supply is not available. The land area in which spilled hazardous liquid could affect the water supply is also treated as an HCA.
- Unusually sensitive ecological areas – including locations where critically imperiled species can be found, areas where multiple examples federally listed threatened and endangered species are found, and areas where migratory water birds concentrate.

The EIS will further discuss any potential environmental effects from accidental spill or release of hazardous materials, including detailed spill modeling, as well as identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials. The EIS will incorporate the results of the following special studies:

- Evaluation of the Fate and Effects of Pipeline Releases and Ecological and Human Risk Assessment
- Assessment of Potential Pinhole Release on Groundwater
- Emergency Response Plan

Associated Facilities

Additional use or storage of hazardous materials beyond those already discussed within the pipeline section are not anticipated with the exception of the Clearbrook West Terminal. The EIS will further discuss any potential environmental effects from accidental spill or release of hazardous materials at the Clearbrook West Terminal.

d. Project related generation/storage of hazardous wastes - Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.

HAZARDOUS WASTE GENERATION

Pipeline

Minimal hazardous wastes are expected to be generated during construction. Some hazardous wastes that could be generated include contaminated soils, cleaning solvents, cleanup materials from small construction-related leak responses, and abrasive blast debris. Wastes would be classified as hazardous or non-hazardous as defined by applicable state and federal regulations. It is expected that the small amount of waste potentially generated and stored along the SPP route would be within the limits of a conditionally exempt small quantity generator under the provisions of 40 CFR 261.5. Hazardous waste generated during construction would be packaged, marked, labeled, and stored onsite and disposed of in accordance with applicable federal and state regulations.

Associated Facilities

The SPP associated facilities are not anticipated to generate hazardous materials outside of and separate from those already discussed within the SPP pipeline and Clearbrook West Terminal subsection below.

Clearbrook West Terminal

The new Clearbrook West Terminal, once operational, would likely include periodic waste streams such as tank bottoms and shell reconditioning blast media produced during American Petroleum Institute ("API") API-653 tank inspection and maintenance. Hazardous waste generated during construction would be packaged, marked, labeled, and stored onsite and disposed of in accordance with applicable federal and state regulations.

The EIS will not further describe hazardous waste generation due to the minimal amount of hazardous waste anticipated along with the implementation of proper waste packaging, marking, labeling, onsite storage and disposal per applicable federal and state regulations.

CUMULATIVE EFFECTS

As discussed above, there are no known contamination or environmental hazardous effects from pre-project site conditions that would be caused or exacerbated by construction and operation of SPP. The measures that would be implemented by SPP for the generation, storage, and handling of solid and hazardous wastes would also be implemented by L3R.

13. Fish, wildlife, plant communities, and sensitive ecological resources (rare features):

a. Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-____) and/or correspondence number (ERDB _____) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

d. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to fish, wildlife, plant communities, and sensitive ecological resources.

EXISTING FISHERIES RESOURCES

Most of these waterbodies found in the SPP environmental survey area support warm-water fisheries, though some cold-water fisheries are also present. Game fish species found in waterbodies in the vicinity of SPP are listed in Table 13-1 (MDNR 2015).

Table 13-1
Representative Game Fish Species in Waterbodies within the Sandpiper Pipeline Project and Line 3 Replacement Project Environmental Survey Areas

Warm-Water Game Fish	Cold-Water Game Fish
Bass (largemouth, rock, smallmouth)	Brook trout
Bullhead (black, brown, yellow)	Rainbow trout
Catfish (channel)	Brown trout
Crappie (black)	
Muskellunge	
Perch (yellow)	

Table 13-1 Representative Game Fish Species in Waterbodies within the Sandpiper Pipeline Project and Line 3 Replacement Project Environmental Survey Areas	
Warm-Water Game Fish	Cold-Water Game Fish
Pike (northern)	
Sunfish (bluegill, green, hybrid, pumpkinseed)	
Walleye	
Source: MDNR 2015	

Sensitive Fisheries Areas

Designated Trout Streams

Pipeline

The SPP route would cross six MDNR designated trout streams (Table 13-2).

Table 13-2
Trout Streams Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project

County	Waterbody Name	SPP MP	L3R MP [b]
Hubbard	La Salle Creek	410.2	943.4
	Straight River	438.3	971.5
Cass	Spring Brook	505.4	1038.5
Carlton	King Creek	582.3	1115.5
	Blackhoof River	590.2	1123.3
	Tributary of Blackhoof River [a]	590.5	1123.6

[a] This stream is included as a MDNR designated trout stream; however, NDPC did not identify a waterbody at this location during field surveys.

[b] Impacts provided for L3R are for the co-located portion only.

Associated Facilities

No impacts to designated trout streams are anticipated from the construction or operation of SPP associated facilities.

Aquatic Management Areas

Pipeline

The SPP route would cross the La Salle Creek AMA. See Table 9-2 for information on location and crossing length.

Associated Facilities

No associated facilities related to the construction or operation of SPP are sited on or within AMAs.

The EIS will address potential impacts to all state-listed species documented in the Natural Heritage Information System ("NHIS") and in the rare species surveys conducted by NDPC. It will further describe potential impacts and mitigation for the following sensitive fisheries resources:

- Designated Trout Streams
- Aquatic Management Areas
- Riparian Habitats

EXISTING VEGETATION RESOURCES

The following cover types (in decreasing order of prevalence) are found in the SPP environmental survey area: wooded/forest, cropland, wetlands, open space, brush/grassland, deep water/streams, and developed areas. Minnesota GAP data was utilized to quantify these cover types. The vegetation communities crossed by SPP by land cover type are described in Table 13-3.

Table 13-3
GAP Vegetation Communities within the Sandpiper Pipeline Project and Line 3 Replacement Project Environmental Survey Areas

Land Cover Type	GAP Vegetation Community
Wooded/Forest	Boreal Aspen-Birch Forest
	Boreal Jack Pine-Black Spruce Forest
	Boreal White Spruce-Fir-Hardwood Forest
	Eastern Great Plains Tallgrass Aspen Parkland
	Laurentian Pine-Oak Barrens
	Laurentian-Acadian Northern Hardwoods Forest
	Laurentian-Acadian Northern Pine-(Oak) Forest
	North-Central Interior Dry Oak Forest and Woodland
	North-Central Interior Dry-Mesic Oak Forest and Woodland
	North-Central Interior Maple-Basswood Forest
Cropland	Cultivated Cropland
	Managed Tree Plantation
	Pasture/Hay
Wetlands	Boreal Acidic Peatland Systems
	Central Interior and Appalachian Floodplain Systems
	Central Interior and Appalachian Shrub-Herbaceous Wetland Systems
	Central Interior and Appalachian Swamp Systems
	Eastern Boreal Floodplain
	Eastern Great Plains Floodplain Systems
	Eastern Great Plains Wet Meadow, Prairie, and Marsh
	Great Plains Prairie Pothole
	Laurentian-Acadian Floodplain Systems

Table 13-3 GAP Vegetation Communities within the Sandpiper Pipeline Project and Line 3 Replacement Project Environmental Survey Areas	
Land Cover Type	GAP Vegetation Community
	Laurentian-Acadian Swamp Systems
	Western Great Plains Depressional Wetland Systems
Open Space	Developed, Open Space
Brush/Grassland	Harvested Forest - Grass/Forb Regeneration
	Introduced Upland Vegetation - Perennial Grassland and Forbland
	North-Central Interior Sand and Gravel Tallgrass Prairie
	Northern Tallgrass Prairie
	Recently Burned Shrubland
Deep Water/Streams	Open Water (Fresh)
Developed	Developed, High Intensity
	Developed, Low Intensity
	Developed, Medium Intensity
	Disturbed, Non-specific

The wooded/forest areas consist of deciduous, evergreen, and mixed forest types. Construction in nearly 90 percent of forested areas would occur in areas already impacted by existing pipeline or other third-party utility ROWs.

According to the 2012 Census of Agriculture, the top crops in the counties crossed by the SPP route are corn, soybeans, wheat, wild rice, oats, potatoes, vegetables, dry edible beans, and sugar beets. Forage-land is also a top crop item in these counties (USDA 2012).

Wetlands include emergent herbaceous wetlands, forested, and shrub-scrub wetlands. Wetland communities, including deep water and streams, are described in detail in the Surface Waters section (Section 11). Brush/grassland areas consist of herbaceous and shrub-scrub vegetation, including regenerating forested areas and recently burned shrubland.

Open space and developed areas are a mix of lawn/landscaping, impervious surfaces, and other urban, commercial, or industrial landscapes. These areas are not discussed further in this section nor in the Wildlife Section as they provide minimal if any wildlife habitat.

Ecological Classifications

Minnesota's Ecological Classification System (MDNR 1999) provides a framework for understanding the potential for sensitive plant communities and fish and wildlife habitat along the SPP route. The State Wildlife Action Plan (MDNR 2006) uses ecological subsections to identify Key Habitats, as discussed under the Wildlife section for certain species. The ecological classification types crossed by SPP were developed by using the Minnesota Ecological Classification System in the following section, as previously described in Section 7.1.2 of NDPC's January 2014 Supplemental EIR.

Based on Minnesota's Ecological Classification System, the majority of SPP is located in the Laurentian Mixed Forest Province. SPP would also cross small portions of the Prairie Parkland, Tallgrass Aspen Parklands, and Eastern Broadleaf Forest Provinces (MDNR 1999).

Prairie Parkland Province

SPP would cross the Red River Prairie subsection of the Prairie Parkland Province between approximate MPs 301.4 and 324.8. The majority of this subsection is a glacial lake plain originally dominated by tallgrass prairie and wet prairie, mixed with wetlands, meandering waterways, and old beach ridges. Much of this area has been converted to agriculture and is intensively ditched.

Tallgrass Aspen Parklands Province

SPP would cross the Aspen Parklands subsection of the Tallgrass Aspen Parklands Province between approximate MPs 324.8 and 356.5. This subsection is part of a low, level lake plain originally occupied by extensive forested peatlands to the east and tallgrass prairie to the west. Agriculture is the dominant land use in the southern half of the subsection, though more recently extensive areas have also been cleared for farming in the northern half. There are more and larger blocks of pre-settlement vegetation in this subsection than in others where agriculture is widespread.

Eastern Broadleaf Forest Province

SPP would cross the Hardwood Hills subsection within the Eastern Broadleaf Forest Province, between approximate MPs 356.5 and 384.5. The subsection is characterized by steep slopes, high hills, and lakes and wetlands formed in glacial end moraines and outwash plains. Pre-settlement vegetation included prairies, aspen-oak lands, oak savannas, and mixed forests of oaks, sugar maple, basswood, and other hardwoods. Much of this subsection is now farmed.

Laurentian Mixed Forest Province

SPP would cross several sections and subsections within the Laurentian Mixed Forest Province between approximate MPs 384.5 and 604.6, as summarized in Table 13-4. Throughout this province, the most prevalent land uses today are forestry, recreation, tourism, and (in some areas) agriculture.

Table 13-4
Ecological Sections and Subsections within the Sandpiper Pipeline Project and Line 3 Replacement Project Environmental Survey Areas

Province	Section	Subsection	SPP MP Range	L3R MP Range [a]	Description
Prairie Parkland	Red River Valley	Red River Prairie	301.4 - 324.8	N/A	The majority of this subsection is a glacial lake plain originally dominated by tallgrass prairie and wet prairie, mixed with wetlands, meandering waterways, and old beach ridges. Much of this area has been converted to agriculture and is intensively ditched.
Tallgrass Aspen Parklands	Lake Agassiz, Aspen Parklands	Aspen Parklands	324.8 - 356.5	N/A	Part of a low, level lake plain originally occupied by extensive forested peatlands to the east and tallgrass prairie to the west. Agriculture is the dominant land use in the southern half of the subsection, though more recently extensive areas have also been cleared for farming in the northern half. There are more and larger blocks of presettlement vegetation in this subsection than in others where agriculture is widespread

Table 13-4 Ecological Sections and Subsections within the Sandpiper Pipeline Project and Line 3 Replacement Project Environmental Survey Areas					
Eastern Broadleaf Forest	Minnesota and Northeast Iowa Morainal	Hardwood Hills	356.5 - 384.5	912.3 - 917.6	Characterized by steep slopes, high hills, lakes, and wetlands formed in glacial end moraines and outwash plains. Presettlement vegetation included prairies, aspen-oak lands, oak savannas, and mixed forests of oaks, sugar maple, basswood, and other hardwoods. Much of this subsection is now farmed.
Laurentian Mixed Forest	Northern Minnesota Drift & Lake Plains	Chippewa Plains	384.5- 414.9 415.8 - 416.9	917.6 - 948.0 948.9 - 950.0	Characterized by three large, heavily used lakes and level to gently rolling plains. Conifers once dominated the sandier portions of the subsection. Aspen is now the most common tree species, found in pure stands and also mixed with birch, maple, oak, white spruce, jack pine, and red pine.
		Pine Moraines & Outwash Plains	414.9 - 415.8 416.9 - 510.8	948.0 - 948.9 950.0 - 1043.9	Lakes are very common, found on end moraines and outwash plains. Till plains are also present. White and red pine formerly dominated on end moraines and till plains, while jack pine barrens and jack pine woodlands were common on well-drained outwash plains. Black spruce, tamarack, white cedar, and black ash predominated on poorly drained sites.
		St. Louis Moraines	510.8 - 519.1 520.0 - 524.5 555.0 - 576.7	1043.9 - 1052.2 1053.1 - 1057.6 1088.1 - 1109.8	Characterized by rolling to steep slopes, with end moraines the dominant landform. Northern hardwood forests were common in the southern portion, while white pine, sugar maple, basswood, and balsam fir characterized the north. Today, quaking aspen is the primary species harvested.
		Tamarack Lowlands	519.1 - 520.0 524.5 - 555.0	1052.2 - 1053.1 1057.6 - 1088.1	Defined by a glacial lake plain that lacks the well-defined beach ridges of better-known Glacial Lake Agassiz in western Minnesota. Lowland hardwoods (black ash) and lowland conifers (black spruce, tamarack, and white cedar) were originally the most common forest communities. Sedge meadows were extensive, and uplands were largely occupied by aspen-birch forests. Today much of the land is publicly owned.
	Western Superior Uplands	Mille Lacs Uplands	576.7 - 597.5	1109.8 - 1130.6	Characterized by gently rolling till plains and drumlin fields. Dominant feature is Mille Lacs Lake. The original vegetation was a mix of maple-basswood forests in the south; conifer, hardwood, and mixed conifer-hardwood forests elsewhere; and peatland areas inhabited by sedge-fen, black spruce-sphagnum, or white cedar-black ash communities.
	Southern Superior Uplands	Glacial Lake Superior Plain	597.5 - 604.6	1130.6 - 1137.7	A small subsection that extends into Wisconsin, coinciding with the basin of Glacial Lake Superior. Topography is level to gently rolling, except where water has cut deep valleys. Pre-settlement vegetation consisted of forests dominated by white spruce, white pine, and aspen-birch.
[a] MPs provided for L3R are for the co-located portion only.					

NDPC's Environmental Protection Plan (Appendix E of the Route Permit Application) provides additional information regarding vegetation management, including best management practices and methods proposed for post-construction restoration and revegetation, drilling mud releases, and spill prevention. The EIS will further describe potential impacts to and mitigation for the following existing vegetation resources:

- Wetlands and Deep Water/Streams
- Wooded/Forest Land
- Brush/Grassland
- Crop Land
- Sensitive Plant Communities

- Native Plant Communities
- Sites of Biodiversity Significance
- Sensitive Forest Resources
- Noxious and Invasive Species

EXISTING WILDLIFE RESOURCES

The following cover type categories are found in the SPP environmental survey area in decreasing order of prevalence: wooded/forest, cropland, wetlands, brush/grassland, and deep water/streams. Many areas of native vegetation within these cover types have been altered by agriculture, logging, and other activities. Because wildlife habitats depend in part on the degree of impact by past human activities, wildlife resources found in the SPP environmental survey area are described below according to existing cover types. Common wildlife species found in those habitat types are also identified.

Wooded/Forest Cover

Forested areas are found primarily along the eastern portion of the SPP environmental survey area. Mammalian species typical of Minnesota's deciduous forests include eastern chipmunks, black bears, snowshoe hares, gray squirrels, gray fox, porcupines, pine martens, and several species of bats. Some of these species also inhabit northern Minnesota's coniferous forests, while others, such as least chipmunks, snowshoe hares, and red squirrels, are more unique to evergreen forests. The structural diversity of forests provides a variety of habitats that can support a large number of avian species, including songbirds, game birds, and raptors.

Croplands

Lands that have been altered for use as hayfields, pastures, and row crop production are found in the SPP environmental survey area. These agricultural fields provide habitat for common mammalian species, including white-tailed deer, woodchucks, striped skunks, raccoons, weasels, Virginia opossum, and various mice and voles, which use these areas for feeding and cover. Common bird species, such as European starlings, American crows, eastern meadowlarks, and house sparrows, are also typically found in agricultural fields. Common invertebrates that may occupy agricultural areas include bees, grasshoppers, and butterflies.

Wetlands

Wetlands within the SPP environmental survey area consist primarily of emergent herbaceous wetlands, woody wetlands, and open water. Forested and brush habitat also exists along river and creek corridors. Emergent wetlands and open water areas provide habitat for a variety of aquatic wildlife, including muskrats, beavers, mink, river otters, waterfowl, wading birds, and numerous species of reptiles and amphibians. Woody wetlands and riparian areas provide additional habitat for terrestrial wildlife, such as white-tailed deer, moose, gray wolves, black bears, and a variety of small mammals and songbirds.

Brush/Grasslands

Vegetated open lands such as brush and grasslands likely support several species of birds, numerous small rodents, and several species of snakes. Species such as coyote, red fox, and a variety of raptors typically hunt open areas for the varied prey. Other common wildlife species that may use these areas include thirteen-lined ground squirrels, eastern cottontail rabbits, and white-tailed jackrabbits. Common invertebrates that may occupy open areas include bees, grasshoppers, and butterflies.

Deep Water/Streams

Deep water/stream habitats provide foraging and spawning habitat for both warm-water and cold-water fisheries (see above Fisheries section). These aquatic habitats also provide feeding and breeding opportunities for a wide variety of insects, amphibians, and songbirds.

The EIS will further describe potential impacts to and mitigation for the following sensitive wildlife resources:

- Wildlife Management Areas
- Audubon Important Bird Areas
- Key Habitats
- Large Block Habitats

EXISTING SENSITIVE ECOLOGICAL RESOURCES

Federally Protected Species

In May 2013, NDPC initiated consultations with USFWS and MDNR. NDPC will continue to coordinate with these agencies on protected species issues. Through these consultations and through researching USFWS county-specific species lists (USFWS 2015a), NDPC identified federally listed, proposed, and candidate species under the federal Endangered Species Act that may occur within counties impacted by SPP (Table 13-5). One endangered species, five threatened species, and one candidate species have the potential to occur in the vicinity of SPP. Critical habitat for the Poweshiek skipperling (*Oarisma poweshiek*) and the Dakota skipper (*Hesperia dacotae*) also occurs in counties impacted SPP (Table 13-5).

Table 13-5
Federally Listed and Candidate Species and Critical Habitat in Counties Impacted by the Sandpiper Pipeline Project and Line 3 Replacement Project [a,b]

Species Name	Federal Status	State Status	Habitat	Listed Counties
Northern Long-eared Bat ("NLEB") (*Myotis septentrionalis*)	Threatened	Special Concern	Caves and mines during hibernation; forested areas during active season	All
Canada Lynx (*Lynx canadensis*)	Threatened	Special Concern	Northern forest	Clearwater, Cass, Aitkin, Carlton
Gray Wolf (*Canis lupus*) – Western Great Lakes Distinct Population Segment	Threatened	None	Northern forests and areas with a matrix of forest and agriculture	All
Sprague's Pipit (*Anthus spragueii*)	Candidate	Endangered	Large (>69 hectare) native or non-native grassland	Polk
Dakota Skipper (*Hesperia dacotae*)	Threatened	Endangered	Native prairie	Polk
Dakota Skipper	Critical Habitat	N/A	Native prairie	Polk
Poweshiek Skipperling (*Oarisma poweshiek*)	Endangered	Endangered	Native prairie	Red Lake, Polk
Poweshiek Skipperling	Critical Habitat	N/A	Native prairie	Polk
Western Prairie Fringed Orchid ("WPFO") (*Platanthera praeclara*)	Threatened	Endangered	Wet prairies and sedge meadows	Red Lake, Polk

Table 13-5 Federally Listed and Candidate Species and Critical Habitat in Counties Impacted by the Sandpiper Pipeline Project and Line 3 Replacement Project [a,b]				
Species Name	Federal Status	State Status	Habitat	Listed Counties
[a] Impacts provided for L3R are for the co-located portion only. [b] USFWS 2015a				

The EIS will analyze the results of additional surveys NDPC conducted for candidate species and critical habitat along the SPP route.

State-Listed Species

In November 2015, NDPC conducted a review of NHIS data provided by MDNR on July 28, 2015, under license agreement LA750. Table 13-6 presents NHIS Element Occurrence ("EO") polygons that involve threatened or endangered species within 1 mile of the SPP pipeline and associated facilities.

Minnesota's Endangered Species Statute and the associated Rules impose a variety of restrictions, a permit program, and several exemptions pertaining to species designated as endangered or threatened. Species of special concern are not protected by Minnesota's Endangered Species Statute or the associated Rules. Further information on the species in Table 13-6 is provided in the sections below.

Table 13-6 EOs of Threatened and Endangered Species in Minnesota's NHIS within 1 Mile of the Sandpiper Pipeline Project and Line 3 Replacement Project			
Species [a]	State Status	County of Element Occurrence	Last Observed Year
ZOOLOGICAL			
Blanding's Turtle (*Emydoidea blandingii*)	Threatened	Cass Crow Wing	2011 2011
Dakota Skipper (*Hesperia dacotae*)	Endangered	Polk	1936
Four-toed Salamander (*Hemidactylium scutatum*)	Special Concern [c]	Aitkin	2001
Henslow's Sparrow (*Ammodramus henslowii*)	Endangered	Red Lake Hubbard	1988 2003
Pugnose Shiner (*Notropis anogenus*)	Threatened	Wadena [d]	2010
BOTANICAL			
Beaked Spikerush (*Eleocharis rostellata*)	Threatened	Clearwater	2013
Bog Adder's Mouth (*Malaxis paludosa*)	Endangered	Hubbard	1984
Butternut (*Juglans cinerea*)	Endangered	Cass	2013
Clinton's Bulrush (*Trichophorum clintonii*)	Threatened	Clearwater Hubbard	1939 2013

Table 13-6 EOs of Threatened and Endangered Species in Minnesota's NHIS within 1 Mile of the Sandpiper Pipeline Project and Line 3 Replacement Project			
Species [a]	State Status	County of Element Occurrence	Last Observed Year
Down Liverwort (*Trichocolea tomentella*)	Threatened	Carlton	2013
Hair-like Beak Rush (*Rhynchospora capillacea*)	Threatened	Clearwater	2013
Narrow Triangle Moonwort (*Botrychium lanceolatum* ssp. *angustisegmentum*)	Threatened	Cass [d] Carlton	2013 2013
Oakes' Pondweed (*Potamogeton oakesianus*)	Endangered	Cass	2010
Purple-flowered Bladderwort (*Utricularia purpurea*)	Endangered	Cass	2013
Sterile Sedge (*Carex sterilis*)	Threatened	Red Lake [d] Clearwater Polk	2013 2013 2013

[a] Species are included in the table if any portion of the NHIS EO polygon overlaps or is within 1 mile of the SPP or L3R pipeline centerline or associated facilities. Data for L3R is presented only where co-located with SPP.

[b] Botanical records from 2013 originated from SPP/L3R field surveys; these records are now in the NHIS database. Pairs of counties separated by a slash indicate single records for which the EO polygon spans county boundaries.

[c] While species of special concern are not protected by Minnesota's Endangered Species Statute or the associated Rules, MDNR requested that NDPC consult on this species.

[d] EO polygon crossed by SPP or L3R pipeline centerline.

The EIS will further describe potential impacts to and mitigation for the following sensitive ecological resources:

- Federally Protected Species as outlined in Table 13-5
- Bald and Golden Eagles
- Migratory Birds
- State Listed Species documented in the NHIS and in rare species surveys

14. Historic properties:

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

Cultural resources are the material remains of human activity and can include sites, buildings, districts, and landscapes. Cultural resources are finite and non-renewable; once destroyed they and the information they provide are lost. Federal laws and regulations provide the standards for cultural resources identification, evaluation, and mitigation of impacts. If a cultural resource site meets the criteria for listing on the National Register of Historic Places ("NRHP"), it is considered significant and termed a "historic property."

Section 10.0 of the January 2014 EIR summarized NDPC's 2013 cultural resource investigation sponsored by NDPC in 2013. NDPC conducted additional Phase I and Phase II surveys of an environmental survey area in 2014 and 2015 and documented additional archaeological sites and standing historic structures.

The cultural resources environmental survey area consisted of a 250- to 450-foot-wide corridor centered on the SPP centerline and also included the footprints of the Clearbrook West Terminal, Pine River Facility, mainline valve sites, and cathodic protection systems. Cultural resource surveys of proposed access roads consisted of a 60- to 100-foot-wide corridor centered on the proposed road centerline.

NDPC initiated SPP coordination with the Minnesota SHPO on August 5, 2014. Since 2014, NDPC has received technical guidance from the Minnesota SHPO in the form of comments on site significance and management recommendations for the 2013 and 2014 cultural resources surveys. Documentation of NDPC requests for coordination and SHPO technical guidance with respect to these annual surveys was provided to the Department of Commerce.

Since the beginning of coordination with the SHPO, NDPC anticipated that one or more federal permitting agencies, such as the USACE, could consult with the SHPO for compliance with the National Historic Preservation Act (NHPA), specifically under Section 106 of NHPA.

NDPC also engaged the SHPO in order to provide information to DOC for compliance with Minn. Stat. Ch. 138 and Minn. R. 7852.1900 for those areas outside of federal jurisdiction. NDPC coordinated with SHPO to classify all cultural resources identified during the 2013 and 2014 annual surveys using NRHP criteria and developed management measures for sites listed on or eligible for listing on the NRHP. Once SHPO reviews NDPC's 2015 annual survey information, which is pending as noted above, NDPC will approach SHPO with initial management measures for any sites listed on or eligible for listing on the NRHP.

In summary, NDPC identified 64 archaeological sites within the SPP environmental survey area in 2013 through 2015. NDPC will continue to coordinate with SHPO for sites identified in 2015.

Existing Environment

Previously Recorded Cultural Resources

Cultural resource site and survey files maintained by SHPO were examined; as well as searching agency and online databases to confirm there are no National Landmarks, NRHP-listed properties, historic districts, or cultural landscapes within SPP construction workspace. The Minnesota Historical Society maintains a list of more than 30 historic sites around the state. This list was checked as well as the list of threatened historic sites on the Preservation Alliance of Minnesota's website. No historic site listed by either institution is located in SPP construction workspace.

Previous survey reports on file at SHPO were reviewed in order to determine how much of SPP construction workspace was previously surveyed for cultural resources and what type of cultural resources sites were recorded in the vicinity. Numerous reports for cultural resources surveys that cover portions of SPP construction workspace are on file with SHPO. These previous surveys are described in SPP reports completed (Table 14-1).

Table 14-1
Cultural Resources Reports Prepared for the Sandpiper Pipeline Project

Principal Investigator/ Affiliation	Report Title	Date
Robert Watson, Allison Lange Mueller/ Commonwealth Cultural Resource Group ("CCRG")	2013 Minnesota Archaeological Reconnaissance Studies	2014
Robert Watson/CCRG	2014 Minnesota Archaeological Reconnaissance Studies	2015
Michael Kolb/ Strata Morph Geoexploration, Inc. ("Strata Morph")	Minnesota Geomorphological Investigations	2015
Allison Lange Mueller/Merjent, Inc. ("Merjent")	2015 Minnesota Archaeological Reconnaissance Studies	2016 (pending)
Robert Watson/CCRG	2015 Minnesota Archaeological Evaluation Studies	2016

Records on file at SHPO indicate that more than 50 archaeological sites were previously recorded within a 2-mile-wide study area surrounding the SPP route. The known sites in the 2-mile-wide study area include earthworks, burials, and numerous campsites and artifact scatters representing the Pre-contact period, as well as homesteads, logging camps, and a Civilian Conservation Corps camp representing the Post-contact or historic period. The Phase I survey reports prepared for SPP (see Table 14-1) provide additional details about the previously recorded archaeological sites.

Cultural Resources Phase I Reconnaissance Surveys

A Phase I survey program was designed that assured survey coverage for the entire SPP construction workspace as defined above in the introduction to Section 14. Cultural resource surveys were conducted between 2013 and 2015, both west and east of Clearbrook. The reports listed in Table 14-1 provide detailed information about the previous and current Phase I reconnaissance surveys.

Phase I surveys were conducted for all proposed access roads that would be widened, graded, or improved for SPP use. A 30- to 50-foot-wide cultural environmental survey area was used to survey access roads. If a cultural site was recorded on an access road, that access road was removed from the SPP environmental survey area, and an alternative road was selected.

Standard survey methods included pedestrian walkover along the entire cultural environmental survey area and subsurface shovel testing at specific locations determined by ground surface visibility and other factors.

A desktop assessment was conducted to identify locations with possible deeply buried living surfaces that might contain buried archaeological resources. A windshield survey was then conducted and identified nine locations with potential to contain deeply buried surfaces and possibly archaeological material. These nine locations were tested by mechanical augering methods in 2014. No archaeological resources were identified.

To summarize, Phase I reconnaissance inventories of approximately 97 percent of the SPP environmental survey area were completed between 2013 and 2015. Surveyors identified 64 archaeological sites within SPP's environmental survey corridor. Based on field survey data, it is expected that significant archaeological sites would be avoided and engineering controls would minimize impacts.

General Construction and Operation Impacts and Mitigation

The preferred method of mitigating impacts on NRHP-eligible or potentially eligible properties is avoidance, which may include routing SPP around eligible properties, installing the pipeline beneath eligible properties using conventional bore or HDD technology, and/or fencing all or portions of eligible properties to ensure that they are avoided during construction. If avoidance is not possible, mitigation measures, such as data recovery, may be used; however, no data recovery measures are expected at this time. Any cemeteries or burials within or near the construction workspace would be protected from unauthorized disturbance in accordance with Minn. Stat. §307.08.

It is anticipated that procedures will be developed in the unlikely event that a previously unrecorded archaeological site or human remains are discovered during construction activities. Following construction, the pipeline and associated facilities would operate within workspace that has been surveyed for cultural resources.

Cumulative Effects

None of the archaeological sites would be impacted by SPP or L3R; therefore there are no cumulative effects to archaeological resources.

The EIS will summarize and refer to the information on Historic Properties analyzed in this EAW.

15. Visual:

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

NDPC conducted 2013, 2014, and 2015 desktop reviews of archival data on file at the Minnesota SHPO was conducted. These reviews did not identify scenic views or vistas near the SPP environmental survey area. There are no previously identified specific scenic views or vistas near the environmental survey corridor.

SPP is primarily a buried utility, and as such would not represent a visual effect to scenic views or vistas. SPP would include a limited number of aboveground facilities, specifically improvements at the existing Clearbrook West Terminal and mainline valve locations along the SPP route (refer to Section 6). There are no previously identified scenic views or vistas at or near the Clearbrook West Terminal. To analyze potential viewshed impacts, a Line of Sight ("LOS") visibility analysis was prepared using a digital surface model ("DSM"). A DSM represents the Earth's surface and includes objects such as trees, buildings, and roads. Utilizing a DSM allows analysis of real world obstructions and provides a more accurate LOS prediction. The boundary of the Clearbrook West Terminal improvements was given a z-value of 30 feet to simulate the gross visual impact of the overall pump station footprint once constructed. Areas within unobstructed lines of sight for structures over 50 years of age which retained historic character were reviewed; none were identified.

In addition, because no scenic views or vistas have been identified along the SPP route at or near mainline valve locations, there are no visual impacts associated with each valve location. Tree clearing associated with construction and maintenance of the permanent ROW is not expected to introduce any substantial visual impacts since SPP is either co-located with existing NDPC ROWs or with existing cleared and maintained utility ROWs.

Cumulative Effects

Because no visual impacts were identified for SPP, there would be no cumulative effects associated with L3R.

The EIS will summarize and refer to the analysis of Visual Impacts included in this EAW.

16. Air:

a. Stationary source emissions - Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

A description of air quality resources affected by SPP, is provided in the following sections, and was previously provided in Section 12.0 of NDPC's Supplemental EIR submitted to the MPUC on January 30, 2014.

STATIONARY SOURCE EMISSIONS

The counties in which SPP would be constructed and operated are all designated as in attainment or unclassifiable for the National Ambient Air Quality Standards for all criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen oxides (NO_X), ozone (O_3), particulate matter less than 2.5 microns in diameter (PM2.5), particulate matter less than 10 microns in diameter (PM10), and sulfur dioxide (SO_2). Criteria pollutant emissions from pipeline systems are predominantly limited to volatile organic compounds ("VOC") from transferring crude oil to and from storage tanks and fugitive VOC emissions from piping components (such as valves, flanges, and pump seals) and, as such, are limited to aboveground components of the pipeline system.

Associated Facilities

Clearbrook West Terminal and Pine River Facility

New stationary sources of air emissions include the Clearbrook West Terminal and the Pine River Facility. At the Clearbrook West Terminal, emissions would be generated primarily from two new external floating roof tanks ("EFRTs"). In addition, a small amount of emissions would be generated from a natural gas-fired emergency generator, PIG traps, sump tanks, and piping components such as pumps, valves, and flanges. Emissions from the Pine River Facility would be generated from new PIG traps and piping components such as pumps, valves, and flanges.

Air emissions from the operation of the Clearbrook West Terminal and Pine River Facility would be primarily comprised of VOC and hazardous air pollutants ("HAP"). The Clearbrook West Terminal would also generate a nominal amount of greenhouse gas ("GHG") emissions from storage breakout tank operation and combustion byproduct emissions from operation of the natural gas-fired emergency generator. Table 16-1 below summarizes the estimated potential Clearbrook West Terminal storage tank VOC emissions and the control equipment installed on the tanks.

Table 16-1 Proposed Storage Tank Potential VOC Emissions and Control Equipment		
Emission Unit	Potential VOC Emissions (tons per year ["tpy"])	Control Equipment
Storage Tank 9900 (150,000 barrel ["bbl"] capacity)	12.37	External floating roof, with dual rim seals and guide-pole controls
Storage Tank 9901 (150,000 bbl capacity)	12.37	External floating roof, with dual rim seals and guide-pole controls

Mainline Valves, Cathodic Protection, and Access Roads

Operation of mainline valves along the SPP route would generate a very small amount (<100 pounds per year) of VOC emissions from piping components such valves, and flanges. Due to the low emission rates, the mainline valves are not required to obtain an air quality permit. Operation of the cathodic protection systems and access roads would not generate stationary source emissions, and these sites are not subject to air quality permitting requirements.

Air Emission Permitting

Estimated potential VOC emissions from the Clearbrook West Terminal are expected to be approximately 30 tons per year ("tpy"); emissions of VOC and other criteria pollutants would not exceed major source thresholds. NDPC would apply for a minor source Option A Registration Permit for the new Clearbrook West Terminal. VOC emissions at the Pine River Facility are expected to be less than 1.0 tpy and as a result, the facility is not required to obtain an air quality permit. Neither of the new stationary sources are subject to federal Prevention of Significant Deterioration ("PSD") permitting under 40 CFR 52.21 because each facility's potential to emit is less than the PSD applicability thresholds. Neither of the new stationary sources would be required to conduct air dispersion modeling and no significant impacts to ambient air quality are expected. The Clearbrook West Terminal Option A Registration Permit emission limitations are summarized below in Table 16-2.

Table 16-2 Option A Registration Permit Emission Limits	
Pollutant	Option A Registration Permit Limits (tons/year)
Hazardous Air Pollutants – Singe HAPs	10
Hazardous Air Pollutants – Total Combined HAPs	25
PM	100
PM-10	100
VOC	100
SO2	100
NOx	100
CO	100
CO2e	100,000

The EFRTs and emergency generator at the Clearbrook West Terminal are subject to federal new source performance standards ("NSPS") under 40 CFR 60 subparts Kb and JJJJ, respectively. The NSPS rules include requirements that would minimize air emissions from these sources.

The Clearbrook West Terminal is a new facility constructed for the SPP. There are no existing operations at the site and no past actual emissions. Estimated future actual VOC emissions for the terminal are estimated to be approximately 20 tpy.

b. Vehicle emissions - Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

VEHICLE EMISSIONS

Construction activities associated with the construction of the pipeline and associated facilities would result in intermittent combustion emissions from construction equipment. In addition, the hauling of materials and transportation of workers would temporarily increase traffic on paved and unpaved public and private roads during construction. The increase in traffic is not expected to have an effect on peak hour traffic and vehicular emissions are not expected to cause or significantly contribute to a violation of an applicable ambient air quality standard.

Emissions from gasoline and diesel engines would be minimized because the engines must be built to meet the standards for mobile sources established by the Environmental Protection Agency ("EPA") mobile source emission regulations (Title 40 CFR Part 85). In addition, the EPA requires that the maximum sulfur content of diesel fuel for highway vehicles is 15 parts per million.

c. Dust and odors - Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 16a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

DUST AND ODORS

Activities associated with the construction of the pipeline and associated facilities could result in intermittent and short-term fugitive dust emissions from soil disruption. The fugitive dust emissions would depend on the moisture content and texture of the soils that would be disturbed. However, emissions from construction are not expected to cause or significantly contribute to a violation of an applicable ambient air quality standard because the construction equipment would be operated on an as-needed basis, primarily during daylight hours.

To minimize dust generated from construction activities, the contractor would take all reasonable steps to control dust near residential areas and other areas. Control practices may include wetting soils in the construction workspace, limiting working hours in residential areas, reducing vehicle speeds, and/or additional measures as appropriate based on site-specific conditions. The use of dust suppression techniques would minimize fugitive emissions.

Dust related impacts are not expected from future operation of the pipeline or associated facilities. The new emissions units constructed for SPP would not generate dust emissions. Dust emissions from vehicle traffic are expected to be minimal; only a small number of operational staff would access the SPP facilities on a daily basis and vehicle traffic would be primarily limited to parking areas at the facilities.

The VOC and HAP emissions from the mainline valves may be odorous; however, it is not expected that the emissions will cause odor concerns due to the low emission rates from the mainline valves. In addition, the VOC and HAP emissions from equipment may be odorous; however, the emission controls in place on the primary source of emissions (the EFRTs) minimize both emissions and potential for odor.

CUMULATIVE EFFECTS

L3R would include construction of eight pump stations, including the existing Clearbrook Terminal. Pump stations would emit small amounts of air emissions from PIG traps, sump tanks, and piping components such as pumps, valves, and flanges. In addition, the L3R pipeline connection at the Clearbrook Terminal would potentially generate air emissions from pipeline deliveries into existing terminal external floating roof storage breakout tanks.

Air emissions from the operation of the Clearbrook West Terminal and pump station sites would be primarily comprised of VOCs and HAP. The Clearbrook West Terminal would also generate a nominal amount of GHG emissions from storage breakout tank operations.

As previously described, SPP-related increases in VOC and HAP emissions from the Clearbrook West Terminal and Pine River Facility would not result in a significant impact to ambient air quality. With respect to cumulative effects, the emission sources constructed for L3R at the existing Enbridge Clearbrook Terminal would not operate in the same immediate geographic area around the Clearbrook West Terminal or Pine River site. Cumulative air impacts from the air emissions from SPP and L3R are not anticipated.

The EIS will include but expand on the analysis of Air Impacts included in this EAW.

17. Noise

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

NOISE STANDARDS

The Minnesota Noise Standards set forth in Minn. R. 7030.0040 define permissible noise levels based on noise area classifications and the percentage of time a standard is exceeded. The L_{10} standard cannot be exceeded for more than 6 minutes during a 1-hour period (10 percent of the time) and the L_{50} standard cannot be exceeded for more than 30 minutes during a 1-hour period (50 percent of the time). Minnesota state noise standards are summarized in Table 17-1.

Table 17-1
Minnesota State Noise Standards

Noise Area Classification	Daytime		Nighttime	
	L_{50}	L_{10}	L_{50}	L_{10}
1 – Residential	60	65	50	55
2 – Commercial	65	70	65	70
3 – Industrial	75	80	75	80

Nuisance noise ordinances exist in Carlton County and the cities of Thief River Falls, Greenwood, Park Rapids, and Wrenshall. Generally, these local noise ordinances prohibit objectionable noise beyond the property line. No separate quantitative standards exist for these areas; therefore, compliance with these local noise ordinances would be assured through compliance with the state standard.

GENERAL CONSTRUCTION AND OPERATION IMPACTS AND MITIGATION

The heavy equipment needed for construction activities would have a short-term impact on noise levels in the vicinity of each construction workspace. Typical construction equipment (e.g., bulldozers, loaders, backhoes and sideboom tractors) generate between 80 to 90 decibels within 50 feet of the equipment when operating at full load.

Maintenance activities on the permanent ROW, such as excavation or mowing, may generate temporary and intermittent noise emissions.

Pipeline, Mainline Valves, and Cathodic Protection

Based on examination of aerial photographs, there are approximately 180 noise sensitive receptors ("SR")[75] within 500 feet of the construction workspace, of which 25 SRs are within 50 feet of the construction workspace. In addition, 321 SRs are within one-half mile of HDD entry and exit sites and 12 SRs are within one-half mile of blasting sites, as shown in Appendix H. Because the SPP environmental survey area consists of primarily rural and undeveloped areas, the general public should experience limited nuisance noises. Ambient noise levels in such

[75] Noise sensitive receptor categories include Private (e.g., residences, garages, and barns), Public (e.g., schools, churches, cemeteries, and hospitals), Commercial/Industrial (e.g., businesses and factories), and Other (e.g., other and unknown).

areas are expected to range from 30-40 decibels of the A-weighted Scale ("dBA"), with higher baseline levels in more developed sections. Equipment noise would be expected to decrease to levels within state daytime residential standards (<60 dBA) within 500 to 1500 feet depending on initial source level. Construction-related noise impacts would be minimized by limiting pipeline construction activities to daylight hours, maintaining equipment in good working order, and utilizing manufacturer-supplied silencers when available.

Noise would not be generated along SPP route including the pipeline, mainline valves, and cathodic protection systems during normal operation.

Associated Facilities

Clearbrook West Terminal and Pine River Facility

Construction of the Clearbrook West Terminal may occur outside of daylight hours. Construction is proposed to occur round-the-clock for a period of approximately 4 months, with crews working 10-hour shifts with associated downtime and turnover meetings in between. To limit noise levels during terminal construction, NDPC would surround the terminal site with a tent and limit the operation of heavy equipment. Increases in ambient noise levels due to heavy equipment operation would be limited to the period of construction.

Construction-related noise impacts at the Pine River Facility would be minimized by limiting construction activities to daylight hours and maintaining equipment in good working order.

Some operational noise would be generated by the Clearbrook West Terminal. NDPC's standards restrict the noise levels around neighboring dwellings and industrial facilities to 40 decibels, measured at a distance of 50 feet from the affected structure, unless state regulations allow higher noise levels. Noise control is incorporated into the design if these levels are exceeded. To determine the impacts of operational noise increases, aerial imagery was used to identify noise SRs within one-half mile of the Clearbrook West Terminal. Appendix H presents the locations and distances of the SRs from SPP components. NDPC would conduct pre-construction and post-construction noise surveys at the SRs identified near the Clearbrook West Terminal.

Access Roads

As construction occurs at each location, roads used to access workspace would experience an increase in traffic. Noise impacts from this increased traffic would be minimized by limiting construction activities to daylight hours and by limiting transportation to areas of active construction. Noise impacts from construction access roads would be temporary and would not have a significant impact on ambient noise levels.

Permanent access roads would be constructed for each of the 21 mainline valve locations. These roads would only receive occasional utilization only and would not have a significant impact on ambient noise levels.

Cumulative Effects

As previously described, operational noise increases from the Clearbrook West Terminal facility would not result in a significant impact on ambient noise. The facilities constructed for L3R, including pipeline and associated facilities, would not operate in the same geographic area around the Clearbrook West Terminal; and therefore would not impact the same sensitive noise receptors. In addition, noise impacts from construction of both SPP and L3R would be intermittent and temporary. As a result, cumulative noise effects from the construction or operation of SPP and L3R are not anticipated**.**

The EIS will summarize and refer to the analysis of Noise Impacts included in this EAW.

18. Transportation

a. Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

EXISTING AND PROPOSED ADDITIONAL PARKING

Pipeline, Mainline Valves, Cathodic Protection, and Access Roads

Parking spaces do not currently exist near the pipeline, mainline valves, and cathodic protection systems associated with SPP because these facilities do not currently exist. Temporary parking would be established for use by construction workers during construction of these facilities and access roads. Because these facilities and access roads occur within close proximity to one another, and the timeline for their construction is likely to overlap, their related parking needs are discussed together. Future, permanent parking would not be needed during operation of these facilities since they are not staffed with permanent employees. However, in the event that maintenance work is required for the pipeline, mainline valves, or cathodic protection systems, workers may need to temporarily park along the route to access the facility.

Construction workers would drive personal vehicles directly to the construction work area on the ROW and park at nearby temporary work areas or along road shoulders when safety considerations allow. Workers would also drive personal vehicles to the construction yards each day before the start of work for busing or carpooling from the construction yard to the active work area along the ROW. The decision of where workers would park would vary over time depending on the location and accessibility of the work area and the available space on the ROW.

Clearbrook West Terminal and Pine River Facility

Parking considerations for construction of the Clearbrook West Terminal and Pine River Facility are different from parking for construction of the pipeline, mainline valves, cathodic protection systems, and access roads because the work would occur at two stationary locations throughout the duration of construction, unlike construction along the pipeline where the construction work changes location over time. Construction workers would park on-site at the Clearbrook West Terminal location during construction, and likewise workers would park on-site at the proposed Pine River Facility location during construction. During operation of SPP, NDPC

estimates eight parking spaces would be needed at the Clearbrook West Terminal, and two parking spaces would be required for the Pine River Facility.

ESTIMATED TOTAL AVERAGE DAILY TRAFFIC GENERATED, AND ESTIMATED MAXIMUM PEAK HOUR TRAFFIC GENERATED AND TIME OF OCCURRENCE

Pipeline, Mainline Valves, and Cathodic Protection

The daily commute of construction workers and the delivery of equipment and materials to the work area could temporarily congest existing transportation networks at specific locations. Contractor yards and pipeyards would be used to manage pipeline construction and stage construction equipment prior to transportation to the construction workspace. Vehicles may take several trips each day between the construction areas and the yards. Once a vehicle leaves the contractor/pipe yard, its exact route would vary depending on the current location of construction activity in relation to the yard. Contractors would drop off equipment and materials at the desired location and then move to a different location along the construction workspace. As a result, subsequent to initial delivery of materials, transportation equipment would not significantly affect traffic on local roads.

The construction of SPP is proposed to be divided into six spreads in Minnesota, with approximately one field office and contractor yard per spread. Construction activities would occur on all spreads simultaneously. The local road and highway system in the vicinity of the SPP route consists of U.S. highways, state highways, secondary state highways, county roads, and private roads. The principal roadways crossed by the SPP route include:

- Interstate 35;
- U.S. Highways:
    - 2, 59, 71, and 169; and
- State Highways:
    - 6, 23, 32, 34, 65, 73, 75, 84, 92, 210, 223, and 371.

In addition to highway crossings, gravel roads could provide access to the SPP workspace during construction. The SPP route would cross 229 roads and 7 railroads; Appendix I provides a table of these crossings and the proposed crossing methods.

It is anticipated that a maximum of 2,100 total vehicles would be mobilized to support construction. Vehicles would include stringing trucks; welding rigs; water trucks; fuel trucks; mechanic trucks; flatbed and lowboy trailer trucks; motor graders; hydrostatic equipment trucks; contractor buses; and inspector, foreman, contractor, and environmental and cultural monitor vehicles. It is estimated that approximately 3,450 total vehicle trips would occur per day during the peak of construction. Construction activities would be dispersed throughout eight counties in Minnesota and construction crews (personnel, vehicles, etc.) would be spread out into six spreads (see Figure 18-1); therefore, instead of experiencing 2,100 vehicles in one given area, this would equate to approximately 350 vehicles and 575 daily trips per spread.

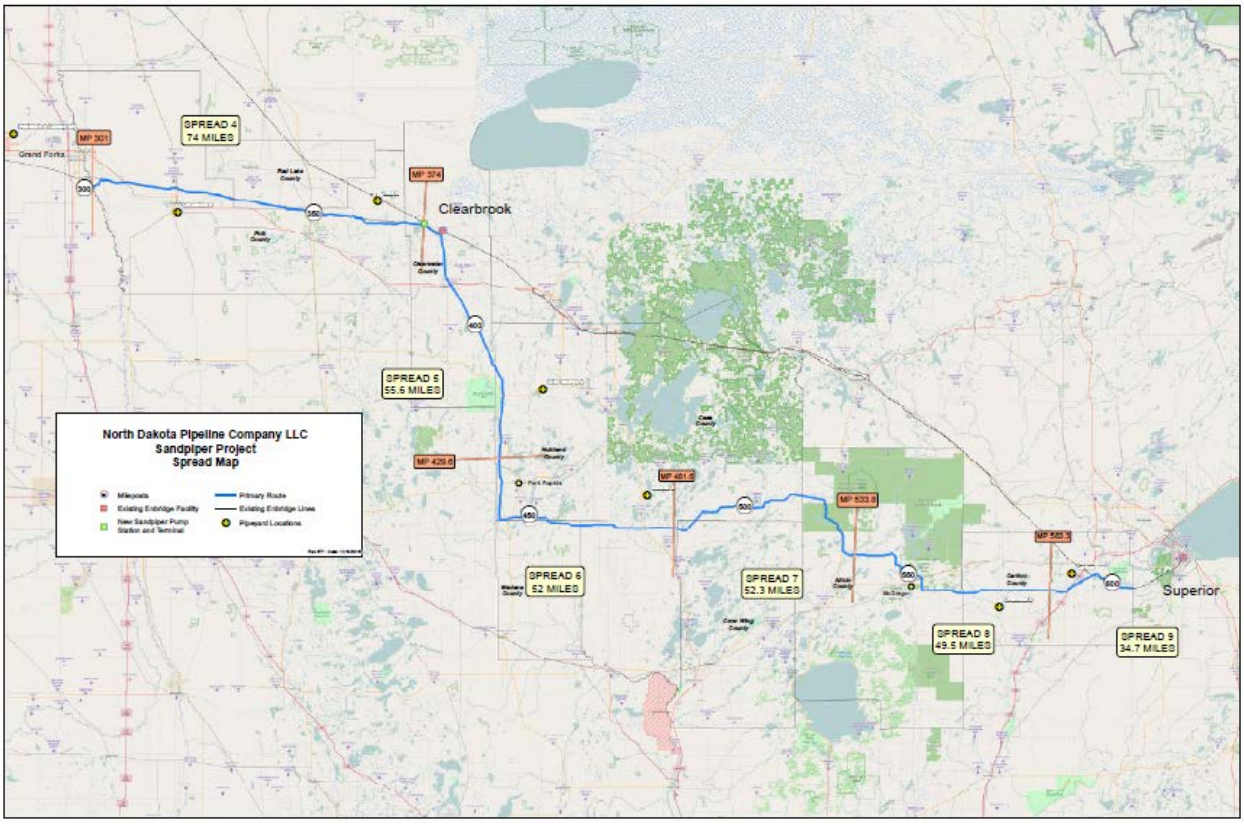

Figure 18-1 Spread Map for the Sandpiper Pipeline Project

Construction is anticipated to take approximately 6 months to 1 year, with a peak construction period of 4 to 6 months and construction crews working 6 days a week. An increased number of vehicles on nearby roadways such as U.S. Highways 2 and 169 would be encountered. In order to maximize daylight working hours and minimize impacts to local commuters, construction workers would commute to contractor yards and work sites prior to the peak morning rush-hour and after the peak afternoon rush-hour; traffic related to delivery of materials and equipment would occur throughout normal working hours.

The effects of construction-related vehicles on existing traffic loads can be generally determined by identifying the Annual Average Daily Traffic ("AADT") on roads. Average daily traffic on a roadway link for all days of the week during a period of one year is expressed in vehicles per day (MNDOT 2015). Table 18-1 lists the annual traffic amounts on roads crossed by the SPP route.

Table 18-1
AADT Associated with Major Roads Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project – Pipeline

Road Name	SPP MP	L3R MP [a]	AADT (vehicles per day)
Interstate 35	588	1122	5,000 to 24,999
U.S. Highways			
2	389	923	1,000 to 4,999
59	349	876	1,000 to 4,999
71	416, 426, 445	950, 960, 979	5,000 to 24,999
169	526	1060	1,000 to 4,999

Table 18-1 AADT Associated with Major Roads Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project – Pipeline			
Road Name	SPP MP	L3R MP [a]	AADT (vehicles per day)
State Highways			
1	N/A	857	1,000 to 4,999
6	504	1038	1,000 to 4,999
23	601	1136	100 to 999
32	336	864	1,000 to 4,999
34	435	969	1,000 to 4,999
65	548	1082	5,000 to 24,999
73	571	1105	1,000 to 4,999
75	319	N/A	1,000 to 4,999
84	481	1015	1,000 to 4,999
92	377	908	1,000 to 4,999
210	552	1086	1,000 to 4,999
223	381	915	100 to 999
371	475	1009	1,000 to 4,999

[a] Impacts provided for L3R are for the co-located portion only.

Source: MNDOT Traffic Forecasting & Analysis, Traffic Mapping Application: http://mndotgis.dot.state.mn.us/tfa/Map

Clearbrook West Terminal and Pine River Facility

The daily commute of construction workers, and the delivery of equipment and materials to the Clearbrook West Terminal and Pine River Facility could temporarily congest existing transportation networks during construction of these two facilities. Both facilities are located close to highway roads and can easily accommodate construction access needs and daily access to the facilities during operation of project. The principal roadways that would be used to access the Clearbrook West Terminal include State Highway 92 and County Road 73, and the principal roadways that would be used to access the Pine River Facility include State Highway 84 and County State Aid Highway 43.

It is anticipated that the number of vehicle trips per day required to support construction of the Clearbrook West Terminal and the Pine River Facility to be 141 and 29, respectively. Construction is anticipated to take approximately one year with construction crews working 6 days a week. An increased number of vehicles on the principal access roadways noted above would be encountered due to worker commuting traffic (generally prior to and after peak morning and afternoon/evening workday rush-hour times); materials and equipment delivery traffic would be dispersed throughout normal workday hours. The average daily construction traffic estimates are based on the following assumptions:

Clearbrook West Terminal:

- Five inspectors (one chief inspector and four discipline inspectors), two trips/day;
- One Environmental/Engineering PM/Safety Inspector, two trips/day;
- Twenty operators for construction equipment, each with vehicle, two trips/day;
- Twenty construction crew workers and supervision, two workers/vehicle, 1 trip/day;
- Two oil storage tank crews, 8 workers each, two trips/day (32 trips/day total);
- Materials delivery trucks, four trips/day;

- Eight contractor support trucks, two trips/day;
- Five 20-cubic-yard end dump trucks for soil handling (top soil removal, subsoil fill), one trip/day; and
- 10-cubic-yard concrete trucks, 12 trips/day.

Pine River Facility

- Three inspectors (one chief inspector and two discipline inspectors), two trips/day;
- One Environmental/Engineering PM/Safety Inspector, one trip/day;
- Four operators for construction equipment, each with vehicle, two trips/day;
- Eight construction crew workers and supervision, two workers/vehicle, 1 trip/day; and
- Materials delivery trucks, and 10-cubic-yard concrete trucks, four trips/day.

Construction traffic volume would follow a bell shaped curve over the one year construction timeframe, with a peak period of 4 to 6 months occurring generally in the middle of the one year construction timeframe. Peak traffic could be double daily estimate, whereas traffic volume during the commissioning phase of the project would be much less. The effects of construction-related vehicles on existing traffic loads can be generally determined by identifying the AADT on roads; Table 18-1 lists the annual traffic amounts on roads crossed by the SPP route.

It is estimated that during operation, 35 vehicle trips per day would be needed at the Clearbrook West Terminal, and one vehicle trip per day would be required at the Pine River Facility, with 95% and 90% of the vehicle traffic in and out of the Clearbrook West Terminal and Pine River Facility, respectively, occurring during regular business hours.

Access Roads

Existing public and private roads would be used to gain access to the construction workspace. If public or privately owned roads are not available, new access roads may need to be constructed for construction of the pipeline, mainline valves, and cathodic protection systems. Many of the existing roads are presently in a condition that can accommodate construction traffic without modification or improvement. Some roads, however, are dirt or gravel roads that are not currently suitable for construction traffic. Unsuitable dirt and gravel roads would be improved through widening and/or grading. The EIS will discuss the need for improvements to existing access roads. Permanent access road would be constructed to each mainline valve site for use during operation of the pipeline. New permanent access roads would not be needed for the Clearbrook West Terminal and the Pine River Facility because they are located adjacent to existing roadways.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system. *If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW*. Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 *(available at: http://www.dot.state.mn.us/accessmanagement/resources.html)* or a similar local guidance.

GENERAL CONSTRUCTION AND OPERATION IMPACTS

Pipeline, Mainline Valves, and Cathodic Protection

Construction activities such as pipeline installation across roads, movement of construction equipment and material to work areas, and daily commuting of the workforce to work sites could result in short-term impacts on transportation infrastructure. These impacts could include disruption to traffic flow due to the movement of construction equipment, materials, and crew members; construction of pipeline facilities across existing roads; and damage to local roads from the movement of heavy construction equipment and materials.

The daily commuting of the construction workforce to the construction workspace could also temporarily affect traffic and create roadside parking hazards. Because pipeline construction work generally occurs during daylight hours, workers would commute to and from the contractor/pipe yards and/or pump station sites during off-peak hours. Additionally, construction would move along the pipeline as progress would allow and therefore, traffic flow impacts would be temporary on any given section of roadway.

Construction across paved roads and unpaved roads where traffic cannot be interrupted would result in short-term impacts on public transportation while construction activities pass through the area. To minimize impacts to traffic, all paved roads and all active railroads are proposed to be crossed by boring underneath the road (see Appendix I). Using this construction technique would prevent the need for road closures and allow traffic to operate normally. Boring techniques would minimize direct impacts to the road; however, construction on the portions of the pipeline that parallel the road could result in increased traffic. Such crossings are typically permitted by federal, state, or local roadway authorities and would generally be completed by boring under the feature. There would be little or no disruption of traffic at road crossings by use of this technique.

Most small, unpaved roads would be crossed using the open-cut method. For public roads, the open-cut method generally requires a temporary road closure and establishment of detours. If no reasonable detour is feasible, at least one lane of the road being crossed would be kept open to traffic except for brief periods when it would be essential to close the road to install the pipeline. It is expected that open-cut road crossings would be completed within 3 days. Normal road function would be restored after the completion of construction including, but not specifically limited to:

- Vehicular traffic that may have been impeded during construction would resume normal flow;
- Damage to the road surface caused by construction would be restored to pre-existing conditions; and
- Access points installed to facilitate ingress/egress to the construction workspace would be removed and the affected area would be restored.

In addition, any temporary impacts resulting from SPP maintenance activities that may require excavation would also be mitigated, and the function would be restored. No long-term effects are expected on roads affected by SPP.

Other Transportation Facilities

According to data from MNDOT, there are three airports located within 1 mile of SPP:

- Crookston Municipal Airport (Kirkwood Field) near MP 319.7;
- Bagley Municipal Airport in Clearwater County near MP 390.2; and
- McGregor – Isedor Iverson Airport in Aitkin County near MP 549.9.

No airports would be affected by SPP. The Federal Aviation Administration ("FAA") requires that the potential to obstruct air traffic be evaluated for projects located near regulated airports. FAA must receive prior notification regarding construction of a structure under 14 CFR Part 77 and requires confirmation of impact avoidance with airport officials. It is anticipated that NDPC would consult with FAA regarding construction techniques and potential construction impacts during the permitting process.

Clearbrook Terminal and Pine River Facility

Construction activities at Clearbrook West Terminal and the Pine River Facility could result in short-term impacts on transportation infrastructure due to movement of construction equipment and material to work areas, and daily commuting of the workforce to the facilities. The impacts could include disruption to traffic flow due to the movement of construction equipment, materials, and crew members; and damage to local roads from the movement of heavy construction equipment and materials.

Access Roads

For the most part, access to the construction workspace would be obtained via use of existing public and private roads (refer to Appendix C). Following construction access road improvements would be removed and roads restored to their pre-construction condition.

CUMULATIVE EFFECTS

Although there would be direct effects on transportation due to the construction of SPP, further clarity in the regulatory process would be required to determine if there is the potential for cumulative effects based on overlapping construction schedules.

c. Identify measures that will be taken to minimize or mitigate project related transportation effects.

MITIGATION MEASURES

To mitigate impacts to short-term congestion and disruption to traffic flow during construction, it is anticipated that NDPC would post signage as needed to identify approaching construction or access points, and would assign traffic control personnel in areas of lane closures or heavy traffic. NDPC would also inspect roads periodically and, if damages occur as a direct result of construction activities, would repair them as appropriate and in accordance with the applicable permit. Depending on the quality of the road surface, impacts could occur to gravel or dirt roads. Following construction, temporary access roads would be restored to pre-construction condition or better unless otherwise requested by the landowner or land-managing agency.

The EIS will summarize and refer to the analysis of Transportation Impacts included in this EAW.

19. Cumulative potential effects: (Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items)

a. **Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.**

b. **Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.**

c. **Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.**

CUMULATIVE EFFECTS METHODOLOGY

Cumulative effects are those that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions and are to be addressed pursuant to M.R. 7852.1900, Subp. 3. for pipeline routing. The purpose of the cumulative effects analysis is to identify any proposed Project effects that, when combined with other effects to resources in the region, may cumulatively become significant through incremental impacts. Adverse impacts that cannot be avoided as well as irreversible and irretrievable commitments of resources also will be presented.

The cumulative effects methodology will:

- Identify other actions affecting the resources, ecosystems (including aquatic ecosystems) and human settlements of concern;
- Characterize impacted resources identified in terms of their response to withstand change and capacity to withstand stress;
- Identify the important cause and effect relationships between human activities and resources; and
- Modify alternatives to mitigate significant cumulative effects.

Permitted or planned projects in the region that could contribute to effects of resource areas will be identified and addressed in the cumulative impacts section of the EIS. Two projects that are known at this time to share cumulative effects with the SPP are described below.

LINE 3 CUMULATIVE EFFECTS

When considering the potential cumulative effects of SPP, the Minnesota portion of L3R was identified as having the potential for cumulative effects on the resources that would be impacted by SPP due to the overlap in both geographic and temporal scales. Where cumulative impacts are referenced in this document, it refers to SPP/L3R and associated facilities only. This EAW assumes that SPP would be constructed before L3R. As presented in Figures 6-2b and 6-2c, L3R would generally be installed next to the SPP pipeline at a standard offset of 25 to 40 feet where co-located with SPP, thus resulting in a cumulative potential effect on the resources

impacted by SPP. In addition, L3R would use the same mainline valves, access roads, and cathodic protection systems east of SPP MP 379.2 (L3R MP 912.3). For the purposes of this EAW, impacts associated with both SPP and L3R are presented as independent pipelines, and impacts associated with the combined construction workspace are presented for the purposes of the cumulative potential effects in each resource section. The incremental impacts associated with L3R as the second pipeline will be presented in the L3R EAW.

In Minnesota, L3R includes the replacement of approximately 282 miles of the existing 34-inch-diameter pipeline with 337 miles of 36-inch-diameter[76] pipeline and associated facilities between the North Dakota/Minnesota border and the Minnesota/Wisconsin border (see Figure 19-1). L3R generally follows the existing Line 3 route and would be generally co-located with the existing Line 67 (Alberta Clipper) pipeline from the North Dakota border in Kittson County to Clearbrook, Minnesota. From Clearbrook, the L3R route would turn south and be generally co-located with SPP to Hubbard County, where both the SPP and L3R routes turn east to the Minnesota/Wisconsin border in Carlton County. In Minnesota, L3R would cross Kittson, Marshall, Pennington, Polk, Red Lake, Clearwater, Hubbard, Wadena, Cass, Crow Wing, Aitkin, and Carlton counties.

Because the indirect impacts associated with the construction of SPP could extend beyond the SPP construction workspace, and potentially beyond the individual resources directly impacted (e.g., sedimentation into adjacent wetlands or waterbodies), natural boundaries of the affected resource, rather than jurisdictional boundaries were used to evaluate cumulative effects (refer to Table 19-1). For example, geology; water resources; and fish, wildlife and plant communities (i.e., vegetation) are evaluated at the watershed level (Hydrologic Unit Code [“HUC”] 8 level), as appropriate (refer to Table 11a-1, also see Figure 19-2). For other resources, such as land use, soils, historic properties, and transportation, the direct and indirect impacts from SPP are not expected to extend beyond the SPP footprint; therefore only the L3R impacts to the resource at the same location were considered in the cumulative effects evaluation (e.g., impacting the same property owner, same recreational trail, same historic site).

Table 19-1 also describes the temporal scope of the evaluation of cumulative effects. In most cases, the impacts to a resource must happen concurrently or immediately following the direct and indirect impacts associated with SPP to have a cumulative effect on the same resource.

HVTL CUMULATIVE EFFECTS

Cumulative impacts of high voltage transmission lines and substations needed to serve proposed SPP pump stations also will be analyzed. Other reasonably foreseeable projects will be identified by searching local land use plans, current permit applications and approved, but not built, projects in the areas of the preferred and alternative routes.

Minnkota Power Cooperative, Inc. is proposing a new transmission line and substation to serve the Clearbrook West Terminal. Cumulative effects of this transmission line and substation are not further discussed in this EAW but will be analyzed in the EIS.

[76] A 36-inch-diameter steel pipeline is a more standard pipeline than 34 inches in the industry and among the Enbridge Mainline System. The decision to replace with 36-inch-diameter pipeline makes pipe, pipefitting, valves, and maintenance equipment more readily available. A 36-inch pipeline is more energy efficient than a 34-inch pipeline.

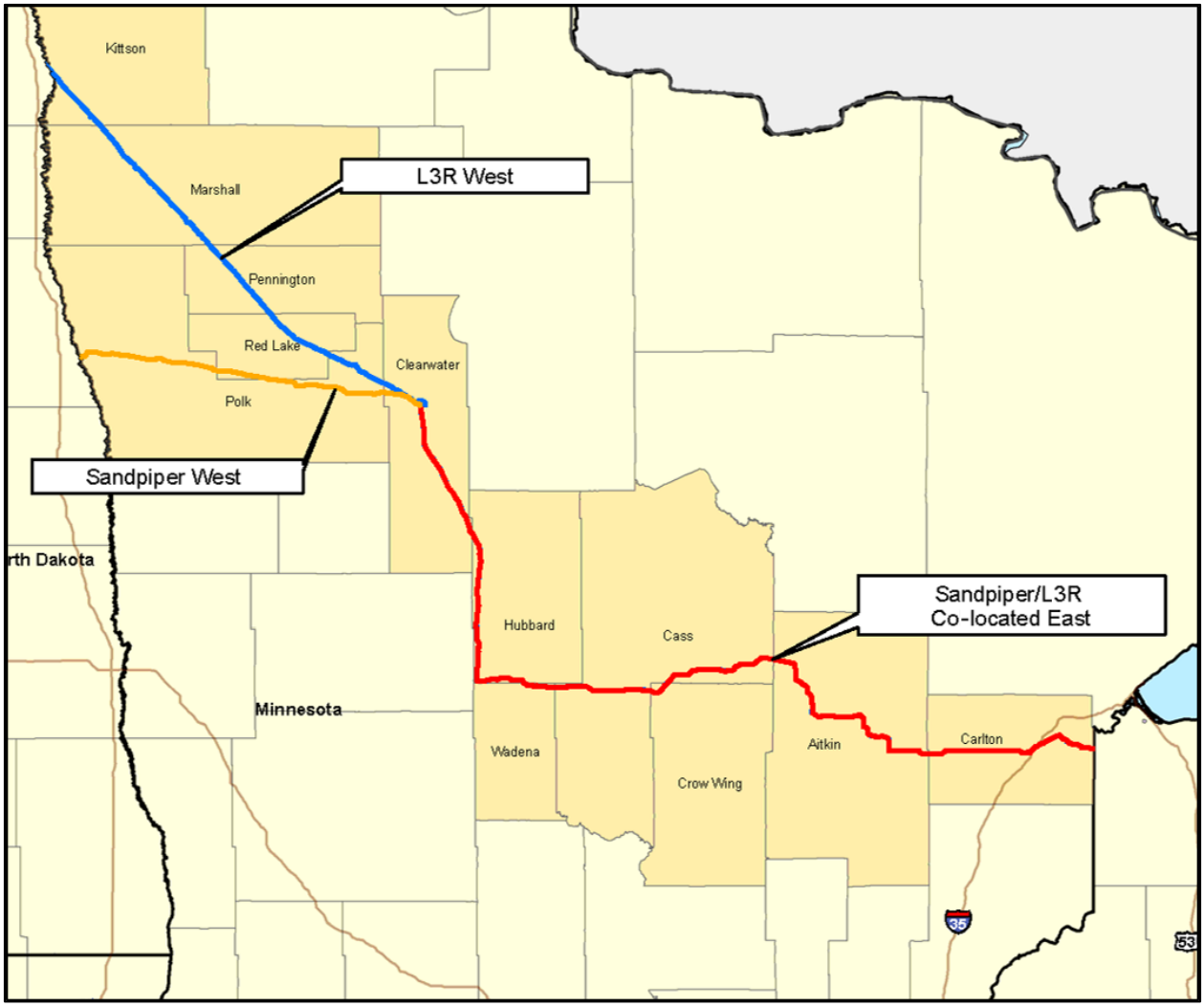

Figure 19-1 Sandpiper Pipeline Project and Line 3 Replacement Project in Minnesota

Table 19-1
Geographic and Temporal Scales used to Evaluate Cumulative Effects of the Sandpiper Pipeline Project

Resource	Environmentally Relevant Geographic Scale	Corresponding SPP MP [a]	Corresponding L3R MP [a]	Temporal Scale
Land Use	Landowner / Land Manager	Varies (depending on location of landowner / land manager; see Section 9)	Varies (depending on location of land owner / land manager; see Section 9)	Overlapping construction timeframe or consecutively constructed projects
Geology and Water Resources	Watersheds (HUC 8 level)	303.9	850.1	Overlapping construction timeframe or consecutively constructed projects
Contamination/Hazardous Materials/Wastes	Overlapping Construction Footprint	379.2	912.3	Overlapping construction timeframe
Fish, wildlife, and plant communities	Watersheds (HUC 8 level)	303.9	850.1	Overlapping construction timeframe or consecutively constructed projects

Table 19-1 Geographic and Temporal Scales used to Evaluate Cumulative Effects of the Sandpiper Pipeline Project				
Resource	Environmentally Relevant Geographic Scale	Corresponding SPP MP [a]	Corresponding L3R MP [a]	Temporal Scale
Soils	Overlapping Construction Footprint	379.2	912.3	Overlapping construction timeframe or consecutively constructed projects
Threatened & Endangered Species	Suitable habitat (varies depending on species; see Section 13)	N/A	N/A	Overlapping construction timeframe or consecutively constructed projects
Historic properties	Site-by-site basis	N/A	N/A	Overlapping construction timeframe or consecutively constructed projects
Visual	Scenic views or vistas (see section 15 for additional details)	N/A	N/A	Overlapping construction timeframe or consecutively constructed projects
Air	Airshed	N/A	N/A	Overlapping construction/operation timeframe
Noise	Sensitive receptors	Varies (depending on location of receptor; see Section 17)	Varies (depending on location of receptor; see Section 17)	Overlapping construction/operation timeframe
Transportation	Location of traffic generation	379.2	912.3	Overlapping construction/operation timeframe

[a] The MP presented represents the location where the potential for cumulative effects between the SPP and L3R routes begin, based on proximity to one another within the state of Minnesota. The potential for cumulative effects in Minnesota would then continue east along the SPP and L3R routes to the Minnesota/Wisconsin border.

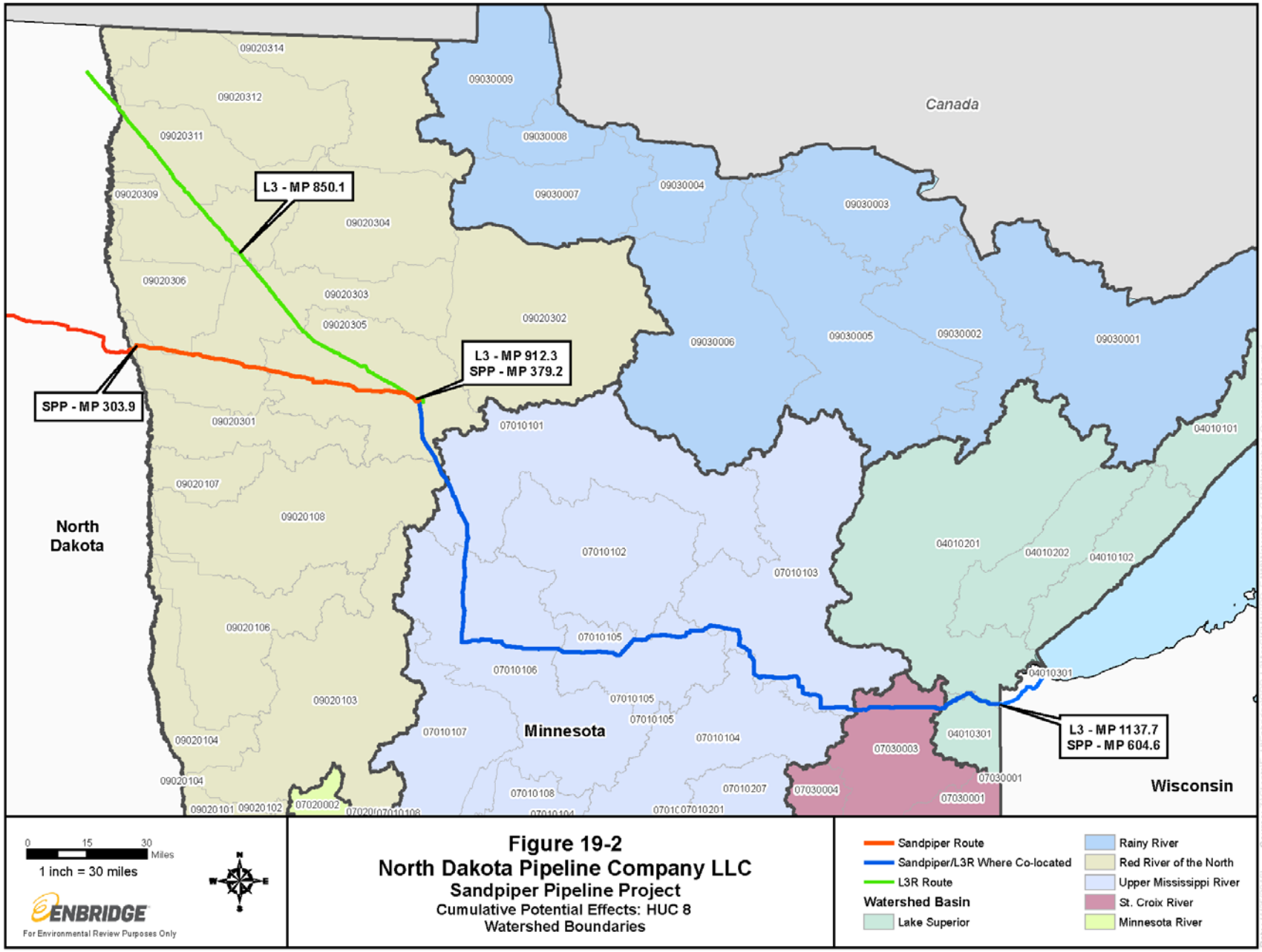

Figure 19-2
North Dakota Pipeline Company LLC
Sandpiper Pipeline Project
Cumulative Potential Effects: HUC 8
Watershed Boundaries

20. RGU CERTIFICATION. ***(The Environmental Quality Board will only accept SIGNED Environmental Assessment Worksheets for public notice in the EQB Monitor.)***

I hereby certify that:

- **The RGU for this project, the Public Utilities Commission, by order dated January 11, 2016, designated that the Department of Commerce should administer the EIS process.**
- **The information contained in this document is accurate and complete to the best of my knowledge.**
- **The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.**
- **Copies of this EAW are being sent to the entire EQB distribution list.**

Signature _____ **Date** 4-8-16

Title Deputy Commissioner

References

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TABLES

Table 6b-1 Location and Length of the Sandpiper Pipeline Project in Minnesota 10
Table 6b-2 Waterbodies Downstream from Mainline Valves on the Sandpiper Pipeline Project in Minnesota 12
Table 6b-3 Pipeyards and Rail Sidings Used for the Sandpiper Pipeline Project 14
Table 6b-4 Typical Construction Workspace and Permanent ROW Dimensions for the Sandpiper Pipeline Project ..... **Error! Bookmark not defined.**
Table 6b-5 Typical Dimensions of ATWS for the Sandpiper Pipeline Project 20
Table 6b-6 Land Requirements for Facilities for the Sandpiper Pipeline Project 21
Table 6b-7 Land Requirements for Mainline Valves for the Sandpiper Pipeline Project 21
Table 6b-8 Land Requirements for Cathodic Protection for the Sandpiper Pipeline Project . 22
Table 6b-9 Land Requirements for Permanent Access Roads for the Sandpiper Pipeline Project 23
Table 6c-1 Sandpiper Pipeline Project Magnitude 28
Table 7-1 Land Cover Types Crossed by the Sandpiper Pipeline Project 31
Table 7-2 GAP Land Cover Types Crossed by the Sandpiper Pipeline Project 32
Table 8-1 Permits and Approvals Required 34
Table 9-1 Ownership of Lands Crossed by the Sandpiper Pipeline Project – Pipeline 47
Table 9-2 Recreational Areas Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project – Pipeline 48
Table 9-3 Ownership of Lands Crossed by the Sandpiper Pipeline Project – Access Roads 51
Table 9-4 Recreational Areas Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project – Access Roads 53
Table 9-5 Conservation Easements within the Sandpiper Pipeline Project Construction Workspace and Requested Route Width 58
Table 9-6 100-Year Floodplains Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project 59
Table 10a-1 Elevation within the Sandpiper Pipeline Project and Line 3 Replacement Project Environmental Survey Areas 63
Table 10a-2 Mineral Resources within 1,500 Feet of the Sandpiper Pipeline Project and Line 3 Replacement Project – Pipeline 65
Table 10a-3 Mineral Resources within 1,500 Feet of the Sandpiper Pipeline Project and Line 3 Replacement Project – Cathodic Protection 67
Table 10b-1 MLRAs Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project 68
Table 10b-2 Soil Characteristics for the Sandpiper Pipeline Project and Line 3 Replacement Project – Pipeline 70
Table 10b-3 Soil Characteristics for the Sandpiper Pipeline Project – Facilities 71
Table 10b-4 Soil Characteristics for the Sandpiper Pipeline Project and Line 3 Replacement Project – Mainline Valves and Cathodic Protection 72
Table 10b-5 Soil Characteristics for the Sandpiper Pipeline Project and Line 3 Replacement Project – Access Roads 73
Table 11a-1 Major Watersheds Impacted by the Sandpiper Pipeline Project and Line 3 Replacement Project 75
Table 11a-2 Summary of Waterbodies Crossed by the Sandpiper Pipeline Project by County – Pipeline 78
Table 11a-3 Summary of Waterbodies Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project by Watershed – Pipeline 78

Table 11a-4 Summary of Waterbodies Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project by County – Access Roads 80
Table 11a-5 Summary of Waterbodies Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project by Watershed – Access Roads 81
Table 11a-6 Summary of Wetland Types Crossed by the Sandpiper Pipeline Project by County – Pipeline 82
Table 11a-7 MDNR Public Water Wetlands and Basins Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project – Pipeline 83
Table 11b-1 Wetland Impacts for the Sandpiper Pipeline Project and Line 3 Replacement Project by Watershed – Pipeline 91
Table 11b-2 Permanent Fill for the Sandpiper Pipeline Project and Line 3 Replacement Project – Facilities 93
Table 11b-3 Permanent Fill for the Sandpiper Pipeline Project and Line 3 Replacement Project – Mainline Valves 94
Table 11b-4 Wetland Impacts for the Sandpiper Pipeline Project and Line 3 Replacement Project – Cathodic Protection 94
Table 11b-5 Wetland Impacts for the Sandpiper Pipeline Project and Line 3 Replacement Project – Temporary Access Roads 95
Table 11b-6 Permanent Wetland Fill for the Sandpiper Pipeline Project and Line 3 Replacement Project – Permanent Access Roads 97
Table 11b-7 Wells and Boreholes Identified within 200 Feet of the Sandpiper Pipeline Project and Line 3 Replacement Project – Pipeline 98
Table 12a-1 Inactive MPCA WIMN Regulatory Listings within 0.5-Mile of the Sandpiper Pipeline Project and Line 3 Replacement Project Centerlines 99
Table 12a-2 Potentially Contaminated Sites within 0.5-Mile of the Sandpiper Pipeline Project and Line 3 Replacement Project Centerlines 101
Table 13-1 Representative Game Fish Species in Waterbodies within the Sandpiper Pipeline Project and Line 3 Replacement Project Environmental Survey Areas 106
Table 13-2 Trout Streams Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project 107
Table 13-3 GAP Vegetation Communities within the Sandpiper Pipeline Project and Line 3 Replacement Project Environmental Survey Areas 108
Table 13-4 Ecological Sections and Subsections within the Sandpiper Pipeline Project and Line 3 Replacement Project Environmental Survey Areas 110
Table 13-5 Federally Listed and Candidate Species and Critical Habitat in Counties Impacted by the Sandpiper Pipeline Project and Line 3 Replacement Project . 113
Table 13-6 EOs of Threatened and Endangered Species in Minnesota's NHIS within 1 Mile of the Sandpiper Pipeline Project and Line 3 Replacement Project 114
Table 14-1 Cultural Resources Reports Prepared for the Sandpiper Pipeline Project 117
Table 16-1 Proposed Storage Tank Potential VOC Emissions and Control Equipment 121
Table 16-2 Option A Registration Permit Emission Limits 121
Table 17-1 Minnesota State Noise Standards 124
Table 18-1 AADT Associated with Major Roads Crossed by the Sandpiper Pipeline Project and Line 3 Replacement Project – Pipeline 128
Table 19-1 Geographic and Temporal Scales used to Evaluate Cumulative Effects of the Sandpiper Pipeline Project 135

FIGURES

Figure 5-1 Minnesota Overview Map 4
Figure 5-2 Pre-Construction Site Plan: Clearbrook West Terminal 5
Figure 5-3 Pre-Construction Site Plan: Pine River Facility 6
Figure 5-4 Post-Construction Site Plan: Clearbrook West Terminal 7
Figure 5-5 Post-Construction Site Plan: Pine River Facility 8
Figure 6-1a SPP West of Clearbrook (Uplands – Co-located with NDPC Line 81 / Existing Third-Party Utility) 19
Figure 6-1b SPP West of Clearbrook (Wetlands – Co-located with NDPC Line 81 / Existing Third-Party Utility) 19
Figure 6-2a SPP East of Clearbrook (Uplands – Greenfield) 20
Figure 6-2b SPP East of Clearbrook (Uplands – Co-located with Existing Third-Party Utility) 20
Figure 6-2c SPP East of Clearbrook (Wetlands – Greenfield) 21
Figure 6-2d SPP East of Clearbrook (Wetlands – Co-located with Existing Third-Party Utility) 21
Figure 6-2e SPP East of Clearbrook (Saturated Wetlands – Greenfield) 22
Figure 6-2f SPP East of Clearbrook (Saturated Wetlands – Co-located with Existing Third-Party Utility) 22
Figure 8-1 January 2014 and January 2016 Route Comparison Map 38
Figure 10a-1 Bedrock Geology 62
Figure 10a-2 Quatenary Geology 64
Figure 10b-1 Major Land Resource Area (MLRA) 69
Figure 11a-1 Watersheds Crossed by the Sandpiper Route 76
Figure 18-1 Spread Map for the Sandpiper Pipeline Project 128
Figure 19-1 Sandpiper Pipeline Project and Line 3 Replacement Project in Minnesota 135
Figure 19-2 Cumulative Effects: HUC 8 Watershed Boundaries 137

APPENDICES

Appendix A Detailed Route Maps
Appendix B Tax Parcel List
Appendix C Access Roads Table
Appendix D Waterbody Crossing Table
Appendix E Wetland Crossing Table
Appendix F Waterbodies in Minnesota within One Mile Downstream of Crossings
Appendix G Log for Well 653274
Appendix H Sensitive Noise Receptors
Appendix I Road and Railroad Crossing Table

ACRONYMS

AADT Annual Average Daily Traffic
AMA Aquatic Management Area
API American Petroleum Institute
Applications Certificate of Need and Routing Permit Applications
ATWS Additional Temporary Workspace

BBL	Barrels
bpd	Barrels Per Day
BMP	Best Management Practices
CAA	Clean Air Act
CCRG	Commonwealth Cultural Resource Group
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
Control Center	NDPC Control Center
dBA	Decibels of the A-weighted Scale
DOC-EERA	Department of Commerce Energy and Environmental Review Analysis
DSM	Digital Surface Model
DWSMA	Drinking Water Supply Management Area
EAW	Environmental Assessment Worksheet
ECDs	Erosion control devices
EFRT	External floating roof tanks
EIR	Environmental Information Report
EIS	Environmental Impact Statement
Enbridge	Enbridge Energy, Limited Partnership
EO	Element Occurrences
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESB	Electrical Service Building
FAA	Federal Aviation Administration
GHG	Greenhouse gas
GIS	Geographic Information System
HAP	Hazardous Air Pollutants
HDD	Horizontal Directional Drill
HP	Horse Power
HUC	Hydrologic Unit Code
HVTL	High Voltage Transmission Line
IVP	Intelligent Valve Placement
kV	Kilovolt
LOS	Line of Sight
L3R	Line 3 Replacement Project
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MLRA	Major Land Resource Area
MDNR	Minnesota Department of Natural Resources
MNDOT	Minnesota Department of Transporation
MP	Milepost
MPCA	Minnesota Pollution Control Agency
MPUC	Minnesota Public Utilities Commission
MWI	Minnesota Well Index
NDPC	North Dakota Pipeline Company LLC
NHIS	Natural Heritage Information System
NHPA	National Historic Preservation Act
NLEB	Northern Long-Eared Bat
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory

NSPS	New Source Performance Standards
NWI	National Wetland Inventory
PEM	Palustrine Emergent Wetland
PFO	Palustrine Forested Wetland
PIG	Pipeline Inspection Gauge
PLSS	Public Land Survey System
POTW	Publically Owned Treatment Works
PSD	Prevention of Significant Deterioration
PSS	Palustrine Shrub-Scrub
PUB	Palustrine Unconsolidated Bottom
PWI	Public Waters Inventory
ROW	Right-of-Way
SHPO	Minnesota State Historic Preservation Office
SNA	Scientific Natural Area
SPP	Sandpiper Pipeline Project
SR	Noise Sensitive Receptors
Strata Morph	Strata Morph Geoexploration, Inc.
TNC	The Nature Conservancy
tpy	Tons Per Year
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish & Wildlife Service
USGS	U.S. Geological Survey
VOC	Volatile Organic Compounds
WCA	Wetland Conservation Act
WHPA	Wellhead Protection Area
WIMN	What’s in My Neighborhood
WMA	Wildlife Management Area
WPFO	Western Prairie Fringed Orchid