Access Roads

Table 10b-5 provides a summary of significant soil characteristics associated with temporary access roads that would be restored to pre-construction conditions after construction is complete and for permanent access roads to mainline valve sites.

Table 10b-5
Soil Characteristics for the Line 3 Replacement Project and Sandpiper Pipeline Project – Access Roads

County	Total Footprint Acreage [a]	Prime Farmland	Hydric Soils	Compact. Prone	Highly Erodible		Reveg. Concerns	Stony/ Rocky	Shallow to Bedrock
					Water	Wind			
		Acres [b]							
Kittson									
Temporary	1.7	1.7	0.5	0.5	0.0	0.0	0.0	0.0	0.0
Permanent	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall									
Temporary	14.4	9.1	3.7	2.8	2.2	10.9	3.8	0.0	0.0
Permanent	0.3	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Pennington									
Temporary	6.3	4.9	2.5	1.3	0.2	3.6	1.3	0.0	0.0
Permanent	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Lake [c]									
Temporary	3.4	2.9	2.4	0.0	0.0	2.0	0.4	0.0	0.0
Permanent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Polk [c]									
Temporary	4.5	0.7	2.0	1.2	2.0	3.8	3.2	0.0	0.0
Permanent	0.5	0.0	0.3	0.0	0.0	0.5	0.0	0.0	0.0
Clearwater									
Temporary	36.4	22.4	1.3	0.7	8.0	17.5	2.7	0.0	0.0
Permanent	0.4	0.2	0.1	0.0	0.0	0.3	0.0	0.0	0.0
Hubbard									
Temporary	37.4	0.3	1.8	1.4	15.0	37.0	19.5	0.0	0.0
Permanent	0.6	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0
Wadena									
Temporary	9.7	0.0	0.4	0.4	0.4	9.7	9.7	0.0	0.0
Permanent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cass									
Temporary	57.5	12.6	12.9	2.7	9.0	48.8	29.0	0.0	0.0
Permanent	0.4	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0
Crow Wing									
Temporary	4.2	0.5	0.0	0.0	2.2	4.2	3.6	0.0	0.0
Permanent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 10b-5 Soil Characteristics for the Line 3 Replacement Project and Sandpiper Pipeline Project – Access Roads									
County	Total Footprint Acreage [a]	Prime Farmland	Hydric Soils	Compact. Prone	Highly Erodible		Reveg. Concerns	Stony/ Rocky	Shallow to Bedrock
					Water	Wind			
		Acres [b]							
Aitkin									
Temporary	47.3	18.9	25.6	16.7	3.4	30.4	20.1	0.0	0.0
Permanent	0.8	0.1	0.7	0.3	0.0	0.6	0.5	0.0	0.0
Carlton									
Temporary	27.2	2.3	3.0	3.0	11.1	13.3	16.6	0.1	0.0
Permanent	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Total									
Temporary	**249.9**	**76.2**	**56.0**	**30.7**	**53.6**	**181.2**	**109.9**	**0.1**	**0.0**
Permanent	**3.4**	**0.8**	**1.1**	**0.3**	**0.1**	**2.9**	**1.1**	**0.0**	**0.0**

[a] Temporary access roads located east of L3R MP 912.3 (SPP MP 379.2) would be utilized for both L3R and SPP.

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

The EIS will further discuss potential impacts from project activities related to soils and topography as noted below.

- Estimated Volume and Acreage of Soil Excavation and/or Grading
- Steep Slopes
- Hydrologic Soils
- Erosion by Wind and Water
- Soils with Revegetation Concerns
- Stony/Rocky Soils and Shallow Bedrock Soils

Measures to be used during and after project construction to address soil limitations, including stabilization, soil corrections, or other measures will also be identified.

11. Water resources:

a. Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.

i. Surface water – lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

A description of surface water (wetlands and waterbodies) and groundwater features impacted by L3R was previously provided in Sections 7.13, 7.14, and 7.15, respectively, of Enbridge's Routing Permit application submitted to the MPUC on April 24, 2015, and is summarized below.

DESCRIPTION OF ENVIRONMENT

Watersheds

Minnesota is divided into 10 major drainage basins that are used by governing agencies to identify and assess water quality issues and develop water quality protection goals. Surface waters impacted by L3R are located within the Red River of the North, Upper Mississippi River, St. Croix River, and Western Lake Superior Basins. Table 11a-1 and Figure 11a-1 present the major watersheds impacted by L3R.

Red River of the North Basin

The Red River of the North Basin encompasses a 39,270-square-mile surface drainage area to the main stem of the Red River of the North within the United States. The basin represents an important hydrologic region where good quality water is a valued resource vital to the region's economy. Additionally, the drainage flows northward into Manitoba, Canada and is of international concern. Annual runoff varies greatly, but most runoff occurs in spring and early summer from rains falling on saturated soils (Red River Basin Commission 2005).

Upper Mississippi River Basin

The Mississippi Headwaters Basin covers 20,162 square miles. The basin is a mixture of forest, prairie, agriculture, and urban land areas. From the headwaters, the Mississippi River flows south 2,340 miles to the Gulf of Mexico (USGS 1990).

St. Croix River Basin

The St. Croix River Basin covers 7,733 square miles in Minnesota and Wisconsin and extends from near Mille Lacs Lake in Minnesota on the west to near Cable, Wisconsin, on the east. Approximately 45 percent of the watershed is located in Minnesota (Niemela et al. 2004).

Table 11a-1 Major Watersheds Impacted by the Line 3 Replacement Project and Sandpiper Pipeline Project			
Basin / Hydrologic Unit Code ("HUC") 8 Watershed	HUC 8 Watershed ID Number	L3R (Y/N)	SPP (Y/N)
RED RIVER OF THE NORTH BASIN			
Tamarac River	69	Y	N
Snake River	68	Y	N
Sandhill River	61	N	Y
Grand Marais Creek	67	Y	Y
Red Lake River	63	Y	Y
Clearwater River	66	Y	Y
Wild Rice River	60	Y	Y
UPPER MISSISSIPPI RIVER BASIN			
Mississippi River – Headwaters	7	Y	Y
Crow Wing River	12	Y	Y
Pine River	11	Y	Y
Leech Lake River	8	Y	Y
Mississippi River – Grand Rapids	9	Y	Y
Mississippi River – Brainerd	10	Y	Y
ST. CROIX RIVER BASIN			
Kettle River	35	Y	Y
WESTERN LAKE SUPERIOR BASIN			
Nemadji River	5	Y	Y
St. Louis River	3	Y	Y

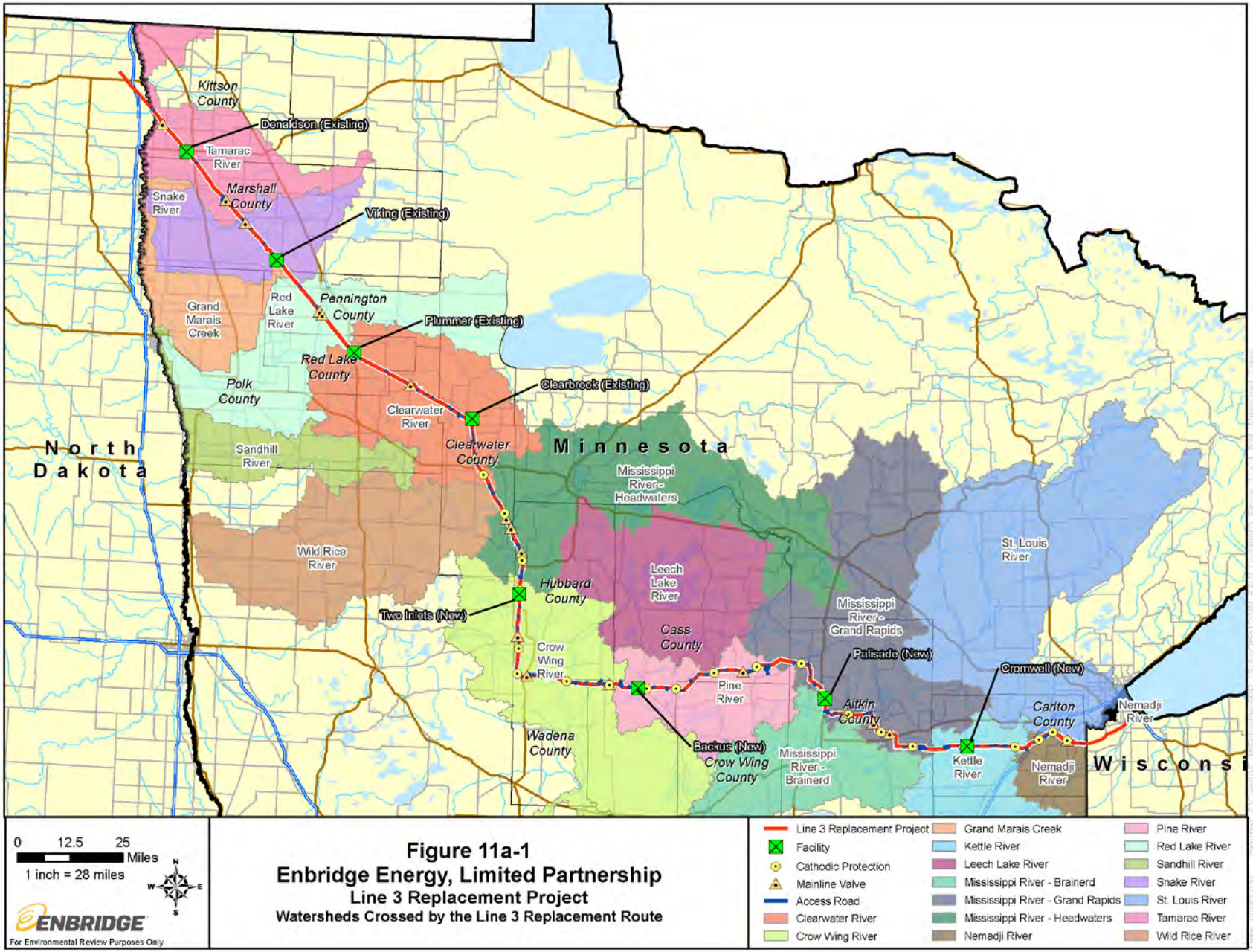

Figure 11a-1
Enbridge Energy, Limited Partnership
Line 3 Replacement Project
Watersheds Crossed by the Line 3 Replacement Route

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

L3R would cross the Two Rivers, Middle Snake-Tamarac, 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. L3R also would cross 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 L3R.

Waterbodies

The following section describes the waterbodies crossed by L3R.

Enbridge conducted waterbody field surveys within the L3R 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 L3R when survey data was not available.

Enbridge identified 248 waterbodies crossed by the L3R route, including 75 perennial streams, 135 intermittent streams, and 38 ephemeral streams. Of these waterbodies, 53 are designated as Public Waters by MDNR, 2 are MDNR-designated wild rice waters (Hay Creek in Hubbard County and Shell River in Wadena County), and 9 are considered Section 10 navigable waters. Waterbodies crossed by the L3R route are summarized in Table 11a-2 by county and in Table 11a-3 by watershed. A list of individual waterbodies crossed by the L3R route is included in Appendix E.

Table 11a-2
Summary of Waterbodies Crossed by the Line 3 Replacement 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]
Kittson	1	16	2	2	--	1	--	1	--
Marshall	2	28	5	4	--	--	--	--	--
Pennington	1	17	2	3	--	1	--	--	--
Red Lake	2	13	--	1	--	--	--	--	--
Polk	--	16	--	--	--	--	--	--	--
Clearwater	11	9	1	11	--	1	--	--	--

Table 11a-2
Summary of Waterbodies Crossed by the Line 3 Replacement 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]
Hubbard	9	--	--	8	--	0	2	--	1
Wadena	3	--	--	2	--	1	--	--	1
Cass	14	6	1	5	--	1	1	--	--
Crow Wing	3	--	--	--	--	--	--	--	--
Aitkin	18	20	14	7	--	1	--	2	--
Carlton	11	8	13	10	--	--	3	3	--
TOTAL	**75**	**135**	**38**	**53**	--	**6**	**6**	**6**	**2**

[a] Enbridge 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 therefore not represented in the list of waterbody crossings in Appendix E. Each crossing is counted as "1" feature; therefore, impacts may be overstated.

[b] The data was generated by Enbridge 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 (Kittson County); Red Lake River (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 Line 3 Replacement Project and Sandpiper Pipeline 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]
Tamarac River	L3R	1	28	3	3	--	1	--	1	--
	SPP [e]	--	--	--	--	--	--	--	--	--
	Cumulative	1	28	3	3	--	1	--	1	--
Snake River	L3R	2	13	4	3	--	--	--	2	--
	SPP [e]	--	--	--	--	--	--	--	--	--
	Cumulative	2	13	4	3	--	--	--	2	--
Grand Marais Creek	L3R	--	3	--	--	--	--	--	--	--
	SPP [e]	--	6	--	1	--	--	--	--	--
	Cumulative	--	9	--	1	--	--	--	--	--
Red Lake River	L3R	1	22	2	3	--	1	--	--	--
	SPP [e]	2	11	1	5	--	1	--	1	
	Cumulative	3	33	3	8	--	2	--	2	

Table 11a-3 Summary of Waterbodies Crossed by the Line 3 Replacement Project and Sandpiper Pipeline 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	L3R	10	31	1	10	--	--	--	--	--
	SPP [e]	14	8	8	11	--	--	--	--	--
	Cumulative	22	39	8	15	--	--	--	--	--
Wild Rice River	L3R	1	--	--	--	--	--	--	--	--
	SPP [e]	1	--	--	--	--	--	--	--	--
	Cumulative	1	--	--	--	--	--	--	--	--
Mississippi River – Headwaters	L3R	3	2	--	3	--	1	1	--	--
	SPP [e]	3	1	--	3	--	1	1	--	--
	Cumulative	3	2	--	3	--	1	1	--	--
Crow Wing River	L3R	13	3	--	10	--	1	1	--	2
	SPP [e]	13	3	--	10	--	1	1	--	2
	Cumulative	13	3	--	10	--	1	1	--	2
Pine River	L3R	10	2	--	4	--	1	1	--	--
	SPP [e]	10	2	--	4	--	1	1	--	--
	Cumulative	10	2	--	4	--	1	1	--	--
Leech Lake River	L3R	1	--	--	--	--	--	--	--	--
	SPP [e]	1	--	--	--	--	--	--	--	--
	Cumulative	1	--	--	--	--	--	--	--	--
Mississippi River – Grand Rapids	L3R	21	23	15	7	--	1	--	2	--
	SPP [e]	21	21	15	7	--	1	--	2	--
	Cumulative	21	23	15	7	--	1	--	2	--
Mississippi River – Brainerd	L3R	1	--	--	1	--	--	--	--	--
	SPP [e]	1	--	--	1	--	--	--	--	--
	Cumulative	1	--	--	1	--	--	--	--	--
Kettle River	L3R	9	7	--	7	--	--	1	3	--
	SPP [e]	9	8	--	7	--	--	1	3	--
	Cumulative	9	8	--	7	--	--	1	3	--
Nemadji River	L3R	2	--	6	3	--	--	1	--	--
	SPP [e]	2	--	2	3	--	--	1	--	--
	Cumulative	2	--	6	3	--	--	1	--	--

Table 11a-3 Summary of Waterbodies Crossed by the Line 3 Replacement Project and Sandpiper Pipeline 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	L3R	--	1	7	--	--	--	--	--	--
	SPP [e]	--	1	8	--	--	--	--	--	--
	Cumulative	--	1	8	--	--	--	--	--	--
	TOTAL									
	L3R	**75**	**135**	**38**	**53**	**--**	**6**	**5**	**9**	**2**
	SPP [e]	**77**	**61**	**34**	**51**	**--**	**5**	**5**	**6**	**2**
	Cumulative	**89**	**161**	**47**	**64**	**--**	**7**	**5**	**10**	**2**

[a] Enbridge 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 therefore not represented in the list of waterbody crossings in Appendix E. Each crossing is counted as "1" feature; therefore, impacts may be overstated.

[b] The data was generated by Enbridge 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 (Kittson County); Red Lake River (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] SPP impacts are provided where SPP is within the same HUC 8 watershed as L3R.

In addition, temporary access roads would cross 14 waterbodies including one perennial, 11 intermittent, and two ephemeral waterbodies (Tables 11a-4 and 11a-5). None of these waterbodies are specially designated.

The Clearbrook Terminal expansion, pump stations, mainline valves, cathodic protection, and permanent access roads would not cross any waterbodies.

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

Table 11a-4 Summary of Waterbodies Crossed by the Line 3 Replacement Project and Sandpiper Pipeline Project by County – Access Roads [a]			
County	Perennial	Intermittent	Ephemeral
TOTAL	**1**	**14**	**3**

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

Table 11a-5 Summary of Waterbodies Crossed by the Line 3 Replacement Project and Sandpiper Pipeline Project by Watershed – Access Roads				
Watershed Name [a]		Perennial	Intermittent	Ephemeral
Tamarac River	L3R	--	1	--
	SPP [b]	--	--	--
	Cumulative	--	1	--
Snake River	L3R	--	2	--
	SPP [b]	--	--	--
	Cumulative	--	2	--
Red Lake River	L3R	--	1	--
	SPP [b]	--	1 [c]	--
	Cumulative	--	2	--
Clearwater River	L3R	--	1	2
	SPP [b]	--	2	3
	Cumulative	--	3	3
Crow Wing River	L3R	1	--	--
	SPP [b]	1	--	--
	Cumulative	1	--	--
Mississippi River – Brainerd	L3R	--	4	--
	SPP [b]	--	4	--
	Cumulative	--	4	--
Kettle River	L3R	--	2	--
	SPP [b]	--	2	--
	Cumulative	--	2	--
TOTAL	**L3R**	**1**	**11**	**2**
	SPP [b]	**1**	**9**	**3**
	Cumulative	**1**	**14**	**3**

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

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

[c] Includes a waterbody crossed by SPP permanent access road to mainline valve near SPP 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 L3R.

Wetland delineation surveys were conducted within approximately 95 percent of the L3R environmental survey area between 2013 and 2015 to identify the wetlands that would be impacted by L3R. 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). Enbridge would conduct the remaining wetland delineations within the L3R 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 L3R route.

Based on a combination of NWI and field data, the L3R route would cross approximately 81.7 miles of wetlands (see Table 11a-6 and Appendix F).

Table 11a-6
Summary of Wetland Types Crossed by the Line 3 Replacement Project by County – Pipeline

County	Wetland Type [a]	Distance (miles)
Kittson	PEM	0.5
	PFO	<0.1
	PSS	--
	PUB	--
Kittson Total [b]		0.6
Marshall	PEM	1.8
	PFO	<0.1
	PSS	<0.1
	PUB	<0.1
Marshall Total [b]		1.9
Pennington	PEM	1.8
	PFO	0.1
	PSS	<0.1
	PUB	<0.1

Table 11a-6 Summary of Wetland Types Crossed by the Line 3 Replacement Project by County – Pipeline		
County	Wetland Type [a]	Distance (miles)
Pennington Total [b]		2.0
Red Lake	PEM	1.7
	PFO	<0.1
	PSS	0.2
	PUB	--
Red Lake Total [b]		**1.9**
Polk	PEM	2.7
	PFO	--
	PSS	<0.1
	PUB	--
Polk Total [b]		**2.7**
Clearwater	PEM	5.7
	PFO	3.2
	PSS	1.8
	PUB	0.3
Clearwater Total [b]		**11.0**
Hubbard	PEM	3.0
	PFO	1.5
	PSS	1.9
	PUB	0.1
Hubbard Total [b]		**6.4**
Wadena	PEM	0.7
	PFO	<0.1
	PSS	0.2
	PUB	--
Wadena Total [b]		**1.0**
Cass	PEM	4.7
	PFO	3.6
	PSS	1.9
	PUB	0.1
Cass Total [b]		**10.2**
Crow Wing	PEM	0.8
	PFO	0.2

Table 11a-6 Summary of Wetland Types Crossed by the Line 3 Replacement Project by County – Pipeline		
County	Wetland Type [a]	Distance (miles)
	PSS	0.3
	PUB	0.1
Crow Wing Total [b]		**1.3**
Aitkin	PEM	9.9
	PFO	9.8
	PSS	8.3
	PUB	0.1
Aitkin Total [b]		**28.0**
Carlton	PEM	2.6
	PFO	7.1
	PSS	5.0
	PUB	0.1
Carlton Total [b]		**14.7**
Grand Total [b]		**81.7**

[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.

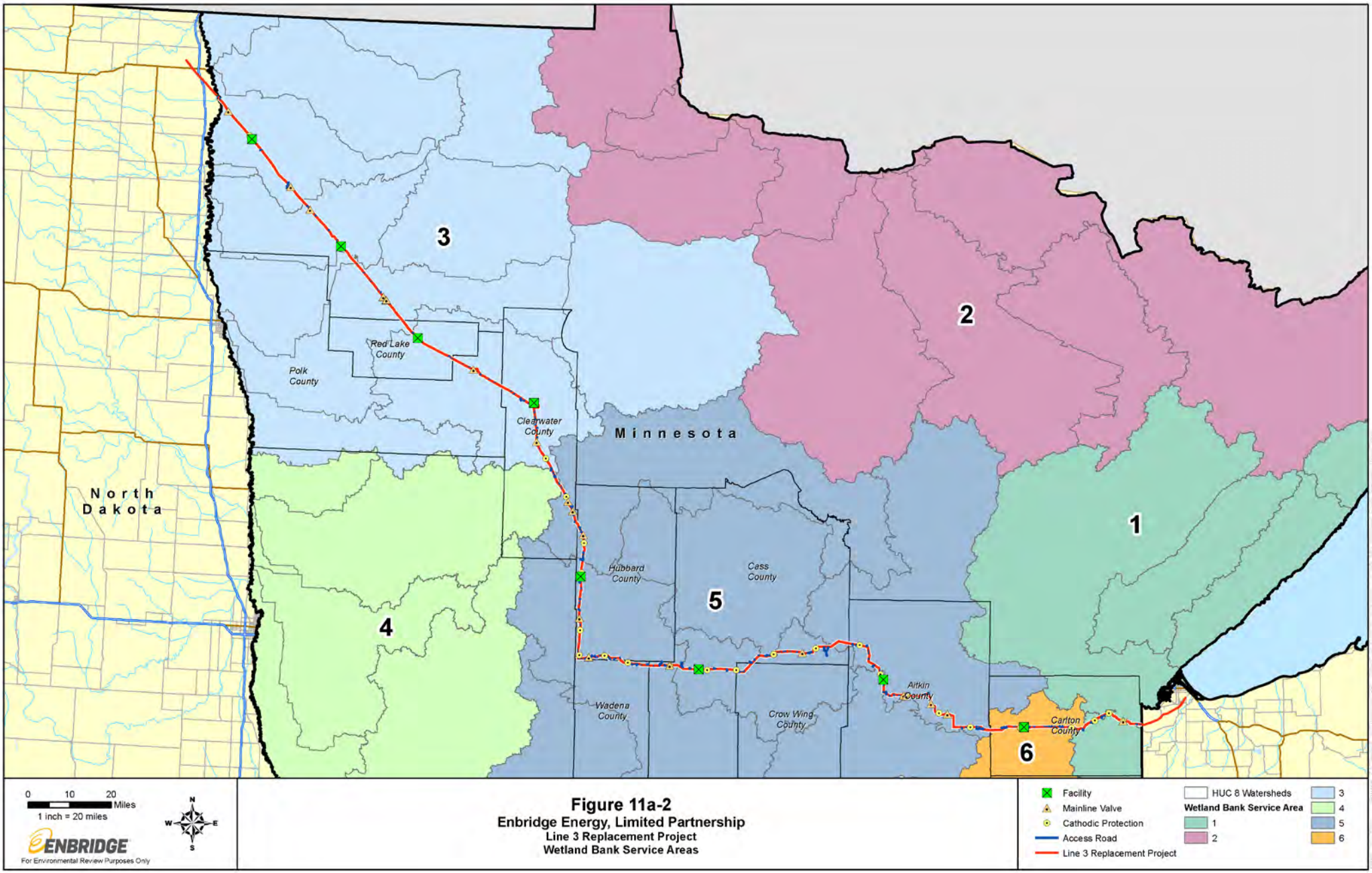

Figure 11a-2
Enbridge Energy, Limited Partnership
Line 3 Replacement Project
Wetland Bank Service Areas

MDNR Public Water Wetlands

PWI wetlands and basins crossed by the L3R route are summarized in Table 11a-7.

Table 11a-7
MDNR Public Water Wetlands and Basins Crossed by the Line 3 Replacement Project and Sandpiper Pipeline Project – Pipeline

Name	PWI Classification	L3R		SPP [a]	
		MP	Crossing Length (miles)	MP	Crossing Length (miles)
Unnamed Wetland	Wetland	853.7	0.1	--	--
Unnamed Wetland	Wetland	912.6	0.1	379.4	0.1
Mud	Basin	930.7	0.1	397.5	0.1
Unnamed Wetland	Wetland	961.0	0.1	427.8	0.2
Portage	Basin	965.0	0.1	431.8	<0.1
Frandsen Wetland	Wetland	985.5	0.2	452.5	0.3
Unnamed Basin	Basin	1002.7	0.0	469.5	<0.1
Peterson Basin	Basin	1025.8	0.1	492.7	0.3
Scout Camp Pond Wetland	Wetland	1038.5	0.1	505.5	<0.1

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

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 affected by L3R was previously provided in Section 7.15 of Enbridge's Routing Permit application submitted to the MPUC on April 24, 2015. The primary source of water for private, public, commercial, and industrial uses near L3R is groundwater pumped from wells. Most lakes, rivers, and many wetlands near L3R are hydraulically connected with the water table and are typically a surface expression of the water table. The L3R 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 L3R 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 L3R 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 L3R 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 L3R 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 L3R, 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).

Glacial aquifers, and particularly surficial glacial aquifers, can be affected by surface activities, including industrial and agricultural land use, due to the relatively shallow depth of the water table and the relatively coarse texture of the material in the overlying unsaturated zone. The most common anthropogenic contaminant in glacial aquifers near L3R is nitrate, which originates as fertilizer applied to agricultural fields and leaches into the groundwater system. Nitrate and other agriculturally derived contaminants are classified as "non-point source pollutants" because of their widespread use near portions of L3R environmental survey area. Nitrate persists in glacial aquifers for a long time because of the naturally low levels of organic material or sulfides that would otherwise "denitrify" nitrate.

Cretaceous Aquifers

Fine sandstone and shale of Cretaceous age are present in two areas that are traversed by L3R 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 L3R 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

L3R 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 1,524 of the 1,703 wells in the Minnesota Well Index ("MWI") database within one mile of the L3R 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 340 likely water table wells within one mile of the L3R 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 340 wells ranges from 1 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 L3R for which data are not available.

Wellhead Protection Areas

Public and non-public community water supply source-water protection in Minnesota is administered by MDH through the Wellhead Protection program. WHPAs 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 layer of the unlocated wells places them at the center of the most accurate Public Land Survey System reference (e.g., quarter-section). Both databases were queried to find wells that may potentially be affected by L3R. 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

Potential sources of wastewater related to construction and operation of L3R 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

Wastewater generated by use of portable toilets during construction of the Clearbrook Terminal expansion and the pump stations would be transported via truck to a permitted facility for proper disposal. The existing facilities operate a sanitary septic system with drain field that services the office/facility restrooms. Modifications to the existing Clearbrook Terminal and the Donaldson, Viking, and Plummer pump stations as part of L3R would not increase the permanent number of workers at those facilities; therefore, the existing septic systems would not need to be expanded. Construction of the Palisade pump station would include a sanitary septic system with drain field that service the office/facility restrooms; the Two Inlets, Backus, and Cromwell pump stations would be equipped with holding tank systems.

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 L3R route that could potentially receive runoff is included in Appendix G.

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

Title 49 Code of Federal Regulations ("CFR") Part 195; Subpart E requires hydrostatic testing of new pipelines and facilities. Enbridge 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 Enbridge 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. Details of hydrostatic testing and discharges is provided below and will be further described in the EIS.

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

(a) 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.

(b) 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 L3R would impact approximately 998.1 acres of wetlands, of which only 9.0 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 L3R route are presented in Table 11b-1.

Table 11b-1
Wetland Impacts for the Line 3 Replacement Project and Sandpiper Pipeline 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
Tamarac River										
L3R [e]	12.4	-	-	-	**12.4**	-	-	0.3	-	**0.3**
SPP [f]	-	-	-	-	**-**	-	-	-	-	**-**
Cumulative [g]	12.4	-	-	-	**12.4**	-	-	0.3	-	**0.3**
Snake River										
L3R [e]	15.5	0.7	-	0.1	**16.2**	-	0.1	0.5	-	**0.6**
SPP [f]	-	-	-	-	**-**	-	-	-	-	**-**
Cumulative [g]	15.5	0.7	-	0.1	**16.2**	-	0.1	0.5	-	**0.6**
Red Lake River										
L3R [e]	23.5	0.5	-	0.3	**24.3**	-	0.2	2.0	-	**2.2**
SPP [f]	19.2	2.3	-	-	**21.5**	-	2.0	0.3	-	**2.3**
Cumulative [g]	42.7	2.7	-	0.3	**45.7**	-	2.3	2.3	-	**4.6**
Grand Marais Creek										
L3R [e]	2.7	-	-	-	**2.7**	-	-	-	-	**0.0**
SPP [f]	0.4	-	-	0.2	**0.6**	-	-	-	-	**0.0**
Cumulative [g]	3.0	-	-	0.2	**3.2**	-	-	-	-	**0.0**
Clearwater River										
L3R [e]	104.7	7.6	-	4.0	**116.3**	-	6.5	10.1	-	**16.6**
SPP [f]	95.2	8.9	-	1.5	**105.6**	-	7.3	26.9	-	**34.2**
Cumulative [g]	175.8	10.7	-	4.1	**190.6**	-	12.0	29.6	-	**41.6**

Table 11b-1
Wetland Impacts for the Line 3 Replacement Project and Sandpiper Pipeline 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
Wild Rice River										
L3R [e]	16.9	2.3	-	0.2	**19.4**	-	2.8	3.1	-	**5.9**
SPP [f]	17.6	3.1	-	0.2	**20.9**	-	1.5	3.2	-	**4.7**
Cumulative [g]	18.8	1.9	-	0.2	**20.9**	-	3.5	3.7	-	**7.2**
Mississippi River – Headwaters										
L3R [e]	23.9	3.8	-	0.2	**27.9**	-	4.2	12.8	-	**17.0**
SPP [f]	19.8	4.3	-	0.2	**24.3**	-	3.0	16.6	-	**19.6**
Cumulative [g]	21.7	2.8	-	0.3	**24.8**	-	5.8	20.3	-	**26.1**
Crow Wing River										
L3R [e]	57.6	11.5	-	0.6	**69.7**	-	14.6	13.7	-	**28.4**
SPP [f]	52.0	11.8	-	0.5	**64.3**	-	13.4	19.5	-	**32.9**
Cumulative [g]	60.3	8.8	-	0.6	**69.8**	-	21.4	24.3	-	**45.7**
Pine River										
L3R [e]	54.3	8.9	-	2.7	**65.9**	-	9.4	17.2	-	**26.6**
SPP [f]	47.0	8.8	-	2.7	**58.5**	-	9.1	25.4	-	**34.5**
Cumulative [g]	52.9	6.1	-	3.1	**62.1**	-	14.3	29.1	-	**43.4**
Leech Lake River										
L3R [e]	0.6	-	-	-	**0.6**	-	-	0.7	-	**0.7**
SPP [f]	-	-	-	-	**-**	-	-	1.4	-	**1.4**
Cumulative [g]	-	-	-	-	**-**	-	-	1.5	-	**1.5**
Mississippi River – Grand Rapids										
L3R [e]	142.4	39.3	-	0.6	**182.3**	-	40.8	62.4	-	**103.2**
SPP [f]	103.5	38.9	-	0.6	**143.0**	-	40.8	101.0	-	**141.8**
Cumulative [g]	125.6	35.8	-	0.6	**162.0**	-	61.9	125.6	-	**187.5**
Mississippi River – Brainerd										
L3R [e]	28.5	8.6	-	-	**37.1**	-	9.5	10.3	-	**19.8**
SPP [f]	21.4	8.9	-	-	**30.3**	-	8.7	18.1	-	**26.8**
Cumulative [g]	24.8	8.2	-	-	**32.9**	-	13.5	21.8	-	**35.3**
Kettle River										
L3R [e]	43.6	22.2	-	0.1	**65.9**	-	23.4	37.6	-	**61.0**
SPP [f]	19.7	22.1	-	0.1	**41.9**	-	23.7	61.1	-	**84.8**
Cumulative [g]	22.0	14.7	-	0.1	**36.8**	-	37.5	69.5	-	**107.0**
Nemadji River										
L3R [e]	13.0	6.8	-	0.1	**19.8**	-	6.0	12.8	-	**18.8**

Table 11b-1
Wetland Impacts for the Line 3 Replacement Project and Sandpiper Pipeline 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
SPP [f]	6.1	6.6	-	0.1	**12.8**	-	7.0	18.7	-	**25.7**
Cumulative [g]	6.6	5.4	-	0.1	**12.1**	-	10.1	22.8	-	**33.0**
St. Louis River										
L3R [e]	5.4	1.3	-	0.4	**7.1**	-	0.8	0.6	-	1.4
SPP [f]	3.1	1.3	-	0.4	**4.8**	-	0.9	0.5	-	1.4
Cumulative [g]	5.7	1.1	-	0.4	**7.2**	-	1.3	0.7	-	1.9
TOTAL [h]										
L3R [e]	**545.0**	**113.5**	-	**9.3**	**667.6**	-	**118.3**	**184.1**	-	**302.5**
SPP [f]	**405.0**	**117.0**	-	**6.5**	**528.2**	-	**117.5**	**292.7**	-	**410.1**
Cumulative [g]	**587.8**	**98.9**	-	**10.1**	**696.7**	-	**183.7**	**352.0**	-	**535.7**
GRAND TOTAL [h]										
L3R [i]	**970.1**									
SPP [j]	**938.6**									
Cumulative [k]	**1232.4**									

[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 Enbridge permanent ROW has already been cleared; therefore, forested wetland impacts are presented as PEM.

[e] Calculations based on the L3R 45-foot-wide temporary workspace (wetlands) and ATWS for temporary impacts and L3R 50-foot permanent ROW for permanent conversion.

[f] Where SPP is within the same HUC 8 watershed as L3R, calculations based on the 45-foot-wide temporary workspace (wetlands) and ATWS for temporary impacts and SPP 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 L3R 95-foot-wide construction workspace (wetlands) and ATWS inclusive of the L3R 50-foot permanent ROW.

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

[k] Calculations based on a combined SPP and L3R 105-foot-wide construction workspace (wetlands) and ATWS inclusive of the SPP and L3R 75-foot-wide permanent ROW.

Associated Facilities

Clearbrook Terminal Expansion and Pump Stations

Construction of the Clearbrook Terminal expansion and Donaldson, Plummer, Clearbrook, Two Inlets, Palisade, and Cromwell pump stations would result in approximately 8.1 acres of permanent wetland impacts. Table 11b-2 summarizes cumulative permanent wetland fill impacts.

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

County	Facility [b]	L3R MP Location	SPP MP Location	Major Watershed (HUC 8)	Wetland Type [c]	L3R Total Permanent Fill (acres)	SPP Total Permanent Fill (acres)	Cumulative Total Permanent Fill (acres)
Kittson	L3R Donaldson Pump Station	814.5	N/A	Tamarac River	PEM	0.1	N/A	0.1
Red Lake	L3R Plummer Pump Station	877.0	N/A	Clearwater River	PEM	<0.1	N/A	<0.1
Clearwater	SPP Clearbrook West Terminal	N/A	374.5	Clearwater River	PEM	N/A	<0.1	<0.1
	L3R Clearbrook Terminal	909.4	N/A	Clearwater River	PEM	1.8	N/A	1.8
Hubbard	L3R Two Inlets Pump Station	957.5	N/A	Crow Wing	PEM PSS	0.1 <0.1	N/A	0.1
Aitkin	L3R Palisade Pump Station	1061.7	N/A	Mississippi River – Brainerd	PSS PEM PFO	0.5 4.6 0.6	N/A	0.5 4.6 0.6
Carlton	L3R Cromwell Pump Station	1106.4	N/A	Kettle River	PSS PEM	<0.1 0.2	N/A	<0.1 0.2
					TOTAL [d]	**8.1**	**<0.1**	**8.1**

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

[b] There would be no wetland impacts at the L3R Viking and Backus pump stations, or at the SPP Pine River Facility (Pine River HUC 8 Watershed).

[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 Line 3 Replacement Project and Sandpiper Pipeline Project – Mainline Valves [a]								
County	Facility [b]	L3R MP Location	SPP MP Location	Major Watershed (HUC 8)	Wetland Type [b]	L3R Total Permanent Fill (acres)	SPP Total Permanent Fill (acres)	Cumulative Total Permanent Fill (acres)
Marshall	Mainline Valve	836.5	N/A	Snake River	PEM	<0.1	N/A	<0.1
Aitkin	Mainline Valve	1061.7	528.6	Mississippi River – Brainerd	PEM	<0.1	0.1	0.1
	Mainline Valve	1069.8	536.7	Mississippi River – Grand Rapids	PSS	0.1	0.1	0.1
	Mainline Valve	1078.7	537.4	Mississippi River – Grand Rapids	PEM	0.1	0.1	0.1
	Mainline Valve	1084.4	545.6	Mississippi River – Grand Rapids	PSS	0.1	0.1	0.1
					TOTAL [c]	**0.2**	**0.3**	**0.3**

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

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

[c] 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 L3R would be used for SPP; therefore, there would be no cumulative wetland impacts.

Table 11b-4 Wetland Impacts for the Line 3 Replacement Project and Sandpiper Pipeline 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	0.2	0.0
		PEM	0.2	0.0
Carlton	Kettle River	PSS	<0.1	0.0
		PEM	0.5	0.0
	Nemadji River	PEM	<0.1	0.0
	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 Line 3 Replacement Project and Sandpiper Pipeline Project – Cathodic Protection [a]				
County	Major Watershed (HUC 8)	Wetland Type [b]	Temporary Wetland Impact (acres) [c]	Permanent Conversion (acres) [d]

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

[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 include 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 Line 3 Replacement Project and Sandpiper Pipeline Project – Temporary Access Roads

Watershed Name [b]	Temporary Impacts (acres)					Permanent Conversion (acres) [f]				
	PEM	PSS	PFO	PUB	**Total**	PEM	PSS	PFO	PUB	**Total**
Tamarac River										
L3R [c]	0.1	-	-	-	**0.1**	-	-	-	-	**-**
SPP [d]	-	-	-	-	**-**	-	-	-	-	**-**
Cumulative [e]	0.1	-	-	-	**0.1**	-	-	-	-	**-**
Snake River										
L3R [c]	0.1	-	-	-	**0.1**	-	-	-	-	**-**
SPP [d]	-	-	-	-	**-**	-	-	-	-	**-**
Cumulative [e]	0.1	-	-	-	**0.1**	-	-	-	-	**-**
Red Lake River										
L3R [c]	-	-	-	-	**-**	-	-	-	-	-
SPP [d]	<0.1	-	-	-	**<0.1**	-	-	-	-	-
Cumulative [e]	<0.1	-	-	-	**<0.1**	-	-	-	-	-
Clearwater River										
L3R [d]	0.9	0.1	-	<0.1	**1.0**	-	-	<0.1	-	**<0.1**
SPP [c]	0.8	0.2	-	<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										
L3R [d]	<0.1	<0.1	-	-	**<0.1**	-	-	-	-	**-**
SPP [c]	<0.1	<0.1	-	-	**<0.1**	-	-	-	-	**-**
Cumulative [e]	<0.1	<0.1	-	-	**<0.1**	-	-	-	-	**-**
Mississippi River – Headwaters										

Table 11b-5 Wetland Impacts for the Line 3 Replacement Project and Sandpiper Pipeline Project – Temporary Access Roads										
Watershed Name [b]	Temporary Impacts (acres)					Permanent Conversion (acres) [f]				
	PEM	PSS	PFO	PUB	**Total**	PEM	PSS	PFO	PUB	**Total**
L3R [d]	0.3	0.1	-	-	**0.4**	-	-	<0.1	-	<0.1
SPP [c]	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										
L3R [d]	0.8	0.5	-	-	**1.3**	-	-	0.1	-	0.1
SPP [c]	0.8	0.5	-	-	**1.3**	-	-	0.1	-	0.1
Cumulative [e]	0.8	0.5	-	-	**1.3**	-	-	0.1	-	0.1
Pine River										
L3R [d]	0.2	0.6	-	<0.1	**0.8**	-	-	0.5	-	**0.5**
SPP [c]	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										
L3R [d]	2.1	1.8	-	-	**3.9**	-	-	5.4	-	**5.4**
SPP [c]	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										
L3R [d]	0.1	0.2	-	-	**0.3**	-	-	0.4	-	**0.4**
SPP [c]	0.1	0.2	-	-	**0.3**	-	-	0.4	-	**0.4**
Cumulative [e]	0.1	0.2	-	-	**0.3**	-	-	0.4	-	**0.4**
Kettle River										
L3R [d]	1.4	1.3	-	-	**2.7**	-	-	<0.1	-	**<0.1**
SPP [c]	1.4	1.3	-	-	**2.7**	-	-	<0.1	-	**<0.1**
Cumulative [e]	1.4	1.3	-	-	**2.7**	-	-	<0.1	-	**<0.1**
Nemadji River										
L3R [d]	<0.1	0.3	-	-	**0.3**	-	-	0.3	-	**0.3**
SPP [c]	<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										
L3R [d]	0.1	<0.1	-	-	**0.1**	-	-	<0.1	-	**<0.1**
SPP [c]	0.1	<0.1	-	-	**0.1**	-	-	<0.1	-	**<0.1**
Cumulative [e]	0.1	<0.1	-	-	**0.1**	-	-	<0.1	-	**<0.1**
TOTAL [g]										
L3R [d]	**6.1**	**4.9**	**-**	**<0.1**	**11.0**	**-**	**-**	**6.7**	**-**	**6.7**
SPP [c]	**5.8**	**5.0**	**-**	**<0.1**	**10.8**	**-**	**-**	**6.9**	**-**	**6.9**
Cumulative [e]	**6.3**	**5.0**	**-**	**<0.1**	**11.3**	**-**	**-**	**6.9**	**-**	**6.9**

Table 11b-5 Wetland Impacts for the Line 3 Replacement Project and Sandpiper Pipeline Project – Temporary Access Roads										
Watershed Name [b]	Temporary Impacts (acres)					Permanent Conversion (acres) [f]				
	PEM	PSS	PFO	PUB	**Total**	PEM	PSS	PFO	PUB	**Total**
GRAND TOTAL [g]										
L3R [d]	**17.7**									
SPP [c]	**17.7**									
Cumulative [e]	**18.2**									

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

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

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

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

[e] Temporary access roads located east of L3R MP 912.3 (SPP MP 379.2) would be utilized for both L3R and SPP. Temporary access roads located in Kittson, Marshall, and Pennington counties would be utilized for L3R 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 Line 3 Replacement Project and Sandpiper Pipeline Project – Permanent Access Roads [a]

County	Facility	L3R MP Location	SPP MP Location	Major Watershed (HUC 8)	Wetland Type [b]	SPP Total Permanent Fill (acres)	L3R Total Permanent Fill (acres)	Cumulative Total Permanent Fill (acres)
Kittson	Mainline Valve Access Road	805.7	N/A	Tamarac River	PEM	N/A	<0.1	<0.1
Clearwater	Mainline Valve Access Road	937.1	403.9	Mississippi River – Headwaters	PFO PEM	<0.1 0.1	<0.1 0.1	<0.1 0.1
Cass	Mainline Valve Access Road	999.9	466.7	Crow Wing River	PSS	<0.1	<0.1	<0.1
Aitkin	Mainline Valve Access Road	1061.7	528.6	Mississippi River – Brainerd	PEM	0.2	0.2	0.2
	Mainline Valve Access Road	1069.8	536.7	Mississippi River – Grand Rapids	PFO PSS	0.1 0.2	0.1 0.2	0.1 0.2
	Mainline Valve Access Road	1070.5	537.4	Mississippi River – Grand Rapids	PEM	<0.1	<0.1	<0.1
	Mainline Valve Access Road	1078.7	545.6	Mississippi River – Grand Rapids	PSS	0.1	0.1	0.1

Table 11b-6 Permanent Wetland Fill for the Line 3 Replacement Project and Sandpiper Pipeline Project – Permanent Access Roads [a]								
County	Facility	L3R MP Location	SPP MP Location	Major Watershed (HUC 8)	Wetland Type [b]	SPP Total Permanent Fill (acres)	L3R Total Permanent Fill (acres)	Cumulative Total Permanent Fill (acres)
Kittson	Mainline Valve Access Road	805.7	N/A	Tamarac River	PEM	N/A	<0.1	<0.1
	Mainline Valve Access Road	1084.4	551.3	Mississippi River – Grand Rapids	PEM	0.1	0.1	0.1
					TOTAL [c]	**0.7**	**0.7**	**0.7**

[a] SPP impacts are provided where SPP is within the same HUC 8 watershed as L3R. Permanent access roads located east of L3R MP 912.3 (SPP MP 379.2) 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] The sum of addends may not total correctly due to rounding.

Groundwater

Wells

A search of the MWI database found 20 wells within 200 feet of the pipeline centerline. These wells are listed below in Table 11b-7. Only two of these wells, unique numbers 101877 and 653274, were within the construction workspace. The MWI database indicates that well 101877 is an active domestic well while well 653274 has been abandoned. The logs for wells 101877 and 653274 are included in Appendix H.

Table 11b-7 Wells and Boreholes Identified within 200 Feet of the Line 3 Replacement Project and Sandpiper Pipeline Project – Pipeline [a]								
Unique Well Number	County	L3R MP	Distance from L3R Centerline (feet)	Direction from L3R Centerline	SPP MP	Distance from SPP Centerline (feet)	Direction from SPP Centerline	Use
527501	Marshall	828.3	92	West	N/A	N/A	N/A	Monitoring
548028	Marshall	828.3	139	East	N/A	N/A	N/A	Monitoring
714983	Marshall	848.0	128	West	N/A	N/A	N/A	Abandoned
714986	Marshall	848.1	130	West	N/A	N/A	N/A	Abandoned
101877	Clearwater	904.0	20	Northeast	N/A	N/A	N/A	Domestic
803707	Clearwater	938.2	184	Southwest	405.0	159	West	Abandoned
428418	Hubbard	947.3	40	East	414.2	80	East	Domestic
764345	Hubbard	957.5	56	East	424.3	81	East	Domestic
653274	Hubbard	957.5	20	West	424.3	5	East	Abandoned
742992	Hubbard	966.6	59	East	433.4	84	East	Domestic
406036	Hubbard	972.8	37	East	439.7	62	East	Domestic

803710	Hubbard	973.9	60	Northwest	440.7	35	West	Abandoned
803712	Hubbard	982.4	195	North	449.3	170	North	Abandoned
471978	Hubbard	984.4	185	Northeast	451.2	160	Northeast	Irrigation
809309	Wadena	994.8	178	North	461.7	138	North	Unknown
746479	Cass	1013.1	165	North	480.0	190	North	Domestic
605979	Cass	1013.2	83	North	480.0	108	North	Domestic
613232	Cass	1038.5	164	North	505.4	189	North	Domestic
726887	Carlton	1122.1	91	Northwest	588.9	116	Northwest	Domestic
673690	Carlton	1133.0	114	North	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 crossed by L3R was previously provided in Section 7.13 of Enbridge's Routing Permit Application submitted to the MPUC on April 24, 2015.

PRE-PROJECT SITE CONDITIONS

Pipeline

The MPCA's What's in My Neighborhood ("WIMN") and the Minnesota Department of Agriculture's ("MDA") WIMN database were used to identify potential environmental hazards within 0.5-mile of the L3R 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 include 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 included 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 wastewater dischargers.

Inactive or closed listings were also eliminated from further analysis. Eleven closed old emergency and spill 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 unlikelihood 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 Line 3 Replacement Project and Sandpiper Pipeline Project – Pipeline							
County	City	Site/Facility Name	MP		Distance from Centerline (feet)		Listing Type
			L3R	SPP [a]	L3R	SPP [a]	
Carlton	Wrenshall	Former Conoco Lakehead Pipeline Terminal	1132.8	599.7	301	276	Leak Site
Pennington	Thief River Falls	Scott Olson	857.9	N/A	468	N/A	Contaminated Soil Treatment Facility
Red Lake	Oklee	Standard Oil	886.2	N/A	729	N/A	Leak Site
Red Lake	Oklee	Cenex Harvest States	886.1	N/A	810	N/A	Leak Site
Clearwater	Clearbrook	Good Samaritan Center – Clearbrook	908.4	N/A	818	N/A	Hazardous Waste, Small to Minimal QG
Red Lake	Oklee	Bobs Napa Service Bulk Site	885.9	N/A	989	N/A	Leak Site
Carlton	Carlton	Dek Rebuilders	1124.5	591.3	1,056	1,047	Hazardous Waste, Small to Minimal QG
Red Lake	Oklee	Bobs Napa Service Station	886.1	N/A	1,133	N/A	Leak Site
Carlton	Wrenshall	P & M Trucking	1133.1	600	1,274	1,299	Hazardous Waste, Small to Minimal QG
Aitkin	Palisade	Robinson Store & Ab Service	1064.7	531.5	1,360	1,385	Multiple Activities: Leak Site and Tank Site
Pennington	Thief River Falls	Scott Olson	858.1	N/A	1,409	N/A	Contaminated Soil Treatment Facility
Carlton	Wrenshall	Wrenshall Public School PBR	1133.4	600.3	1,410	1,435	Solid Waste, Permit By Rule
Clearwater	Clearbrook	ISD 2311 Clearbrook Gonvick	908.5	N/A	1,429	N/A	Hazardous Waste, Small to Minimal QG

Table 12a-1 Inactive MPCA WIMN Regulatory Listings within 0.5-Mile of the Line 3 Replacement Project and Sandpiper Pipeline Project – Pipeline							
County	City	Site/Facility Name	MP		Distance from Centerline (feet)		Listing Type
			L3R	SPP [a]	L3R	SPP [a]	
Clearwater	Clearbrook	Clearbrook Post Office	908.5	N/A	1,436	N/A	Leak Site
Clearwater	Clearbrook	Flint Hills Resources Pine Bend Clearbrook Tankage	909.4	N/A	1,513	N/A	Hazardous Waste, Small to Minimal QG
Red Lake	Plummer	Plummer Bulk Plant	876.9	N/A	1,661	N/A	Leak Site
Carlton	Wrenshall	Wrenshall Dump	1131.1	598	1,703	1,660	Multiple Activities: State Assessment Site and Unpermitted Dump Site
Carlton	Carlton	Tietz Implement	1124.7	591.6	1,746	1,721	Hazardous Waste, Small to Minimal QG
Red Lake	Oklee	Red Lake County Coop Inc	886.1	N/A	1,780	N/A	Leak Site
Red Lake	Oklee	Oklee Public School	886.0	N/A	1,792	N/A	Leak Site
Red Lake	Oklee	Oklee Bus Garage	885.8	N/A	1,850	N/A	Leak Site
Red Lake	Plummer	Hess Oil	876.0	N/A	2,045	N/A	Leak Site
Red Lake	Plummer	(Mdh) Plummer Municipal Well No. 1	876.1	N/A	2,071	N/A	Leak Site
Red Lake	Plummer	Senior Citizens Center	876.1	N/A	2,147	N/A	Leak Site
Clearwater	Clearbrook	Community Oil Co Bulk Plant	908.5	N/A	2,164	N/A	Multiple Activities: Leak Site and Tank Site
Clearwater	Bagley	Friborg Residence	918.9	385.7	2,194	2,169	Leak Site

Table 12a-1 Inactive MPCA WIMN Regulatory Listings within 0.5-Mile of the Line 3 Replacement Project and Sandpiper Pipeline Project – Pipeline							
County	City	Site/Facility Name	MP		Distance from Centerline (feet)		Listing Type
			L3R	SPP [a]	L3R	SPP [a]	
Carlton	Wrenshall	Conoco Inc Lakehead Tank Farm	1132.8	599.7	2,198	2,223	CERCLIS Site
Carlton	Carlton	Mndot Proj 0910-26 (Th210)	unknown[b]	N/A	unknown[1]	N/A	Tank Site
Carlton	Carlton	Conoco Terminal	unknown[b]	N/A	unknown[b]	N/A	Tank Site
Carlton	Carlton	Bw Smith Property	unknown[b]	N/A	unknown[b]	N/A	Tank Site
Carlton	Carlton	Carlton Co Sheriffs Dept	unknown[b]	N/A	unknown[b]	N/A	Tank Site
Carlton	Carlton	Carlton Feed Mill	unknown[b]	N/A	unknown[b]	N/A	Tank Site
Carlton	Carlton	Dahlen Transport Inc	unknown[b]	N/A	unknown[b]	N/A	Tank Site
Carlton	Carlton	Big T Truck Center	unknown[b]	N/A	unknown[b]	N/A	Hazardous Waste, Small to Minimal QG
Carlton	Carlton	Carlton Section Building	unknown[b]	N/A	unknown[b]	N/A	Tank Site
Marshall	Viking	Ricky King Farm	unknown[b]	N/A	unknown[b]	N/A	Tank Site
Marshall	Viking	Viking Service	unknown[b]	N/A	unknown[b]	N/A	Tank Site
Carlton	Mahtowa	Mahtowa Gas Co/Como Oil	unknown[b]	N/A	unknown[b]	N/A	Tank Site

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

[b] Inactive sites included in MPCA's WIMN database as zip code or 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 38 active sites with potential for environmental impact that were identified within 0.5-mile of the L3R centerline. Of these sites, 37 sites were determined to be either more than 500 feet from the L3R centerline or were un-locatable and mapped as centroids. Listings which were located as centers of zip codes, counties, or sections were confirmed to be located outside of the L3R construction workspace area. The remaining site is an open landfill with routine inspections reported since 1999 and no compliance issues reported.

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

County	City	Site/Facility Name	MP		Distance from Centerline (feet)		Listing Type
			L3R	SPP	L3R	SPP	
Red Lake	Oklee	Red Lake County Demo Landfill Oklee Site	885.6	N/A	92	N/A	Landfill, Open
Hubbard	Park Rapids	Autocraft	969.5	436.4	627	602	Hazardous Waste, Small to Minimal QG
Clearwater	Clearbrook	Lakehead Pipeline Co Inc	909.4	N/A	773	N/A	Tank Site
Clearwater	Clearbrook	Enbridge Energy – Clearbrook Terminal	909.4	N/A	776	N/A	Multiple Activities: Air Permit and Hazardous Waste, Small to Minimal
Clearwater	Clearbrook	Minnesota Pipe Line Co	909.4	N/A	794	N/A	Tank Site
Clearwater	Clearbrook	Good Samaritan Society – Clearbrook	908.4	N/A	850	N/A	Multiple Activities: Hazardous Waste, Small to Minimal QG and Tank Site
Red Lake	Oklee	CHS Ag Services	885.8	N/A	867	N/A	Hazardous Waste, Small to Minimal QG
Polk	Trail	Jacks Salvage	895.3	N/A	893	N/A	Solid Waste, Permit By Rule
Clearwater	Clearbrook	Riviana Foods Inc – Clearbrook Facility	907.8	N/A	932	N/A	Tank Site

Table 12a-2 Potentially Contaminated Sites within 0.5-Mile of the Line 3 Replacement Project and Sandpiper Pipeline Project – Pipeline							
County	City	Site/Facility Name	MP		Distance from Centerline (feet)		Listing Type
			L3R	SPP	L3R	SPP	
Hubbard	Park Rapids	Revammp Engineering	968.8	435.6	960	985	Hazardous Waste, Small to Minimal QG
Red Lake	Oklee	Red Lake County Oklee Shop	886.2	N/A	1,013	N/A	Tank Site
Carlton	Mahtowa	Doug's Auto Works	1119.2	586.0	1,193	1,168	Hazardous Waste, Small to Minimal QG
Carlton	Moose Lake	Minnesota Sex Offender Program Moose Lake	1106.0	572.8	1,483	1,458	Multiple Activities: Air Permit and Hazardous Waste, Small to Minimal QG
Cass	Backus	Grinning Bear Demolition Landfill	1013.0	479.8	1,499	1,474	Landfill, Open
Clearwater	Clearbrook	Koch Pipeline Co LP – Clearbrook	909.4	N/A	1,516	N/A	Multiple Activities: Air Permit and Hazardous Waste, LQG
Clearwater	Clearbrook	Clearwater Health Services Clinic	908.5	N/A	1,571	N/A	Hazardous Waste, Small to Minimal QG
Red Lake	Oklee	Security State Bank	886.1	N/A	1,572	N/A	Tank Site
Carlton	Wrenshall	Northern Natural Gas Co	1133.0	599.8	1,621	1,596	Tank Site
Carlton	Wrenshall	Northern Natural Gas Co – Wrenshall LNG Plant	1133.0	599.8	1,629	1,604	Multiple Activities: Air Permit, Hazardous Waste, Small to Minimal QG and Tank Site
Clearwater	Clearbrook	AC Oil Station	908.5	N/A	1,666	N/A	Multiple Activities: State Assessment Site and Tank Site

Table 12a-2 Potentially Contaminated Sites within 0.5-Mile of the Line 3 Replacement Project and Sandpiper Pipeline Project – Pipeline							
County	City	Site/Facility Name	MP		Distance from Centerline (feet)		Listing Type
			L3R	SPP	L3R	SPP	
Red Lake	Plummer	Skjerven Station	876.1	N/A	1,691	N/A	Leak Site
Clearwater	Bagley	Clearwater County Demolition Debris Land Disposal	921.1	387.9	1,705	1,728	Multiple Activities: Hazardous Waste, Small to Minimal QG and Landfill, Open
Red Lake	Plummer	Plummer District No 628	875.1	N/A	1,749	N/A	Tank Site
Red Lake	Plummer	Zimpel Construction	876.1	N/A	1,787	N/A	Leak Site
Clearwater	Clearbrook	Y92 Convenience	908.4	N/A	1,897	N/A	Tank Site
Carlton	Wrenshall	Wrenshall Fire Dept	1130.6	597.5	1,910	1,885	Hazardous Waste, Small to Minimal QG
Clearwater	Clearbrook	Thrifty White Drug 747	908.5	N/A	2,044	N/A	Hazardous Waste, Small to Minimal QG
Clearwater	Clearbrook	Former Clearbrook AST Site	908.9	N/A	2,054	N/A	Leak Site
Red Lake	Oklee	Oklee Red Lake County Coop C-Store	886.1	N/A	2,080	N/A	Tank Site
Hubbard	Park Rapids	Buck Stop	954.9	421.7	2,182	2,157	Tank Site
Carlton	Carlton	Carlton Storage	unknown[1]	N/A	unknown[1]	N/A	Tank Site

Table 12a-2 Potentially Contaminated Sites within 0.5-Mile of the Line 3 Replacement Project and Sandpiper Pipeline Project – Pipeline							
County	City	Site/Facility Name	MP		Distance from Centerline (feet)		Listing Type
			L3R	SPP	L3R	SPP	
Carlton	Carlton	Murphy Bros Inc	unknown[1]	N/A	unknown[1]	N/A	Hazardous Waste, Small to Minimal QG
Carlton	Carlton	ISD 93	unknown[1]	N/A	unknown[1]	N/A	Hazardous Waste, Small to Minimal QG
Carlton	Carlton	Northern Natural Gas Compressor Sta	unknown[1]	N/A	unknown[1]	N/A	Tank Site
Carlton	Carlton	Haluptzok Auto Salvage	unknown[1]	N/A	unknown[1]	N/A	Hazardous Waste, Small to Minimal QG
Carlton	Barnum	Carlton County Highway Dept	unknown[1]	N/A	unknown[1]	N/A	Tank Site
Carlton	Carlton	Carlton city of – Garage	unknown[1]	N/A	unknown[1]	N/A	Hazardous Waste, Small to Minimal QG
Marshall	Viking	ISD 441 Viking Elementary School	unknown[1]	N/A	unknown[1]	N/A	Hazardous Waste, Small to Minimal QG

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

[b] Inactive sites included in MPCA's WIMN database as zip code or 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)

L3R is located adjacent to existing oil pipelines such as Enbridge's Line 67, 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 L3R centerline as described above, which would encompass the Clearbrook Terminal expansion, pump stations, mainline valves, cathodic protection systems, and access roads associated with L3R. Therefore, the potential environmental hazards described for the L3R route are applicable to these L3R associated facilities.

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 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 L3R 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 related to the L3R associated facilities are not anticipated beyond those already discussed within the pipeline section.

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.

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 L3R 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 L3R associated facilities are not anticipated to generate hazardous materials outside of and separate from those already discussed within the L3R pipeline section above.

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 hazards effects from pre-project site conditions that would be caused or exacerbated by construction and operation of L3R. The measures that would be implemented by L3R for the generation, storage, and handling of solid and hazardous wastes would also be implemented by SPP.

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

A description of fisheries that could potentially be impacted by L3R is provided in the following sections, and was previously provided in Section 7.11 of Enbridge's Routing Permit Application submitted to the MPUC on April 24, 2015. Mitigation plans will be adopted or developed for the protection of these resources in the EIS.

Most of these waterbodies found in the L3R 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 L3R are listed in Table 13-1 (MDNR 2015a).

Table 13-1
Representative Game Fish Species in Waterbodies within the Line 3 Replacement Project and Sandpiper Pipeline 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)	
Pike (northern)	
Sunfish (bluegill, green, hybrid, pumpkinseed)	
Walleye	

Table 13-1 Representative Game Fish Species in Waterbodies within the Line 3 Replacement Project and Sandpiper Pipeline Project Environmental Survey Areas	
Warm-Water Game Fish	Cold-Water Game Fish
Source: MDNR 2015a	

Sensitive Fisheries Areas

Designated Trout Streams

Pipeline

The L3R route would cross six MDNR designated trout streams (Table 13-2).

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

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

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

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

Associated Facilities

No impacts to designated trout streams are anticipated from the construction or operation of L3R associated facilities.

Aquatic Management Areas

Pipeline

The L3R route would cross the La Salle Creek AMA. See Table 9-2 for information on location and crossing length.

Associated Facilities

No impacts to AMAs are anticipated from the construction or operation of L3R associated facilities.

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

- Designated Trout Streams
- AMAs
- Riparian Habitats

EXISTING VEGETATION RESOURCES

A description of vegetation impacted by L3R was previously provided in Section 7.9 of Enbridge's Routing Permit Application submitted to the MPUC on April 24, 2015.

The following cover types (in decreasing order of prevalence) are found in the L3R environmental survey area: cropland, wooded/forest, 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 L3R by land cover type are described in Table 13-3.

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

Land Cover Type	GAP Vegetation Community
Cropland	Cultivated Cropland
	Managed Tree Plantation
	Pasture/Hay
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
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
	Laurentian-Acadian Swamp Systems

Table 13-3 GAP Vegetation Communities within the Line 3 Replacement Project and Sandpiper Pipeline Project Environmental Survey Areas	
Land Cover Type	GAP Vegetation Community
	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 L3R 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 scrub-shrub wetlands. Brush/grassland areas consist of herbaceous and scrub-shrub 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

Although much of the land within the L3R environmental survey area has been altered since pre-settlement vegetation by forestry, agriculture, and development activities, Minnesota's Ecological Classification System (MDNR 1999) provides a framework for understanding the potential for sensitive plant communities and fish and wildlife habitat. The State Wildlife Action Plan (MDNR 2006) uses ecological subsections to identify Key Habitats for certain species.

Based on Minnesota's Ecological Classification System, L3R would cross small portions of the Prairie Parkland, Tallgrass Aspen Parklands, and Eastern Broadleaf Forest Provinces (MDNR 1999). The majority of L3R is located in the Laurentian Mixed Forest Province and would cross several sections and subsections, 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 Line 3 Replacement Project and Sandpiper Pipeline Project Environmental Survey Areas

Province	Section	Subsection	SPP MP Range [a]	L3R MP Range	Description
Prairie Parkland	Red River Valley	Red River Prairie	N/A	801.8 – 833.9	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	N/A	833.9 – 896.1	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	Minnesota and Northeast Iowa Morainal	Hardwood Hills	379.2 – 384.5	896.1 – 917.7	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	917.7 – 948.1 949.0 – 950.1	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	948.1 – 949.0 950.1 – 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.

Table 13-4 Ecological Sections and Subsections within the Line 3 Replacement Project and Sandpiper Pipeline Project Environmental Survey Areas					
		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 SPP are for the co-located portion only.					

Enbridge'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 Plan Communities
- Sites of Biodiversity Significance
- Sensitive Forest Resources
- Noxious and Invasive Species

EXISTING WILDLIFE RESOURCES

A description of wildlife resources impacted by L3R was previously provided in Section 7.10 of Enbridge's Routing Permit Application submitted to the MPUC on April 24, 2015.

The following cover type categories are found in the L3R environmental survey area in decreasing order of prevalence: cropland, wooded/forest, 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 L3R environmental survey area are described below according to existing cover types. Common wildlife species found in those habitat types are also identified.

Croplands

Lands that have been altered for use as hayfields, pastures, and row crop production are found in the L3R 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.

Wooded/Forest Cover

Forested areas are found primarily along the eastern portion of the L3R 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.

Wetlands

Wetlands within the L3R 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 whitetailed 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:

- WMAs
- Audubon Important Bird Areas
- Key Habitats
- Large Block Habitats

EXISTING SENSITIVE ECOLOGICAL RESOURCES

A description of threatened and endangered species impacted by L3R was previously provided in Section 7.12 of Enbridge's Routing Permit Application submitted to the MPUC on April 24, 2015.

Federally Listed Species

In November 2014, Enbridge initiated consultations with USFWS and MDNR. Enbridge will continue to coordinate with these agencies on protected species issues. Through these consultations and through researching USFWS county-specific species lists (USFWS 2015), Enbridge identified federally listed, proposed, and candidate species under the federal ESA that may occur within counties crossed by L3R (Table 13-5). One endangered species, five threatened species, and one candidate species have the potential to occur in the vicinity of L3R. Critical habitat for the Poweshiek skipperling (*Oarisma poweshiek*) and the Dakota skipper (*Hesperia dacotae*) also occurs in counties crossed by L3R (Table 13-5).

Table 13-5

Federally Listed and Candidate Species and Critical Habitat in Counties Crossed by the Line 3 Replacement Project and Sandpiper Pipeline Project [a, b]

Species Name	Federal Status	State Status	Habitat	Listed Counties
Northern Long-eared Bat (*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	Marshall, 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	Kittson, Polk
Dakota Skipper	Critical Habitat	N/A	Native prairie	Kittson, Polk

Table 13-5 Federally Listed and Candidate Species and Critical Habitat in Counties Crossed by the Line 3 Replacement Project and Sandpiper Pipeline Project [a, b]				
Species Name	Federal Status	State Status	Habitat	Listed Counties
Poweshiek Skipperling (*Oarisma poweshiek*)	Endangered	Endangered	Native prairie	Kittson, Marshall, Pennington, Red Lake, Polk
Poweshiek Skipperling	Critical Habitat	N/A	Native prairie	Kittson, Polk
Western Prairie Fringed Orchid (*Platanthera praeclara*)	Threatened	Endangered	Wet prairies and sedge meadows	Kittson, Pennington, Red Lake, Polk
[a] Impacts provided for L3R are for the co-located portion only. [b] USFWS 2015.				

The EIS will analyze the results of additional surveys Enbridge conducted for candidate species and critical habitat along the L3R route.

State-Listed Species

In November 2015, Enbridge conducted a review of Natural Heritage Information System ("NHIS") data provided by MDNR on July 28, 2015, under license agreement LA-750. Table 13-6 presents NHIS Element Occurrence ("EO") polygons that involve threatened or endangered species within one mile of the L3R 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.

Table 13-6 EOs of Threatened and Endangered Species in Minnesota's NHIS within 1 Mile of the Line 3 Replacement Project and Sandpiper Pipeline Project			
Species [a]	State Status	County of EO	Last Observed Year
ZOOLOGICAL			
Blanding's Turtle (*Emydoidea blandingii*)	Threatened	Cass Crow Wing	2011 2011
Four-toed Salamander (*Hemidactylium scutatum*)	Special Concern [c]	Aitkin	2001
Henslow's Sparrow (*Ammodramus henslowii*)	Endangered	Hubbard	2003
Pugnose Shiner (*Notropis anogenus*)	Threatened	Wadena [d]	2010
Fluted-shell Mussel (*Lasmigona costata*)	Threatened	Pennington/Red Lake	2007

Table 13-6 EOs of Threatened and Endangered Species in Minnesota's NHIS within 1 Mile of the Line 3 Replacement Project and Sandpiper Pipeline Project			
Species [a]	State Status	County of EO	Last Observed Year
BOTANICAL			
Beaked Spikerush (*Eleocharis rostellata*)	Threatened	Polk Clearwater	2011 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
Down Liverwort (*Trichocolea tomentella*)	Threatened	Carlton	2013
Gray Ragwort (*Packera cana*)	Endangered	Marshall	1991
Hair-like Beak Rush (*Rhynchospora capillacea*)	Threatened	Polk Clearwater	2011 2013
Handsome Sedge (*Carex formosa*)	Endangered	Clearwater	2008
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
Red Saltwort (*Salicornia rubra*)	Threatened	Kittson	2007
Sterile Sedge (*Carex sterilis*)	Threatened	Marshall Pennington Polk Clearwater	2013 2007 2011 2013
Whorled Nut-rush (*Scleria verticillata*)	Threatened	Polk	2011

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

[b] Botanical records from 2013 originated from L3R/SPP 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 Enbridge consult on this species.

[d] EO polygon crossed by L3R or SPP 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 the rare species surveys conducted by Enbridge

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.

A description of cultural resources affected by L3R was previously provided in Section 7.16 of Enbridge's Certificate of Need and Routing Permit applications, submitted to MPUC on April 24, 2015 and is summarized below.

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 7.16 of the April 2015 Routing Permit Application summarized the extensive cultural resource investigations sponsored by Enbridge in 2013 and 2014. Enbridge conducted additional Phase I and Phase II surveys in 2015 of the environmental survey area 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 L3R centerline and also included the footprints of the Clearbrook Terminal Expansion, pump stations, mainline valve sites, and cathodic beds. Cultural resource surveys of proposed access roads consisted of a 60- to 100-foot-wide corridor centered on the proposed road centerline.

Enbridge initiated L3R coordination with the Minnesota SHPO on August 5, 2014. Since 2014 Enbridge 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 Enbridge requests for coordination and SHPO technical guidance with respect to these annual surveys was provided to the DOC.

Since the beginning of coordination with the SHPO, Enbridge 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. Enbridge understood that a federal agency's Area of Potential Effects, determinations of eligibility, and findings of effect were milestones in Section 106 consultation between the federal agency and the SHPO and other consulting parties. However, to ensure identified resources are given the appropriate protection and consideration, Enbridge incorporated SHPO technical guidance into project planning activities, which will also anticipate the eventual Section 106 consultation.

Enbridge 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. Enbridge 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 Enbridge's 2015 annual survey information, which is pending as noted above, Enbridge will approach SHPO with management measures for any sites listed on or eligible for listing on the NRHP.

In summary, Enbridge identified 64 archaeological sites within the L3R survey area in 2013 through 2015. Enbridge will continue to coordinate with SHPO for the eight 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 L3R 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 L3R construction workspace.

Previous survey reports on file at SHPO were reviewed in order to determine how much of L3R 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 L3R construction workspace are on file with SHPO. These previous surveys are described in L3R reports completed (Table 14-1).

Table 14-1
Cultural Resources Reports Prepared for the Line 3 Replacement 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 (for L3R Clearbrook East)	2015

Table 14-1 Cultural Resources Reports Prepared for the Line 3 Replacement Project		
Principal Investigator/ Affiliation	Report Title	Date
Allison Lange Mueller/Merjent, Inc. ("Merjent")	2014 Minnesota Archaeological Reconnaissance Studies (for L3R Clearbrook West)	2015
Michael Kolb/ Strata Morph Geoexploration, Inc.	Minnesota Geomorphological Investigations	2015
Allison Lange Mueller/Merjent	2015 Minnesota Archaeological Reconnaissance Studies (for L3R Clearbrook East)	2016a (pending)
Allison Lange Mueller/Merjent	Addendum to 2015 Minnesota Archaeological Reconnaissance Studies (for L3R Clearbrook East)	2016b (pending)
Allison Lange Mueller/Merjent	2015 Minnesota Archaeological Reconnaissance Studies (for L3R Clearbrook West)	2016c (pending)
Allison Lange Mueller/Merjent	Addendum to 2015 Minnesota Archaeological Reconnaissance Studies (for L3R Clearbrook West)	2016d (pending)
Robert Watson/CCRG	2015 Minnesota Archaeological Evaluation Studies	2016

Records on file at SHPO indicate that upwards of 75 archaeological sites were previously recorded within a 2-mile-wide study area surrounding the L3R 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 L3R (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 L3R construction workspace as defined above in the introduction to Section 7.16. 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 all Enbridge-sponsored Phase I reconnaissance surveys.

Phase I surveys were conducted for all proposed access roads that would be widened, graded, or improved for L3R 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 L3R 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 to identify locations with possible deeply buried living surfaces that might contain buried archaeological resources was conducted. 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 over 95 percent of the L3R environmental survey area were completed between 2013 and 2015. Surveyors identified 64 archaeological sites within L3R'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 L3R 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 L3R or SPP; therefore there are no cumulative potential 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.

Enbridge conducted 2013, 2014, and 2015 desktop reviews of archival data on file at the Minnesota SHPO; these reviews did not identify scenic views or vistas near the L3R survey area. There are no previously-identified specific scenic views or vistas near the survey area.

L3R is primarily a buried utility, and as such would not represent a visual effect to scenic views or vistas. L3R would include a limited number of aboveground facilities, specifically eight aboveground pump stations, and 22 mainline valve locations spread along the L3R route (refer to Section 6.b). There are no previously-identified scenic views or vistas identified at or near the L3R pump stations. To analyze potential viewshed impacts, a Line of Sight ("LOS") visibility analysis 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. Initially, the boundary of each pump station's 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 pipeline route at or near proposed mainline valve locations, there are no visual impacts associated with each valve location. Should a valve location-specific visual impact be identified, screening mitigation measures could be implemented. Tree clearing associated with construction and maintenance of the L3R ROW is not expected to introduce any substantial visual impacts since the project is either co-located with or positioned very near existing cleared and maintained utility rights-of-way.

Cumulative Effects

No scenic views or vistas would be impacted by L3R or SPP; therefore there are no cumulative potential effects to scenic views or vistas.

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 L3R is provided in the following sections, and was previously provided in Section 7.17 of Enbridge's Routing Permit Application submitted to the MPUC on April 24, 2015.

STATIONARY SOURCE EMISSIONS

The counties in which L3R 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; nitrogen oxides ("NO_X"); ozone; 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 Terminal Expansion and Pump Stations

L3R includes the construction of three new pumps adjacent to existing pump stations, a new pump station adjacent to the existing Clearbrook Terminal, and four new pump stations which would emit small amounts of air emissions from pump station PIG traps, sump tanks, and piping components such as pumps, valves, and flanges. In addition, the L3R pipeline connection at the existing Clearbrook Terminal would potentially generate air emissions from pipeline deliveries into the existing terminal's external floating roof storage tanks. L3R would not include construction of new tanks at the Clearbrook Terminal or at any other facility in Minnesota.

Air emissions from the operation of the Clearbrook Terminal and pump stations would be primarily comprised of VOC and hazardous air pollutants ("HAP"). The Clearbrook Terminal would also generate a nominal amount of greenhouse gas ("GHG") emissions from storage tank operations. The air emissions would be the same type, source, and composition as the existing pump stations and Clearbrook Terminal. Emissions of other criteria pollutants from the sources are insignificant. Past actual terminal VOC emissions for the years 2013 and 2014 were 28 and 29 tons per year ("tpy"), respectively. Tables16-1 and 16-2 below summarize the 2014 actual criteria pollutant and HAP emissions from the Clearbrook Terminal.

Table 16-1 2014 Actual Clearbrook Terminal Criteria Pollutant Emissions	
Pollutant	2014 Actual Emissions (tpy)
CO	0.29
NO_X	0.30
PM-Filterable	0.01
PM_{10}- Filterable	0.01
$PM_{2.5}$- Filterable	0.01
PM-Condensable	0.01
SO_2	0.01
VOC	28.84
CO_2e	15.75

Table 16-2 2014 Actual Clearbrook Terminal HAP Emissions	
Pollutant	2014 Actual Emissions (tpy)
Benzene	0.127
Biphenyl	0.008
Cumene	0.013
Ethylbenzene	0.056
n-Hexane	0.655
Naphthalene	0.029
Phenol	0.043
Toluene	0.152
Trimethylpentane	0.017
m-Xylene	0.195
Maximum Single HAP – (n-Hexane)	0.655
Total HAPs	1.295

The estimated potential pump station VOC emissions are less than two tpy per station and the pump stations are not subject to MPCA air quality permitting requirements. Table 16-3 below summarizes the estimated potential VOC emissions for the pump stations not located at the Clearbrook Terminal.

Table 16-3 Estimated Pump Station Emissions	
Pump Station Name	Potential VOC Emissions (tpy)
Donaldson South	1.12
Backus	1.23
Viking	1.09
Cromwell	1.16
Plummer	1.15
Two Inlets	1.16
Palisade	1.16

Mainline Valves, Cathodic Protection, and Access Roads

Operation of mainline valves along the L3R 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

The Clearbrook Terminal currently operates under a minor source Option A Registration Permit. The potential L3R-related VOC emission increase at the Clearbrook Terminal is estimated to be less than 30 tpy from the new pump station and the potential increase in tank throughput. L3R would result in the estimated potential terminal VOC emissions to exceed major source thresholds and Enbridge would apply for a synthetic-minor permit to retain status as a minor source under the Part 70 (Title V) permitting program. Table 16-4 below compares the existing Option A Registration Permit emission limitations to the synthetic-minor permit limits.

Table 16-4 Existing Option A Registration Permit and Synthetic-minor Permit Emission Limits		
Pollutant	Current Option A Registration Permit Limits (tpy)	Synthetic-minor Individual State Permit Limits (tons/year)
CO	100	< 100
Nox	100	< 100
PM	100	< 100
PM-10	100	< 100
SO2	100	< 100
VOC	100	< 100
CO_2e	100,000	< 100,000
HAPs – Singe HAPs	10	< 10
HAP – Total Combined HAPs	25	< 25

The Clearbrook Terminal and pump stations are classified as minor sources under federal Prevention of Significant Deterioration ("PSD") regulations in 40 CFR 52.21 because each sources' potential to emit is and would remain less than the respective 250 and 100 tpy major PSD source thresholds.

L3R would not result in the source exceeding major HAP source emissions thresholds. The Clearbrook Terminal is and would remain an area (minor) source of HAP.

None of the sources would be required to conduct air dispersion modeling. Based on the proposed level of emissions, L3R does not have the potential to cause or contribute to a violation of any federal, state, or local air quality standards. L3R would not result in a significant impact to ambient air quality.

Several of the existing Clearbrook Terminal tanks are subject to new source performance standards under 40 CFR 60 subparts Kb which include requirements that would minimize air emissions from these sources.

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 L3R route 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 L3R route 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 L3R pipeline or associated facilities. The new emissions units constructed for L3R 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 L3R 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 would 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

SPP would include construction of stationary sources of air emissions at a new Clearbrook West Terminal located 3.8 miles northwest of the existing Enbridge Clearbrook Terminal and at a new mainline valve and PIG trap facility near Pine River, MN.

The Clearbrook West Terminal emissions would be generated primarily from two new external floating roof tanks and 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 site would be generated from PIG traps and piping components such as valves and flanges.

Air emissions from the operation of the Clearbrook West Terminal and Pine River site would be primarily comprised of VOCs and HAP. The Clearbrook West Terminal would also generate a nominal amount of GHG emissions from storage tank operation and combustion byproduct emissions from operation of the natural gas-fired emergency generator.

As previously described, L3R-related increases in VOC and HAP emissions from the Clearbrook Terminal and pump stations would not result in a significant impact on ambient air quality. The emission sources constructed for SPP would not operate in the same immediate geographic area around the Clearbrook Terminal or pump stations. As a result, Enbridge does not anticipate cumulative air impacts from the air emissions from L3R and SPP.

The EIS will summarize and refer to 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 to construct the pipeline would have a short-term impact on noise levels in the vicinity of the construction workspace. Typical pipeline 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 Beds

Based on examination of aerial photographs, there are approximately 422 noise sensitive receptors[75] ("SR") within 500 feet of the construction workspace, of which 52 SRs are within 50 feet of the construction workspace. In addition, 553 SRs are within one-half mile of HDD entry

[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).

and exit sites and 11 SRs are within one-half mile of blasting sites, as shown in Appendix I Because the L3R environmental survey area consists of primarily rural and undeveloped areas, the general public should experience limited nuisance noises. Ambient noise levels in such 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 L3R route including the pipeline, mainline valves, and cathodic protection systems during normal operation.

Associated Facilities

Clearbrook Terminal Expansion and Pump Stations

Construction-related noise impacts at the Clearbrook Terminal Expansion and the eight new or modified pump stations 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 Terminal Expansion and the new or modified pump stations. Enbridge'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 each facility. Appendix I presents the locations and distances of the SRs from L3R components. Additionally, Enbridge performed pre-construction noise quality analyses at select SRs for the Clearbrook Terminal Expansion and the new or modified stations. Results of these studies at locations within one-half mile of each station are included in Tables 17-2 through 17-9. Enbridge would conduct post-construction noise surveys at the SRs identified near each of the facilities.

Table 17-2
Preliminary Noise Quality Analysis for Modifications at the Donaldson Pump Station

Noise Sensitive Area ID	Distance an Direction [a]	Existing Sound Level (dBA) [b]	Est'd Sound Level of the New Pump Station (dBA)	Existing Sound Level + New L93 Pump Station (dBA)	Potential Change in Current Sound Level (dB)
NSA #1	980 feet (north)	45.7	50.0	51.3	5.6

[a] Approximate distance and direction from site acoustic center to site of noise quality analysis.
[b] "Lowest" sound level determined from a recent sound survey during station operation.
SR = noise sensitive receptor, such as a residence.
dB = decibels
dBA = A-weighted decibels

Table 17-3
Preliminary Noise Quality Analysis for Modifications at the Viking Pump Station

Noise Sensitive Area ID	Distance and Direction [a]	Existing Sound Level (dBA) [b]	Est'd Sound Level of the New Pump Station (dBA)	Existing Sound Level + New L93 Pump Station (dBA)	Potential Change in Current Sound Level (dB)
NSA #1	2,550 feet (south)	34.9	24.8	34.1	0.6

[a] Approximate distance and direction from site acoustic center to site of noise quality analysis.
[b] "Lowest" sound level determined from a recent sound survey during station operation.
SR = noise sensitive receptor, such as a residence.
dB = decibels
dBA = A-weighted decibels

Table 17-4
Preliminary Noise Quality Analysis for Modifications at the Plummer Pump Station

Noise Sensitive Area ID	Distance and Direction [a]	Existing Sound Level (dBA) [b]	Est'd Sound Level of the New Pump Station (dBA)	Existing Sound Level + New L93 Pump Station (dBA)	Potential Change in Current Sound Level (dB)
NSA #1	1,475 feet (WSW)	38.2	26.0	38.5	0.3
NSA #2	1,350 feet (east)	37.5	21.0	37.6	0.1

[a] Approximate distance and direction from site acoustic center to site of noise quality analysis.
[b] "Lowest" sound level determined from a recent sound survey during station operation.
SR = noise sensitive receptor, such as a residence.
dB = decibels
dBA = A-weighted decibels

Table 17-5
Preliminary Noise Quality Analysis for Modifications at the Clearbrook Terminal Expansion

Noise Sensitive Area ID	Distance and Direction [a]	Existing Sound Level (dBA) [b]	Est'd Sound Level of the New Pump Station (dBA)	Existing Sound Level + New L93 Pump Station (dBA)	Potential Change in Current Sound Level (dB)
NSA #3	1,850 feet (south)	37.9	25.0	38.1	0.8

[a] Approximate distance and direction from site acoustic center to site of noise quality analysis.
[b] "Lowest" sound level determined from a recent sound survey during station operation.
SR = noise sensitive receptor, such as a residence.
dB = decibels
dBA = A-weighted decibels

Table 17-6
Preliminary Noise Quality Analysis for the New Two Inlets Pump Station

Noise Sensitive Area ID	Distance and Direction [a]	Ambient Sound Level (dBA) [b]	Est'd Sound Level of the New Pump Station (dBA)	Existing Sound Level + New L93 Pump Station (dBA)	Potential Change in Current Sound Level (dB)
NSA #1	1,000 feet (east)	43.6	36.0	44.3	0.7
NSA #2	1,150 feet (WNW)	43.0	34.0	43.5	0.5

[a] Approximate distance and direction from site acoustic center to site of sound survey.
[b] "Lowest" sound level determined from a recent ambient sound survey.
SR = noise sensitive receptor, such as a residence.
dB = decibels
dBA = A-weighted decibels

Table 17-7
Preliminary Noise Quality Analysis for the New Backus Pump Station

Noise Sensitive Area ID	Distance and Direction [a]	Ambient Sound Level (dBA) [b]	Est'd Sound Level of the New Pump Station (dBA)	Existing Sound Level + New L93 Pump Station (dBA)	Potential Change in Current Sound Level (dB)
NSA #1	750 feet (north)	39.2	40.0	42.6	3.4

[a] Approximate distance and direction from site acoustic center to site of sound survey.
[b] "Lowest" sound level determined from a recent ambient sound survey.
SR = noise sensitive receptor, such as a residence.
dB = decibels
dBA = A-weighted decibels

Table 17-8
Preliminary Noise Quality Analysis for the New Palisade Pump Station

Noise Sensitive Area ID	Distance and Direction [a]	Ambient Sound Level (dBA) [b]	Est'd Sound Level of the New Pump Station (dBA)	Existing Sound Level + New L93 Pump Station (dBA)	Potential Change in Current Sound Level (dB)
NSA #1	1,150 feet (NE)	40.6	34.0	41.5	0.9
NSA #2	1,450 feet (SSW)	40.9	32.0	41.4	0.5
NSA #3	2,100 feet (east)	39.3	28.0	39.6	0.3

[a] Approximate distance and direction from site acoustic center to site of sound survey.
[b] "Lowest" sound level determined from a recent ambient sound survey.
SR = noise sensitive receptor, such as a residence.
dB = decibels
dBA = A-weighted decibels

Table 17-9 Preliminary Noise Quality Analysis for the New Cromwell Pump Station					
Noise Sensitive Area ID	Distance and Direction [a]	Ambient Sound Level (dBA) [b]	Est'd Sound Level of the New Pump Station (dBA)	Existing Sound Level + New L93 Pump Station (dBA)	Potential Change in Current Sound Level (dB)
NSA #1	1,650 feet (north)	38.4	32.0	39.3	0.9
NSA #2	1,750 feet (NW)	38.0	30.0	38.6	0.6

[a] Approximate distance and direction from site acoustic center to site of sound survey.
[b] "Lowest" sound level determined from a recent ambient sound survey.
SR = noise sensitive receptor, such as a residence.
dB = decibels
dBA = A-weighted decibels

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 23 mainline valve locations. These roads would receive occasional utilization only and would not have a significant impact on ambient noise levels.

CUMULATIVE EFFECTS

SPP would consist of 616 miles of new pipeline in Minnesota and would include the construction and operation of the Clearbrook West Terminal that would produce an insignificant amount of operational noise.

As previously described, L3R-related operational noise increases from the pump stations would not result in a significant impact to ambient noise. The Clearbrook West Terminal constructed for SPP would not operate in the same geographic area around the pump stations and therefore, would not impact the same NSRs. In addition, noise impacts from construction of both L3R and SPP would be intermittent and temporary. As a result, cumulative noise impacts from the construction or operation of L3R and SPP are not anticipated.

The EIS will summarize and refer to the Noise Impact analysis contained 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 Beds, and Access Roads

Parking considerations for construction of the pipeline, mainline valves, cathodic protection systems, and access roads are combined because the work associated with these facilities would be temporary and/or change location over time, as opposed to being focused to one location. Parking spaces do not currently exist near the pipeline, mainline valves, and cathodic protection systems associated with L3R 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 Terminal Expansion and Pump Stations

Parking considerations for construction of the Clearbrook Terminal Expansion and Donaldson, Plummer, Viking, Two Inlets, Backus, Cromwell, and Palisade Pump Stations are different from parking for construction of the pipeline, mainline valves, cathodic protection systems, and access roads because the work would occur at multiple 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 eight pump station locations, plus during peak construction times, workers would park at remote off-site locations and be shuttled to and from the facilities to limit the number of vehicles parked at or near the facilities. During operation of L3R, Enbridge estimates two parking spaces would be needed at each of the proposed pump stations with the exception of the Palisade Pump Station, which would need six parking spaces.

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

Pipeline, Mainline Valves, and Cathodic Beds

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 L3R 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 L3R route consists of U.S. highways, state highways, secondary state highways, county roads, and private roads. The principal roadways crossed by the L3R route include:

- Interstate 35;
- U.S. Highways:
    - 2, 59, 71, 75, and 169; and
- State Highways:
    - 1, 6, 11, 23, 32, 34, 64, 65, 73, 84, 92, 210, 223, and 371.

In addition to highway crossings, gravel roads could provide access to the L3R workspace during construction. The L3R route would cross 281 roads and 8 railroads; Appendix J provides a table of these crossings and the proposed crossing methods.

It is anticipated that a maximum of 2,450 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. Enbridge estimates that approximately 4,130 total vehicle trips would occur per day during the peak of construction. Construction activities would be dispersed throughout 12 counties in Minnesota and construction crews (personnel, vehicles, etc.) would be spread out into 6 spreads (see Figure 18-1); therefore, instead of experiencing 2,450 vehicles in one given area, this would equate to approximately 408 vehicles and 688 daily trips per spread.

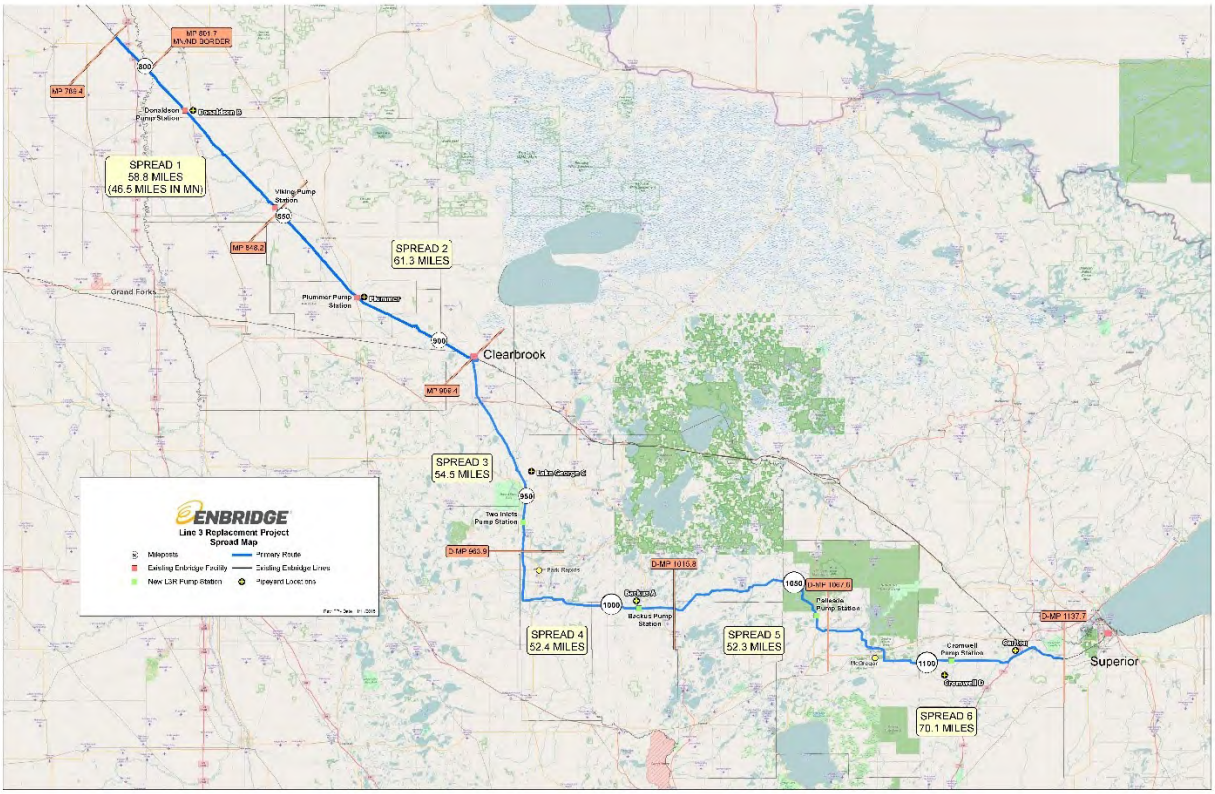

Figure 18-1 Spread Map for the Line 3 Replacement Project

Construction is anticipated to take approximately eight months, with a peak construction period of four to six months and construction crews working six days a week. An increased number of vehicles on nearby roadways would be encountered during morning and evening peak times, corresponding to normal workday 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 (MN DOT 2015). Table 18-1 lists the annual traffic amounts on roads crossed by the L3R route.

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

Road Name	L3R MP	SPP MP	AADT (vehicles per day)
Interstate 35	1122	588	5,000 to 24,999
U.S. Highways			
2	923	389	1,000 to 4,999
59	876	349	1,000 to 4,999
71	950, 960, 979	416, 426, 445	5,000 to 24,999
75	817	N/A	100 to 999

Table 18-1 AADT Associated with Major Roads Affected by the Line 3 Replacement Project and Sandpiper Pipeline Project			
Road Name	L3R MP	SPP MP	AADT (vehicles per day)
169	1060	526	1,000 to 4,999
State Highways			
1	857		1,000 to 4,999
6	1038	504	1,000 to 4,999
11	814	N/A	1,000 to 4,999
23	1136	601	100 to 999
32	864	336	1,000 to 4,999
34	969	435	1,000 to 4,999
65	1082	548	5,000 to 24,999
73	1105	571	1,000 to 4,999
75	N/A	319	1,000 to 4,999
84	1015	481	1,000 to 4,999
92	908	377	1,000 to 4,999
210	1086	552	1,000 to 4,999
223	915	381	100 to 999
371	1009	475	1,000 to 4,999
Source: MN DOT Traffic Forecasting & Analysis (2015), Traffic Mapping Application: http://mndotgis.dot.state.mn.us/tfa/Map			

Clearbrook Terminal Expansion and Pump Stations

The daily commute of construction workers, and the delivery of equipment and materials to the eight proposed pump stations could temporarily congest existing transportation networks during construction of these facilities. In general, each facility is 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 pumps stations are listed below:

- Donaldson — U.S. Highway 75, State Highway 11
- Viking — U.S. Highway 59, State Highway 1, County Road 2
- Plummer — U.S. Highway 59, County Road 1
- Clearbrook Terminal — State Highway 92, County Road 49 / 74
- Two Inlets — U.S. Highway 71
- Backus — State Highways 371 and 87, County Road 27 / 113
- Palisade — U.S. Highway 169
- Cromwell — State Highways 210 and 73, County Roads 4 and 129

It is anticipated that between 81 and 86 vehicle trips per day at each facility would be required to support construction of the eight proposed pump stations. Construction is anticipated to take approximately eight months with construction crews working six 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 flow estimates at each of the eight pump stations are based on the following assumptions:

- Five inspectors (one chief inspector and four discipline inspectors), two trips/day;
- One Environmental/Engineering Project Manager/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;
- Materials delivery trucks, four trips/day;
- Eight contractor support trucks, two trips/day;
- 20-cubic-yard end dump trucks for soil handling (top soil removal, subsoil fill), 40 to 60 trips/day generally occurring within the first two months of construction; and
- 10-cubic-yard concrete trucks, 20 to 30 trips/day generally occurring between months two to four of construction.

Construction traffic volume would follow a bell shaped curve over the eight-month construction timeframe, with a peak period of four to six months occurring in the early-mid portion of the eight-month 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 L3R route.

During operation of the Project, it is estimated that one vehicle trip per day (two total) would be needed at the Clearbrook Terminal Expansion and six of the pump stations (Donaldson, Plummer, Viking, Two Inlets, Backus, Cromwell); the Palisade Pump Station would require 11 vehicle trips per day (22 total). During operation, it is estimated that 90 percent of the vehicle traffic in and out of the eight proposed pump stations would occur 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 roads would be constructed to each mainline valve site for use during operation of the pipeline. New permanent access roads would not be needed for any of the pump stations because they are located adjacent to existing roadways. However, Enbridge would improve/widen existing township roads at the Two Inlets and Palisade Pump Stations (300th Street and 510th Lane, respectively).

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 AND MITIGATION

Pipeline, Mainline Valves, and Cathodic Beds

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 J). 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 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 L3R 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 L3R.

Other Transportation Facilities

According to data from MNDOT, there are two airports located within 1 mile of L3R:

- Bagley Municipal Airport in Clearwater County near MP 923; and
- McGregor – Isedor Iverson Airport in Aitkin County near MP 1082.

No airports would be affected by L3R. 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 Enbridge would consult with FAA regarding construction techniques and potential construction impacts during the permitting process.

Clearbrook Terminal Expansion and Pump Stations

Construction activities at Clearbrook Terminal Expansion and seven other proposed pump stations 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 D). Following construction access road improvements would be removed and roads restore to their pre-construction condition.

CUMULATIVE EFFECTS

Although there would be direct effects on transportation due to the construction of L3R, 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 Enbridge 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. Enbridge 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 Sandpiper project are described below.

SANDPIPER PIPELINE PROJECT (SPP) CUMULATIVE EFFECTS

When considering the potential cumulative effects of L3R, the Minnesota portion of SPP was identified as having the potential for cumulative effects on the resources that would be impacted by L3R due to the overlap in both geographic and temporal scales. Where cumulative impacts are referenced in this document, it refers to L3R/SPP and associated facilities only. This EAW and all following discussions assume 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, therefore resulting in a cumulative potential effect on the resources impacted by SPP. In addition, L3R would utilize the same mainline valves, access roads, and cathodic protection systems east of Clearbrook, 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 discussion in each resource section. The incremental impacts associated with L3R as the second pipeline are presented in Appendix K. In addition, any other permitted or planned projects in the region that could contribute to effects of resource areas will be addressed in the cumulative impacts section of the EIS.

In Minnesota, SPP includes approximately 303 miles of new underground crude oil pipeline. Approximately 73 miles of new 24-inch diameter pipeline, beginning at the North Dakota/Minnesota state line near Grand Forks, North Dakota would extend to a new SPP terminal near Clearbrook, Minnesota. The SPP and L3R routes would join near Clearbrook, Minnesota (see Figure 19-1). SPP would then include approximately 230 miles of new 30-inch diameter pipeline from the SPP terminal to the Minnesota/Wisconsin border. The SPP route would cross portions of Polk, Red Lake, Clearwater, Hubbard, Wadena, Cass, Crow Wing, Aitkin, and Carlton counties.

Because the indirect impacts associated with the construction of L3R could extend beyond the L3R 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 (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 L3R are not expected to

extend beyond the L3R footprint; therefore only the SPP 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 Sandpiper 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.

As discussed in Section 6.b, the following transmission lines are anticipated to be constructed to serve each of the four new pump stations:

- An approximate 7.0 mile line near the Two Inlets pump station;
- An approximate 2.5 mile line near the Backus pump station;
- An approximate 13.0 mile line near the Palisade pump station; and
- An approximate less than 0.25 mile line near the Cromwell pump station.

The transmission company or companies would submit a separate application(s) to the appropriate federal, state, and/or local agencies for the resources impacted. Cumulative effects of these transmission lines are not further discussed in this EAW.

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

Table 19-1
Geographic and Temporal Scales used to Evaluate Cumulative Effects of the Line 3 Replacement Project

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

Table 19-1 Geographic and Temporal Scales used to Evaluate Cumulative Effects of the Line 3 Replacement Project				
Resource	Environmentally Relevant Geographic Scale	Corresponding L3R MP [a]	Corresponding SPP MP [a]	Temporal Scale
Fish, wildlife, and plant communities	Watersheds (HUC 8 level)	850.1	303.9	Overlapping construction timeframe or consecutively constructed projects
Soils	Overlapping Construction Footprint	912.3	379.2	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	912.3	379.2	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.

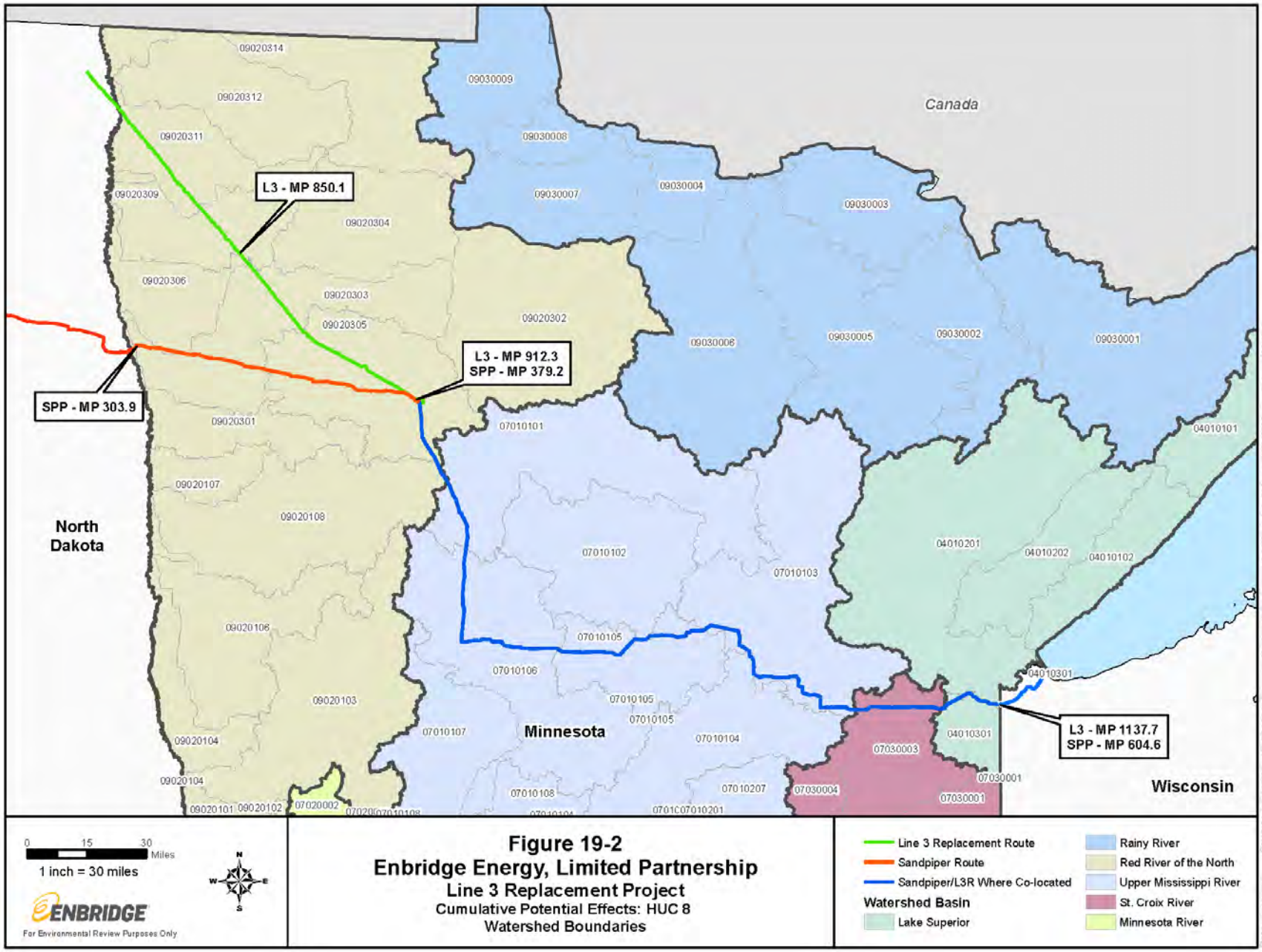

Figure 19-2
Enbridge Energy, Limited Partnership
Line 3 Replacement Project
Cumulative Potential Effects: HUC 8 Watershed Boundaries

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 February 1, 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

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ACRONYMS

AADT	Annual Average Daily Traffic
AMA	Aquatic Management Area
ATWS	Additional Temporary Workspace
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
Control Center	Enbridge Control Center
CCRG	Commonwealth Cultural Resource Group
CFR	Code of Federal Regulations
CO	Carbon Monoxide
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

EIS	Environmental Impact Statement
Enbridge	Enbridge Energy, Limited Partnership
EO	Element Occurrence
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESB	Electrical Service Building
GHG	Greenhouse gas
HAP	Hazardous Air Pollutants
HDD	Horizontal Directional Drill
HP	Horsepower
HUC	Hydrologic Unit Code
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
Merjent	Merjent, Inc.
MLRA	Major Land Resource Area
MDNR	Minnesota Department of Natural Resources
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
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
NWI	National Wetlands Inventory
PIG	Pipeline Inspection Gauge
PM2.5	Particulate Matter Less Than 2.5 Microns In Diameter
PM10	Particulate Matter Less Than 10 Microns In Diameter
PSD	Prevention of Significant Deterioration
PWI	Public Waters Inventory
ROW	Right-of-way
SHPO	State Historic Preservation Office
SNA	Scientific Natural Area
SO_2	Sulfur Dioxide
SPP	Sandpiper Pipeline Project
SR	Noise Sensitive Receptors
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