TABLE OF CONTENTS

Page

LIST OF FIGURES

Page

LIST OF TABLES

Page

This page intentionally left blank.

Chapter 2
Project Description

Enbridge Energy, Limited Partnership (Enbridge, or Applicant) proposes to construct, operate, and maintain a pipeline and related facilities to transport crude oil from its existing facilities in Edmonton, Alberta, Canada, to its existing terminals in Clearbrook, Minnesota, and Superior, Wisconsin. Enbridge has termed this proposed Project the "Line 3 Replacement Project." This chapter describes Enbridge's proposed Project, including Enbridge's proposed action within Minnesota and those portions of the Project that lie within North Dakota and Wisconsin. Detailed maps along the Applicant's preferred route are provided in Appendix A.

The Project information in this chapter is primarily based on public filings by the Applicant.

2.1 PROJECT SUMMARY

The Project Would Replace an Aging Pipeline and Increase Throughput

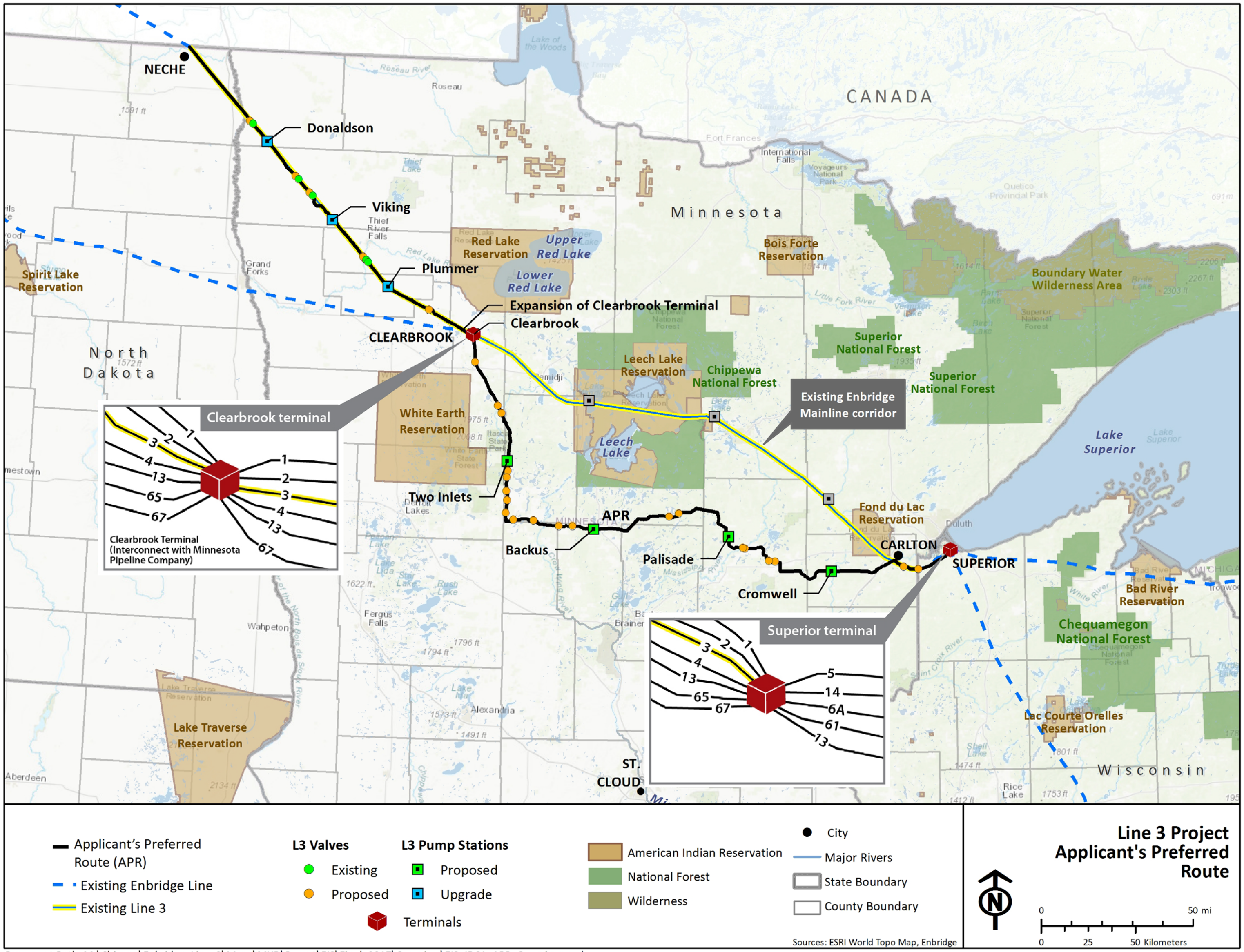
Enbridge's proposed Project would be constructed with a 36-inch-diameter pipeline and associated facilities to replace the existing 34-inch-diameter Line 3 pipeline, which currently crosses Minnesota as part of the Enbridge Mainline system corridor. Enbridge has indicated that the new pipeline would address safety and reliability, restore the line's capacity to carry heavy crude oils, and allow transport of 760,000 barrels per day (bpd), equivalent to 256,120 million barrels per day-miles, an increase over the current Line 3 operating level of 390,000 bpd.[1]

The Project Would Primarily, but Not Always, Follow Existing Rights-of-Way

Enbridge's proposed Line 3 pipeline route would begin at the Joliette Valve near Neche, North Dakota, and extend 365 miles across Minnesota to the Superior terminal at Superior, Wisconsin (Figure 2.1-1). Approximately 340 miles of the route would be located in Minnesota. The proposed Line 3 pipeline permanent right-of-way would follow the existing Enbridge Line 67 pipeline in the Enbridge Mainline corridor for approximately 110 miles from North Dakota to the existing Clearbrook terminal in Clearwater County. The right-of-way would diverge from the Mainline corridor at the Clearbrook terminal, routing south and then east for approximately 220 miles, where it would then rejoin the Mainline corridor near Carlton, Minnesota, and extend for approximately 10 miles to the Minnesota-Wisconsin border.

From the Clearbrook terminal to Carlton, the right-of-way would primarily follow third-party pipeline, utility, and transportation corridors, although some construction would occur through areas where no third-party utilities are present.

[1] One barrel of crude oil is equivalent to 42 gallons.



Document Path: M:\Chicago\Enbridge_Line_3\Maps\MXD\Report\EIS\Final_2017\Overview\EIS_ID61_APR_Overview.mxd

Figure 2.1-1. Overview of the Applicant's Preferred Route for the Line 3 Project

The proposed Line 3 route as depicted on figures throughout the EIS indicates that it does not cross reservation boundaries. The Applicant has noted in their comments that consideration was made for the avoidance of the two reservations, which the existing Line 3 crosses. However, some depictions of the White Earth Reservation boundaries indicate that the Applicant's preferred route would cross the northeastern corner of the reservation. The Applicant has proposed route segment alternative (RSA) 05 to avoid this area due to existing watersheds and hydrologic connections. Figure 9-3 depicts the differences in the boundaries, dependent on the source of information used. For the purposes of this EIS, the US Census boundary is used, thereby showing that the Applicant's preferred route does not cross reservations.

Enbridge Has Requested a 750-Foot Route Width for the Construction Phase

Enbridge has requested that the Commission permit a 750-foot route width (375 feet on each side of the proposed Line 3 pipeline centerline). The 50-foot permanent right-of-way would be located within this 750-foot corridor. The 750-foot route width would encompass construction workspace for the pipeline and associated facilities, and would allow Enbridge to make small-scale refinements of the pipeline centerline within the corridor, as needed, prior to and during construction.

Enbridge's application materials use the term "construction right-of-way" when referring to the temporary construction areas located alongside the permanent right-of-way that would be used temporarily for construction of the pipeline (see Section 2.7.1.2). The Applicant uses the term "construction workspace" to encompass additional temporary workspaces, or ATWS (see Section 2.3.5). This Environmental Impact Statement (EIS) uses the term "construction work area" when referring to the temporary construction areas located alongside the permanent right-of-way, and uses the term "ATWS" when referring to the areas required for staging equipment, storing some excavation spoil materials, and providing additional workspace where required for special construction methods.

Pump Stations, Valves, Roads, and Cathodic Protection Systems Also Would Be Constructed

The proposed Project includes constructing and operating (new or modified) pump stations, mainline valves (MLVs), block valves, cathodic protection systems, pipe yards, and permanent access roads. During construction, additional temporary material storage yards, contractor yards, and access roads would be required.

Pump stations include expansion of three existing pump stations in Kittson, Marshall, and Red Lake counties; expansion of one pump station and existing equipment at the Clearbrook terminal in Clearwater County; and construction of four new pump stations in Hubbard, Cass, Aitkin, and Carlton counties. Remotely controlled MLVs would be installed along the new pipeline to control and stop the flow of oil and to isolate segments of the pipeline should a pipeline leak or to perform pipeline repairs. These valves generally would be installed near populated areas, major waterbody crossings, drinking water resources, and environmentally sensitive areas. Cathodic protection systems would be installed with the buried pipelines to reduce external corrosion on the pipeline.

During Construction, the Project Would Require Additional Staging and Material Storage Areas

During construction, Enbridge would temporarily use off-pipeline-route areas (yards) for pipe and material storage, to receive deliveries of materials by rail (at rail sidings), and to park equipment and stage construction activities. Pipe yards and rail sidings would be located in Polk, Hubbard, Cass, Carlton, Red Lake, Kittson, and Beltrami counties. Contractor yard locations would be identified as planning and engineering for the Project progresses. Enbridge would attempt to use existing public or privately owned roads to gain access to construction work areas along the right-of-way. Where public or privately owned roads are not available, Enbridge would construct new access roads. Enbridge would also construct permanent access roads to each MLV and pump station.

The installed pipeline and other permanent facilities would require 2,057 acres of land; 3,480 additional acres would be required for construction.

The Existing Pipeline Would Be Removed in Accord with Existing Regulations

Enbridge proposes to permanently remove the existing Line 3 pipeline from service (i.e., abandon the pipeline) once the proposed Line 3 pipeline is placed into service (for more details on abandonment see Section 2.9, Chapter 8, and Appendix B). Following 49 Code of Federal Regulations (CFR) 195.402 (c)(10), which details the process and requirements for pipeline abandonment, Enbridge would disconnect the existing Line 3 pipeline at each of the pump stations, purge the pipeline of all combustible materials, and permanently seal the ends of the pipeline. Enbridge would file a report with the Pipeline and Hazardous Materials Safety Administration (PHMSA) to identify where the pipeline is abandoned wherever it crosses over, under, or through a commercially navigable waterway.

2.2 PROJECT PURPOSE

Corrosion and Cracking of the Existing Pipeline Have Reduced Performance

The Line 3 Project would replace the existing Line 3 pipeline within the Enbridge Mainline pipeline system. The Enbridge Integrity Management Program, comprising inspections, repair, and maintenance, has detected a high amount of corrosion and long-seam cracking along the existing Line 3 pipeline.

A consent decree between Enbridge and the U.S. Department of Justice entered by the Justice Department in September 2016 on behalf of the U.S. Environmental Protection Agency and the U.S. Coast Guard (81 Federal Register 62536), revised in May 2017, requires replacement of Line 3. Until it is replaced, heightened integrity work and reduced operating pressures will be required. The consent decree has not been finalized at this time, but the draft consent decree is incorporated here by reference.[2]

Enbridge reduced discharge pressures of the Line 3 pump stations in 2008, extended the pressure reduction to the entirety of the Line 3 pipeline in 2010, and proportionately reduced the maximum allowable operating pressure of the Line 3 pipeline in 2012.

Enbridge Believes Replacing the Existing Pipeline Is Less Expensive and Avoids Extensive Inspections

Despite reducing pressure at the pump stations, along the entire line, and reducing the maximum allowable pressure, 4,000 integrity digs over the next 15 years along the U.S. portion of the line would be necessary if the Line 3 pipeline remained in service. According to Enbridge, constructing their proposed Project would be less expensive for the company than conducting the integrity dig program. Enbridge believes that installation of the proposed Line 3 pipeline would be less invasive than continuously conducting digs along the existing right-of-way to maintain and repair the existing Line 3 pipeline. Enbridge has estimated that it would cost $30 to $40 million per year to maintain the U.S.

---

2 United States of America v. Enbridge Energy, Limited Partnership, Draft Revised Following Public Comment available at: https://www.epa.gov/enbridge-spill-michigan/revised-enbridge-consent-decree.

portion of the existing Line 3 pipeline. For comparison, Enbridge estimates maintaining the proposed Line 3 pipeline would cost approximately $2 million (Enbridge 2014).

Enbridge States that Demand for Canadian Crude Oil Exceeds Current Capacity

The proposed Line 3 pipeline would be designed to transport light and heavy crude oil. The crude oil refineries of Minnesota and the other states in the northern portion of the Petroleum Administrative Defense District II, which includes Minnesota and the surrounding states of the Midwest, rely solely on crude oil transported from western Canada and the United States. The Enbridge Mainline system transported upward of 74 percent of Canadian crude oil consumed in Petroleum Administrative Defense District II in 2014. Nonetheless, Enbridge maintains the demand for crude oil feedstock from western Canada is currently greater than the capacity of the Enbridge pipeline system.

Enbridge has Indicated that Expanded Capacity Would Reduce Curtailment and Improve Operational Flexibility

As a common carrier, Enbridge is required to treat all similarly situated crude oil customers on the Enbridge Mainline system without discrimination. Thus, when demand from refineries is greater than the capacity of the pipeline system, Enbridge must apportion the pipeline capacity as regulated by the Federal Energy Regulatory Commission, typically resulting in all refineries receiving less capacity to transport crude oil nominations than requested.

Enbridge's objective for the proposed Line 3 Project would be to restore the capability of this line to carry heavy crude and increase capacity, which would allow operational flexibility to the Enbridge system. This would reduce ongoing and forecasted apportionment to the refining industry in eastern Canada, the Gulf Coast, and the Midwest, including the Flint Hills and Northern Tier Energy refineries in Minnesota. Although the increased capacity of the proposed Line 3 pipeline would not be sufficient to meet all of the demand noted, Enbridge's goal would be to increase its ability to respond to fluctuating demand of different refineries in the United States in general and in Minnesota in particular.

Expanded Capacity Would Improve Energy Efficiency on Enbridge's System

According to Enbridge, the increased capacity of the proposed Line 3 pipeline also would increase the energy efficiency of transporting crude oil. The gain in energy efficiency would result from the principle that pumping the same volume of crude oil through a 36-inch-diameter pipeline as through a 34-inch-diameter pipeline requires lower pressure due to decreased friction in the larger pipeline. The lower pressure required translates to less horsepower, and consequently less energy, needed to operate the pumps. Increased operational flexibility resulting from increased capacity would allow Enbridge to operate its pipeline system as efficiently as possible.

2.3 PROPOSED FACILITIES

The permanent and temporary facilities proposed to be constructed or used as part of the proposed Line 3 Project are (as discussed below) the pipeline, associated facilities, permanent access roads, temporary contractor and material/pipe storage yards, additional temporary workspaces, and temporary access roads.

An overview of the Applicant's preferred route and proposed facilities is shown in Figure 2.1-1. Land requirements for the installed pipeline and other permanent facilities would be 2,134 acres;

3,309 additional acres would be required for construction. Detailed route maps are provided in Appendix A.

2.3.1 Pipeline

Proposed Pipeline Would Primarily Follow Existing Rights-of-Way

In Minnesota, Enbridge's proposed Line 3 pipeline would consist of approximately 340 miles of new 36-inch-diameter underground pipeline that would enter Minnesota approximately 10 miles southwest of the city of Hallock in Kittson County and traverse southeast through Marshall, Pennington, Red Lake, and Polk counties to the existing Enbridge Clearbrook terminal in Clearwater County. The proposed Line 3 pipeline right-of-way would be primarily co-located with the Enbridge Line 67 pipeline for 110 miles from where the right-of-way would enter Minnesota to the Clearbrook terminal.

From the Clearbrook terminal, the route would continue south through Clearwater and Hubbard counties and then turn east through Wadena, Cass, Crow Wing, Aitkin, and Carlton counties (Table 2.3-1). Throughout this area, the proposed Line 3 pipeline right-of-way would be primarily co-located with the Minnesota Pipe Line Company pipeline right-of-way until it reached the southern extent of Hubbard County. At the southern end of Hubbard County, the right-of-way would turn and be routed eastward, where it would then be generally co-located with third-party electric transmission, pipeline, and transportation corridors, although some portions would not be co-located with existing utility corridors.

Table 2.3-1. Pipeline Length by County for the Line 3 Project

County	Milepost Range[a]	Approximate Pipeline Length	
		Miles	Percent
Kittson	801.8 – 816.9	15.4	4.5
Marshall	816.9 – 851.7	36.3	10.7
Pennington	851.7 – 871.3	19.7	5.8
Red Lake	871.3 – 886.9	15.7	4.6
Polk	886.9 – 900.5	14.0	4.1
Clearwater	900.5 – 942.8	42.2	12.4
Hubbard	942.8 – 987.4	44.6	13.1
Wadena	987.4 – 994.4	7.1	2.1
Cass[b]	994.4 – 1015.8	21.4	6.3
	1020.6 – 1046.7	26.1	7.7
Crow Wing	1015.8 – 1020.6	4.8	1.4
Aitkin	1046.7 – 1098.3	51.6	15.2
Carlton	1098.3 – 1139.3	41.0	12.1
TOTAL		**339.7**	**100**

[a] Milepost numbering begins at the Hardisty terminal in Alberta, Canada. Mileposts are used as reference markers only; they are not accurate indicators of pipeline lengths.

[b] Two milepost ranges are presented for Cass County because the route would exit Cass County into Crow Wing County and then re-enter Cass County.

The proposed Line 3 pipeline would cross the Minnesota-Wisconsin border in Carlton County approximately 12 miles southeast of the city of Cloquet, Minnesota (Figure 2.1-1). Approximately 3 miles southwest of the city of Carlton, the right-of-way would rejoin and be co-located with the Enbridge Mainline system for approximately 10 miles until it crossed the Minnesota-Wisconsin border in eastern Carlton County.

The Life of the Proposed Pipeline Could Be Indefinite, with an Economic Life of More Than 30 Years

The Applicant anticipates that the physical life of the proposed Line 3 pipeline (i.e., the number of years that the pipeline would be capable of transporting crude oil) would be indefinite given appropriate construction, maintenance, and integrity systems. The economic life of the Project (i.e., the number of years that continued operation of the Project would be feasible) is anticipated to be no less than 30 years.

Design Capacity Would Be 844,000 bpd, with Annual Capacity of 760,000 bpd

The capacity of a liquids pipeline is expressed as design capacity or annual capacity. "Design capacity" is the theoretical flow rate of a pipeline for a specific type of liquid and is calculated assuming theoretically ideal operating conditions. In liquid petroleum pipelines, the design capacity is the maximum instantaneous throughput that a pipeline is capable of achieving under design conditions for a specific liquid. The design capacity of the proposed Line 3 pipeline would be 844,000 bpd, assuming that the total volume of crude oil transported by the pipeline would consist of 65 percent heavy crude oil and 35 percent light crude oil. This flow rate is also based on the number, spacing, and horsepower of the pump stations that are proposed.

"Annual capacity" is the average sustainable throughput over a year and is calculated assuming average annual historical operating conditions, including scheduled and unscheduled maintenance and the availability of crude oil. The annual capacity of a pipeline is typically 90 percent of its design capacity. Based on the proposed pipeline design and pumping capacity, the annual capacity of the proposed Line 3 pipeline would be approximately 760,000 bpd.

The maximum allowable operating pressure would be 1,440 pounds per square inch gauge (psig). The pipeline would be designed to withstand pressures over and above normal operating pressures, and would operate according to applicable codes and regulations.[3]

2.3.2 Associated Facilities

Associated Facilities Were Located after Hydraulic Studies and in Accord with Federal Regulations

Additional facilities associated with the proposed Line 3 pipeline include modified and new pump stations, MLVs, and cathodic protection systems.

Appropriate locations for pump stations along the pipeline route were determined by hydraulic studies of the pipeline operations that optimized pumping requirements at the design capacity. Optimizing the pumping requirements in turn minimizes the amount of energy needed for pumping.

[3] 49 CFR 195 Subpart F.

MLVs were located based on federal regulations[4] for protection of human and natural resources during hydraulic operation of the pipeline.

Cathodic protection sites were located adjacent to the permanent pipeline right-of-way as required to meet the operational requirements of the cathodic protection system.

The location of pump stations and currently planned MLVs are shown in Figure 2.1-1.

2.3.2.1 Pump Stations

2.3.2.1.1 Modification of the Clearbrook Terminal

Area of Clearbrook Terminal Would Permanently Expand by About 13 Acres

As part of the proposed Project, Enbridge would modify and expand the existing Clearbrook terminal at milepost (MP) 909.4 in Clearwater County, Minnesota. The expansion would include installation of four additional pumps and associated equipment, including:

- Four 7,000-horsepower (hp) electric motor and pump units;
- Two 7,000-hp variable frequency drives;
- A crude oil reinjection pump and sump tank;
- A 36-inch pipeline inspection gauge (PIG) launcher;
- Valves, metering equipment, pump station-to-terminal interconnections, and associated terminal piping;
- Instrumentation and monitoring equipment; and
- Associated electrical facilities, including a substation with redundant utility transformers and breakers.

Additional modification of the Clearbrook terminal would include:

- An additional 36-inch PIG receiver;
- A pressure relief system;
- Additional valves, metering equipment, terminal piping, and manifold interconnections;
- Instrumentation and monitoring equipment and associated electrical facilities; and
- A 16-inch meter manifold run with associated valves, interconnections, piping, instrumentation, electrical facilities, and sample system, which would be added to the existing meter manifold 152.

---

4 49 CFR 195.260. (See details in Section 2.3.2.2.).

The existing Clearbrook terminal would be permanently expanded by approximately 13 acres. An additional approximately 2 acres would be temporarily disturbed during construction of the Clearbrook terminal expansion (Table 2.3-2). This acreage would be restored to preconstruction conditions once construction is complete. Plot plans showing the boundary of the Project area for expansion of the Clearbrook terminal, including electrical and spill containment facilities associated with the existing Clearbrook terminal and details of pipeline routes in the vicinity of the expanded terminal, are provided in Appendix C.

Table 2.3-2. Locations and Land Requirements for the Clearbrook Terminal Expansion and Pump Stations for the Line 3 Project

Facility	County	Milepost	Construction Area (acres)	Permanent Area (acres)
Terminal Expansion				
Clearbrook terminal	Clearwater	909.4	15.3	13.3
Modification of Existing Pump Stations				
Donaldson pump station	Kittson	814.5	8.0	7.1
Viking pump station	Marshall	848.2	10.1	7.7
Plummer pump station	Red Lake	877.0	8.2	8.2
Subtotal			***26.3***	***23.0***
New Pump Stations				
Two Inlets pump station	Hubbard	956.1	10.1	8.1
Backus pump station	Cass	1006.7	9.4	7.4
Palisade pump station	Aitkin	1061.2	9.3	7.3
Cromwell pump station	Carlton	1108.1	7.3	5.7
Subtotal			***36.1***	***28.5***
TOTAL			**77.7**	**64.8**

2.3.2.1.2 Modification of Existing Pump Stations

Twenty-three Acres Would Be Permanently Disturbed by Pump Station Modifications

Enbridge would modify three existing pump stations located along the Enbridge Mainline system corridor right-of-way west of the Clearbrook terminal. At each facility, Enbridge would install additional pumps, MLVs, metering and monitoring equipment, and associated electrical facilities.

Each pump station, including the Clearbrook terminal, would have a maximum allowable operating pressure of 1,440 psig and an average annual capacity of 760,000 bpd. The maximum power capacity of each individual motor at the facilities would be 7,000 hp.

Approximately 26 acres would be temporarily disturbed during construction of the modified pump stations, and 23 acres would be permanently converted as a result of the modifications. Plot plans showing the boundary of the Project area for expansion of the existing pump stations, including the electrical and spill containment facilities associated with the existing pump stations and details of pipeline routes through the pump stations, are provided in Appendix C.

2.3.2.1.3 New Pump Stations

Twenty-nine Acres Would Be Permanently Disturbed by Construction of New Pump Stations

Enbridge would construct new pump stations at four locations along the right-of-way east of the Clearbrook terminal. Each facility would contain two to three 7,000-hp motor and pump units with a maximum operating pressure of 1,440 psig and an average annual capacity of 760,000 bpd. The stations would also include MLVs, metering, monitoring equipment, and associated electrical facilities. In addition, the Backus pump station would contain a PIG receiver and launcher traps (see Section 2.8.2.1 for additional information on PIGs).

A total of 36 acres would be temporarily disturbed during construction of the new pump stations, and 29 acres would be permanently converted (Table 2.3-2).

2.3.2.2 Mainline Valves and Pressure Transmitters

MLVs and Pressure Transmitters Would Be Placed to Best Protect the Environment

MLVs are remotely controlled valves that are operated to shut down movement of oil in the pipeline and to isolate segments of the pipeline in the event of a leak or to perform pipeline repairs. MLVs are used as safeguards near populated areas, major waterbody crossings, drinking water sources, and environmentally sensitive areas identified during environmental review and permitting.

Each MLV location would contain a slide gate valve that could be remotely controlled from the Enbridge Control Center or manually operated; digital pressure and temperature monitoring equipment; and associated electrical and communications equipment necessary to control the MLVs and transmit pressure and temperature information to the Control Center.

Enbridge conducted an analysis to determine the most appropriate locations for MLVs in compliance with the requirements of 49 CFR Part 195.260. Once the optimal locations for MLVs are chosen, Enbridge must then conduct field surveys to confirm that there are no constraints to locate the MLVs at the given sites, obtain landowner agreement to locate the MLVs at the given sites, and submit the final locations listing to PHMSA for review to confirm compliance with 49 CFR Part 195.260. Based on these criteria, Enbridge is proposing to install 27 MLVs. As a result of the action of permitting agencies with jurisdiction, including PHMSA, however, the final number and location of MLVs may be modified.

MLVs and Pressure Transmitters Would Require Negligible Space

Enbridge also would install two pressure transmitters in conjunction with the MLVs. Pressure transmitters monitor pipeline pressure at specific points and transmit the values electronically to a control system. Pressure transmitters and MLVs are located within the permanent right-of-way; therefore, their number and location do not affect the total land area required for construction and operation of the proposed Project. A typical valve installation in the permanent pipeline right-of-way is shown in Figure 2.3-1. Each valve would be enclosed within a security fence and encompass an area of approximately 0.1 acre.

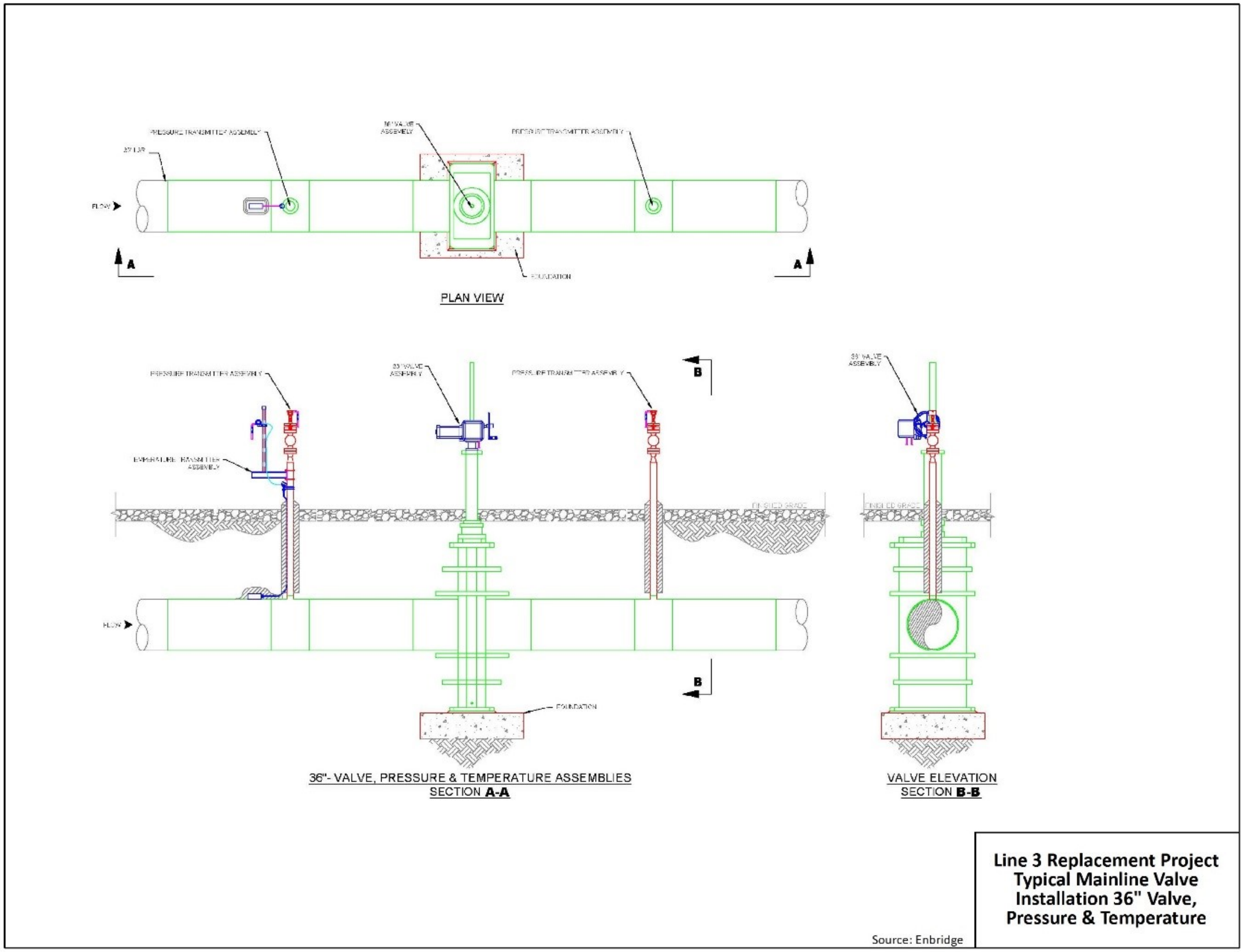


Figure 2.3-1. Typical Mainline Valve Installation

2.3.2.3 Cathodic Protection Systems

Cathodic Protection Would Be Operational Within a Year after Construction

The buried pipeline would be protected from external corrosion by application of a coating to the pipeline and by installation and operation of a cathodic protection system. A cathodic protection system must be constructed and operated in accordance with the requirements of 49 CFR Subpart H – Corrosion Control (Section 195.563 and Sections 195.567 through 195.577), which require the cathodic protection system be operational within one year of construction. The cathodic protection system electrically connects the pipeline to anodes buried in ground beds adjacent to the pipeline and located along the pipeline route. The cathodic protection system would be located within the right-of-way disturbed for construction.

The area necessary for the cathodic protection system anode beds would range between 0.2 and 0.6 acre per system, and the only aboveground features at each site would be a junction box and small-diameter vent pipe installed above the deep well beds.

Enbridge also would install alternating current/direct current mitigation to protect the pipeline and cathodic protection system from electromagnetic-induced voltage and stray current from co-located electric transmission lines. Enbridge would assess the electric transmission lines (that the proposed Line 3 pipeline would be co-located with) to determine the extent of cathodic protection necessary for the Project. Section 195.563 of 49 CFR Subpart H – Corrosion Control states that cathodic protection must be in operation no later than 1 year after the pipeline is constructed.

Preliminary locations for components of the cathodic protection system have been identified by Enbridge within their Environmental Assessment Worksheet (EAW).[5]

2.3.3 Permanent Access Roads

Permanent Roads Would Provide Access to Pump Stations and MLVs

Enbridge proposes to construct or improve permanent roads along the permanent right-of-way to access the pump stations. Enbridge also proposes to construct permanent roads along the permanent right-of-way to access the MLVs in accordance with the request of the Minnesota Public Utilities Commission. The amount of land required would range from 0.1 to 0.5 acre, with the average being closer to 0.1.

2.3.4 Temporary Contractor and Material/Pipe Storage Yards

Temporary Construction Sites Would Be Restored After Use

Construction of the proposed Line 3 pipeline would require that land be temporarily used for pipe and materials storage, construction staging, and offloading rail deliveries of construction materials. These pipe and material storage yards, contractor yards, and rail sidings would be located apart from the pipeline right-of-way.

Enbridge proposes to lease the sites on which the yards would be located and restore the land to its general condition prior to use once it is no longer required for construction. Several locations for pipe yards have received National Pollutant Discharge Elimination System (NPDES) Construction Stormwater

[5] Enbridge 2016, page 36.

(CSW) permits through the Minnesota Pollution Control Agency (Minnesota PCA). These NPDES permits authorize ground disturbance with approved protection measures to manage soil erosion and stormwater discharge on the construction sites.

Temporary Sites Chosen by Proximity, Accessibility, Ability to Be Restored, and Landowner Approvals

These NPDES permits authorize ground disturbance with approved protection measures to manage soil erosion and stormwater discharge on the construction sites. Rail sidings would be placed on land currently used for railroads, and pipe yards would be located on cultivated or uncultivated agricultural land. The locations of contractor yards would be determined as Project planning progresses. Locations for contractor yards would be chosen based on their proximity to the construction work area, access by sufficient load-rated haul roads, water drainage capabilities from soil and topography at the sites, ability for restoration of the sites to preconstruction conditions, avoidance of any sensitive cultural or environmental resources including public and private drinking water wells, and landowner approvals.

2.3.5 Additional Temporary Workspaces

Each ATWS Would Require Less Than Half an Acre

Outside of the construction work area along the pipeline alignment, ATWS would be required for staging equipment, storing some excavation spoil materials, and providing additional workspace where required for special construction methods. ATWS might, for example, be needed where the pipeline crosses waterbodies, wetlands, steep slopes, roads, railroads, and other pipelines or utilities. ATWS will also use appropriate stormwater erosion prevention and sediment control best management practices (BMPs) per Minnesota PCA's NPDES CSW Permit.

Additionally, ATWS would be required for accommodating equipment and resources necessary at horizontal directional drilling (HDD) sites and for withdrawing and discharging water during cleaning and hydrostatic testing of the pipeline. Generally, ATWS would be located adjacent to the construction work area and measure half an acre or less. Dimensions of ATWS would vary according to site-specific conditions.

2.3.6 Temporary Access Roads

Two Hundred Eighty-eight Proposed Access Roads Would Disturb Approximately 271 Acres

During construction, Enbridge proposes to use public roads wherever possible. Where public roads do not cross the right-of-way, Enbridge would request the use of privately owned roads. If neither public nor private roads are available, Enbridge would construct new access roads. Enbridge would need to obtain environmental permits and landowner permission for use or modification of existing public and private roads and construction of new access roads.

Enbridge has proposed a preliminary list of 288 access roads distributed throughout the counties in the Project (Appendix D). At some points along the pipeline route, final construction planning and Project permitting could require additional or different access roads. Enbridge estimates that roads used to access the construction work area along the pipeline route would temporarily disturb approximately 271 acres, based on a standard 30-foot-wide road. Of the proposed 288 access roads, 75 would be existing roads, 172 would be new roads, and 41 would be a combination of new and existing roads.

A final list of roads proposed to access the construction work area and the degree to which the roads would need improvement will not be available until the final planning and engineering phase of the Project.

Temporary access roads will also use appropriate stormwater erosion prevention and sediment control BMPs per Minnesota PCA's NPDES General CSW Permit.

2.4 RIGHT-OF-WAY REQUIREMENTS

Rights-of-Way Would Differ for Different Segments of the Proposed Pipeline

Construction of the proposed Line 3 pipeline would generally require a 50-foot-wide permanent right-of-way in uplands and an additional 70-foot-wide construction work area (Table 2.4-1). The combined 120-foot-wide construction work area would be required to accommodate construction vehicles, string and install the pipeline, and temporarily store topsoil and trench spoil. In wetlands, the width of the construction work area would be reduced to 95 feet.

From the North Dakota-Minnesota border to the Clearbrook terminal and from Carlton to the Minnesota-Wisconsin border, approximately 40 feet of the Line 67 pipeline permanent right-of-way would be included as part of the construction work area for the proposed Line 3 pipeline. After construction, 25 of the 40 feet of the Line 67 pipeline permanent right-of-way would serve as shared permanent right-of-way for the Line 3 and Line 67 pipelines, resulting in 25 feet of new permanent right-of-way attributable to the proposed Line 3 pipeline in both uplands and wetlands.

Between the Clearbrook terminal and Carlton, the permanent right-of-way for the pipeline would be 50 feet wide in both uplands and wetlands. Plan views of the permanent right-of-way and the construction work area with respect to the pipeline alignment are shown in Figures 2.4-1 through 2.4-6.

Table 2.4-1. Temporary Construction Work Area, Permanent Right-of-Way, and Total Land Requirements for the Line 3 Project

Route Segment	Temporary Construction Work Area (feet)[a]	Permanent Right-of-Way (feet)	Total Land Requirements (feet)	Corresponding Plan View Figure for Reference
North Dakota-Minnesota border to Clearbrook terminal – co-located with existing Enbridge pipeline (Line 67)	70 (upland)	50 (~25 new)	120 (upland)	2.4-1
	45 (wetland)		95 (wetland)	2.4-2
Clearbrook terminal to Minnesota-Wisconsin border – co-located with existing third-party utilities or greenfield construction	70 (upland)	50	120 (upland)	2.4-3, 2.4-5
	45 (wetland/ saturated wetland)		95 (wetland/ saturated wetland)	2.4-4, 2.4-6

[a] Construction work area includes the temporary construction work area plus the permanent right-of-way.

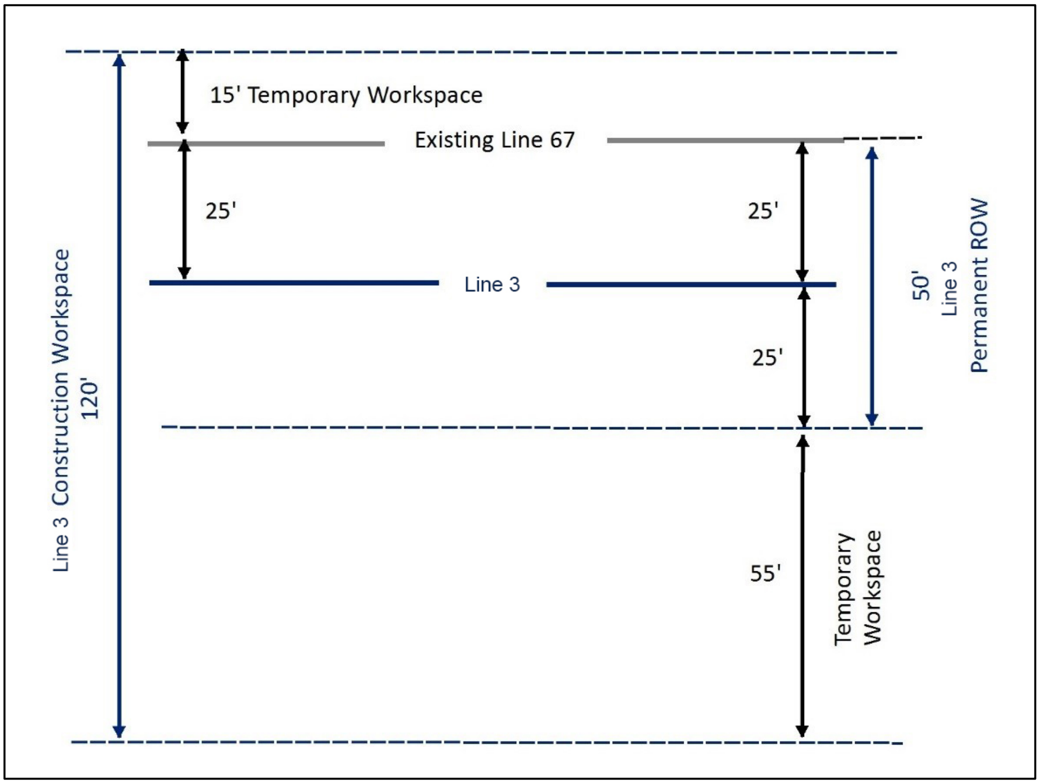


Figure 2.4-1. Plan View – Proposed Co-Location of the Proposed Line 3 Pipeline Right-of-Way with the Existing Line 67 Pipeline Right-of-Way in Uplands

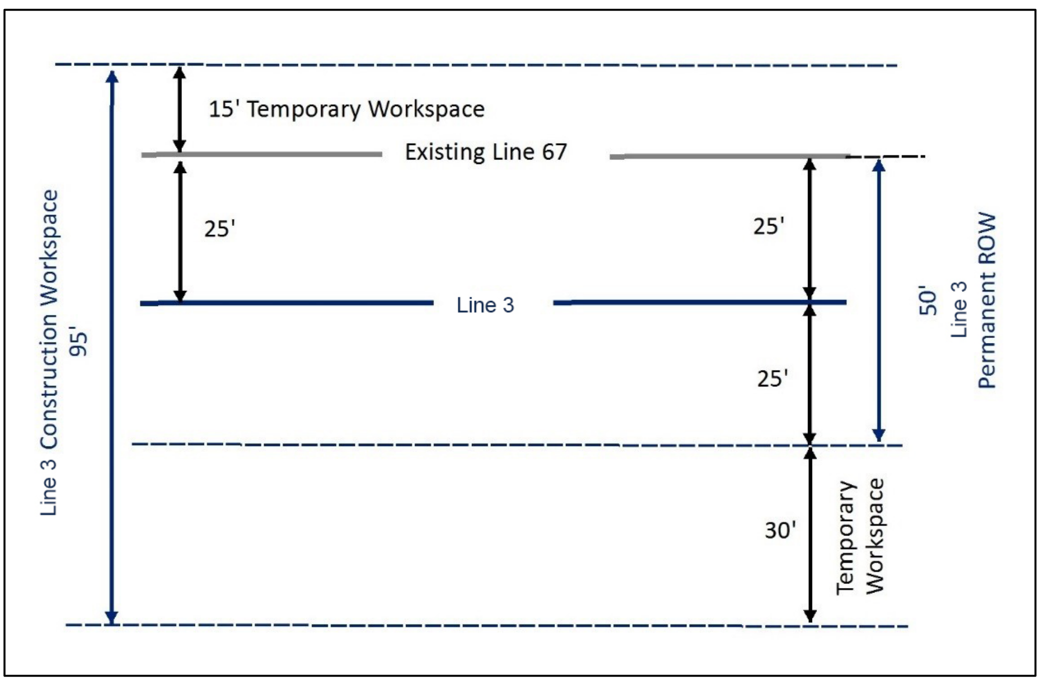


Figure 2.4-2. Plan View – Proposed Co-Location of the Proposed Line 3 Pipeline Right-of-Way with the Existing Line 67 Pipeline Right-of-Way in Wetlands

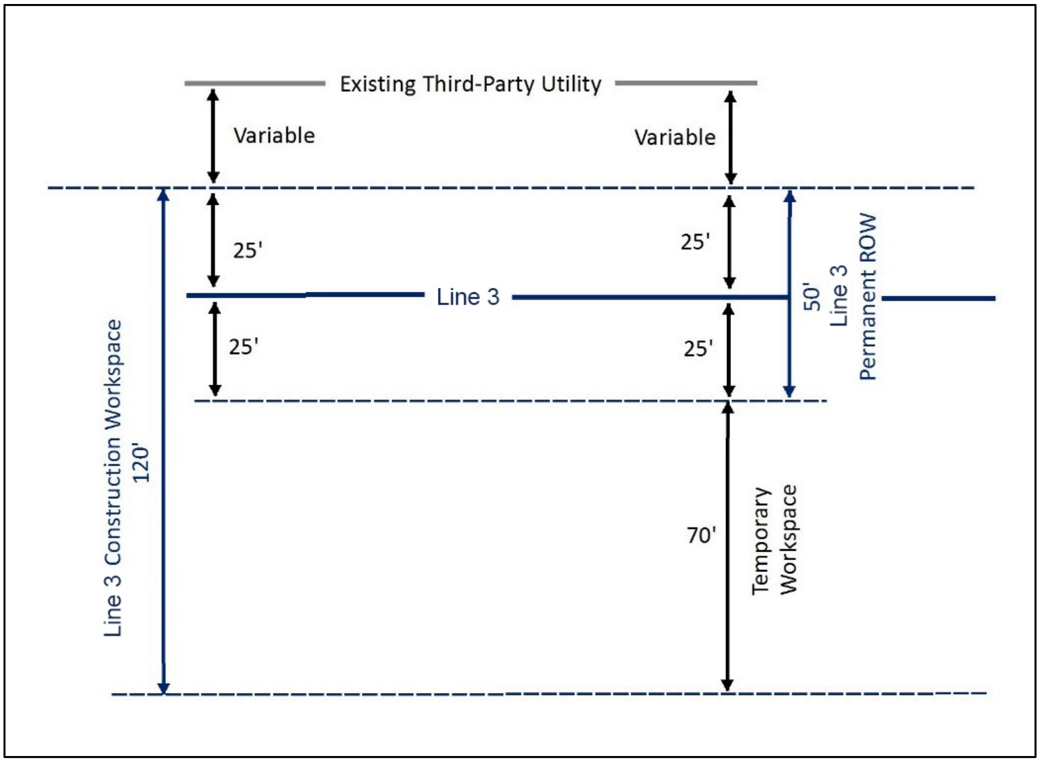


Figure 2.4-3. Plan View – Proposed Co-Location of the Proposed Line 3 Pipeline Right-of-Way with Existing Pipelines, Transmission Lines, and Highways in Uplands

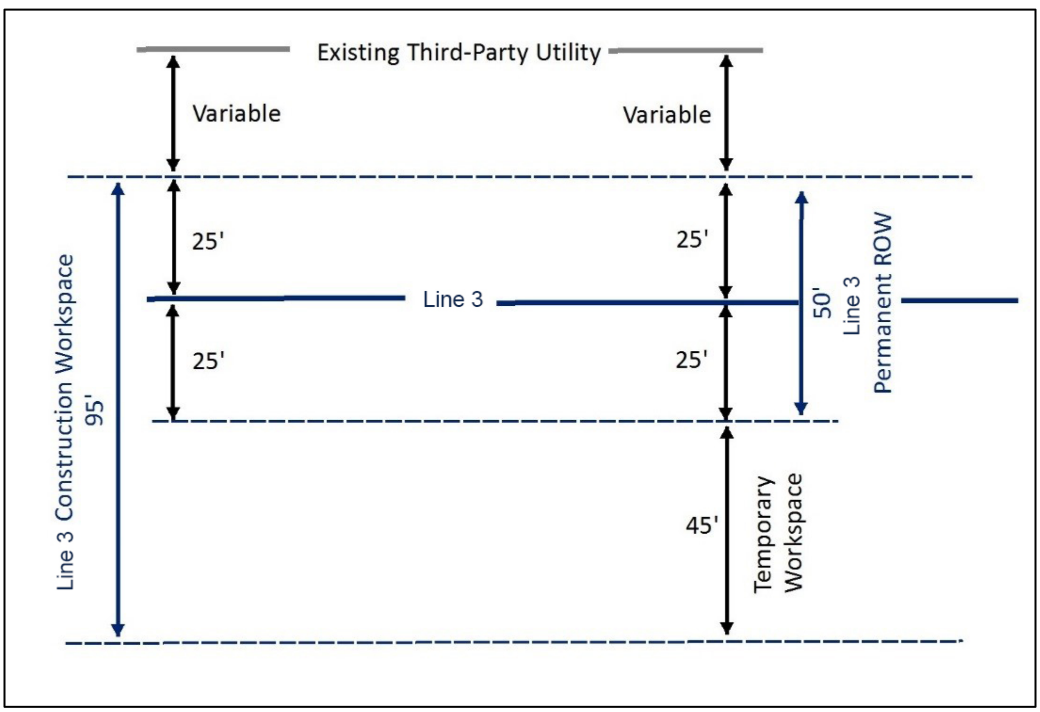


Figure 2.4-4. Plan View – Proposed Co-Location of the Proposed Line 3 Pipeline Right-of-Way with Existing Pipelines, Transmission Lines, and Highways in Wetlands

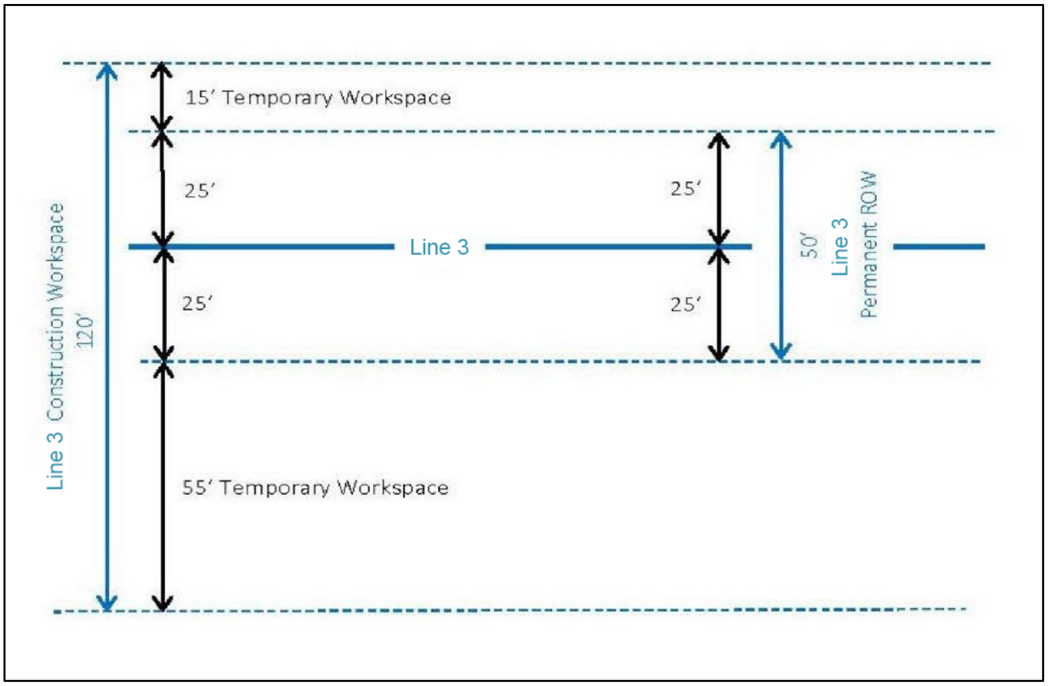


Figure 2.4-5. Plan View – Permanent Right-of-Way and Construction Work Area for the Proposed Line 3 Pipeline Route not Co-Located with Other Facilities in Uplands

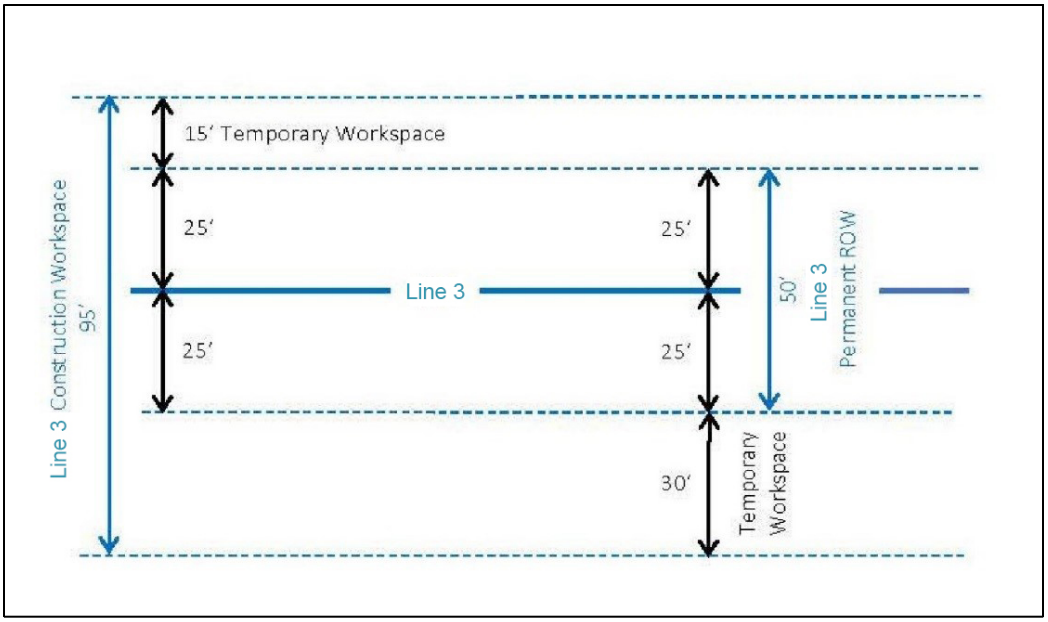


Figure 2.4-6. Plan View – Permanent Right-of-Way and Construction Work Area for the Proposed Line 3 Pipeline Route not Co-Located with Other Facilities in Wetlands

2.5 PROJECT COSTS

Total Costs in Minnesota Would Be $2.1 Billion, Excluding Land Purchases and Some Other Items

Enbridge expects the total costs of designing, permitting, and constructing the Line 3 Project from Hardisty, Alberta, Canada, to Superior, Wisconsin, to be $7.5 billion. Enbridge expects the U.S. portion of the Project to total approximately $2.6 billion and the Minnesota portion of the Project to account for approximately 80 percent, or $2.1 billion, of the U.S. total.

2.6 PROJECT SCHEDULE

Once Approved, Construction Would Start, with Commissioning Expected within 12 Months

Enbridge proposes to begin building the proposed Line 3 pipeline and associated facilities as soon as all construction-related regulatory approvals have been obtained. Enbridge plans to complete construction, testing, and commissioning of the new pipeline and associated facilities within approximately 12 months of initiating construction. Final restoration activities would likely extend beyond 12 months.

Prepositioning of pipe, construction materials, and construction equipment would begin approximately 60 days before the commencement of construction and would be expected to be completed within 45 days. Construction activities would be conducted simultaneously across seven construction segments. The planned construction spreads would be delineated as follows:

- Spread 1: MP 789.4 – MP 848.2
- Spread 2: MP 848.2 – MP 909.4
- Spread 3: MP 909.4 – MP D962.6
- Spread 4: MP D962.6 – MP D1014.4
- Spread 5: MP D1014.4 – MP D1066.6
- Spread 6: MP D1066.6 – MP D1118.3
- Spread 7: MP D1118.3 – MP 1097.8

Construction spreads 1 and 2 and portions of spreads 3 and 7 would be along Enbridge's Mainline corridor. The remaining construction would be conducted along other rights-of-way or a new corridor (mileposts identified with a "D").

Enbridge proposes to begin building pump stations as soon as they are permitted and expects that pump stations would be completed within approximately 10 months, depending on contractor availability, final design, and weather-induced delays. The order of events for typical construction efforts is described in Section 2.7.

Testing and certification would include hydrostatic testing and caliper tool runs. Testing and certification would be completed before line fill begins.

Commissioning would take place once all hydrostatic testing, caliper tool runs, and pump station construction is completed and would likely take about 45 days per pump station, with overlapping schedules across 3 months.

2.7 CONSTRUCTION METHODS

Measures are Proposed to Minimize Construction Impacts

This section describes the procedures that Enbridge would follow while constructing the proposed Line 3 pipeline and associated facilities, yards, and roads. It also summarizes the measures Enbridge would be required and/or has proposed to take to avoid or minimize potential impacts from the Project.

Based on regulatory requirements and industry BMPs, Enbridge has developed and proposed various measures for minimizing the potential impacts of construction and operation. Enbridge has committed to implementing and adhering to these Applicant-proposed measures, and they are considered are part of the proposed Project. Additional details about some of these measures are contained in Appendices E, F, and G. Specific regulatory requirements that will govern construction are addressed in Chapters 5 and 6, as well as additional mitigation measures to further minimize construction impacts.

2.7.1 Conventional Pipeline Construction Procedures

2.7.1.1 Construction Monitoring and Inspection

Construction Would Be Monitored and Inspected by Both Enbridge and State Agencies

Construction of the proposed Project would be subject to the requirements of a number of permit programs that are in place to manage impacts to the environment. Monitoring and inspection are requirements under the relevant permit programs for this Project. For example, under Minnesota PCA's NPDES CSW Permit, Enbridge will be required to conduct monitoring and inspections related to stormwater.

Consistent with the relevant permit programs, which are discussed in greater detail in Chapters 5 and 6, Enbridge proposes a two-tiered program for monitoring and inspecting construction: (1) a direct program of Environmental Inspectors (EIs); and (2) an independent third-party system of monitors to be implemented by state agencies.

EIs supplied by Enbridge would monitor and document compliance with company requirements, and the requirements of permit conditions,[6] the environmental protection measures contained in the Environmental Protection Plan included as Appendix E, and contract specifications. The specific concerns of landowners along the pipeline route would also be monitored during construction.

EIs Would Identify Environmental Issues and Train Project Personnel

EIs would serve as liaisons between Enbridge's Project management personnel, construction contractors, and federal and state agency officials. Their designated responsibilities would include identifying and marking environmentally sensitive areas to avoid during construction, clarifying environmental requirements within permit conditions, identifying potential environmental issues or challenges that might arise on a construction spread, and providing day-to-day oversight to ensure that construction practices abide by Enbridge's Environmental Protection Plan.

The EIs also would conduct appropriate environmental training for Project construction personnel, including how to identify and provide notification of the presence of sensitive environmental resources

[6] Minnesota PCA's NPDES CSW Permit would require stormwater-specific inspections of all active construction areas and areas of exposed soils every 7 days and after every rainfall event of 0.5 inch or greater.

(such as cultural and archaeological resources and threatened or endangered species). EIs would have the authority to stop construction activities and order corrective mitigation for actions that fail to comply with the environmental requirements imposed on the Project, including permit conditions and landowner agreements. Information on compliance provided by the EIs would be entered into an Enbridge database of Project commitments, permit conditions, and regulatory requirements.

State Agencies Would Independently Monitor Construction

Enbridge has committed to participating with state agencies with jurisdiction to establish a third-party monitoring program. Third-party monitors are independent monitors who document compliance with the environmental requirements of permits and Enbridge's construction plans. They do not have stop-work authority but do submit daily reports about construction activities to Enbridge and the agencies. Enbridge would coordinate with the participating agencies to identify the appropriate qualifications of the third-party monitors and determine their specific role during construction.

2.7.1.2 Construction Work Area

In the Construction Area, Storage and Work Areas Would Be Separated

The full width or limits of the pipeline construction work area would be 120 feet in uplands and 95 feet in wetlands. Within the construction limits would be two areas: one area for temporary storage of topsoil and trench excavation spoil (the non-working area), and a second area for active construction (i.e., the actual working area and travel lane for construction equipment) (Figure 2.7-1). The construction limits would include both the permanent right-of-way and the temporary construction work area.

Width of Temporary Work Area Would Be Determined by Co-Location Opportunities and Terrain

Three different conditions exist along the pipeline route that determine the width of the temporary construction work area within the overall 120-foot-wide construction limits: the pipeline would be located: (1) near an existing Enbridge easement; (2) near utilities owned by others; and (3) not near any existing Enbridge easements or other utilities.

From the Minnesota border to the Clearbrook terminal and from the Carlton Junction to the Wisconsin border, the pipeline would be installed adjacent to Enbridge's Line 67 where the company maintains an existing easement. In these segments of the route, a portion of the Line 67 easement would be used for the non-working area, as shown in Figures 2.4-1 and 2.4-2.

The portion of the route east of the Clearbrook terminal generally runs adjacent to pipelines, transmission lines, or roads owned by others where Enbridge does not have access to the adjacent easement. In these segments of the route, space is not available to extend the construction limit beyond the limit of permanent easement; therefore, the entire work area would be on one side of the pipeline alignment, as shown in Figures 2.4-3 and 2.4-4.

In some portions of the route between the Clearbrook terminal and the Carlton Junction, the route is not co-located with other facilities, and temporary construction work area can be used on both sides of the pipeline alignment, as shown in Figures 2.4-5 and 2.4-6.

In wetland areas, the overall width of the construction limits would be reduced to 95 feet. This would reduce the active working area from 80 feet to 55 feet in wetland areas.

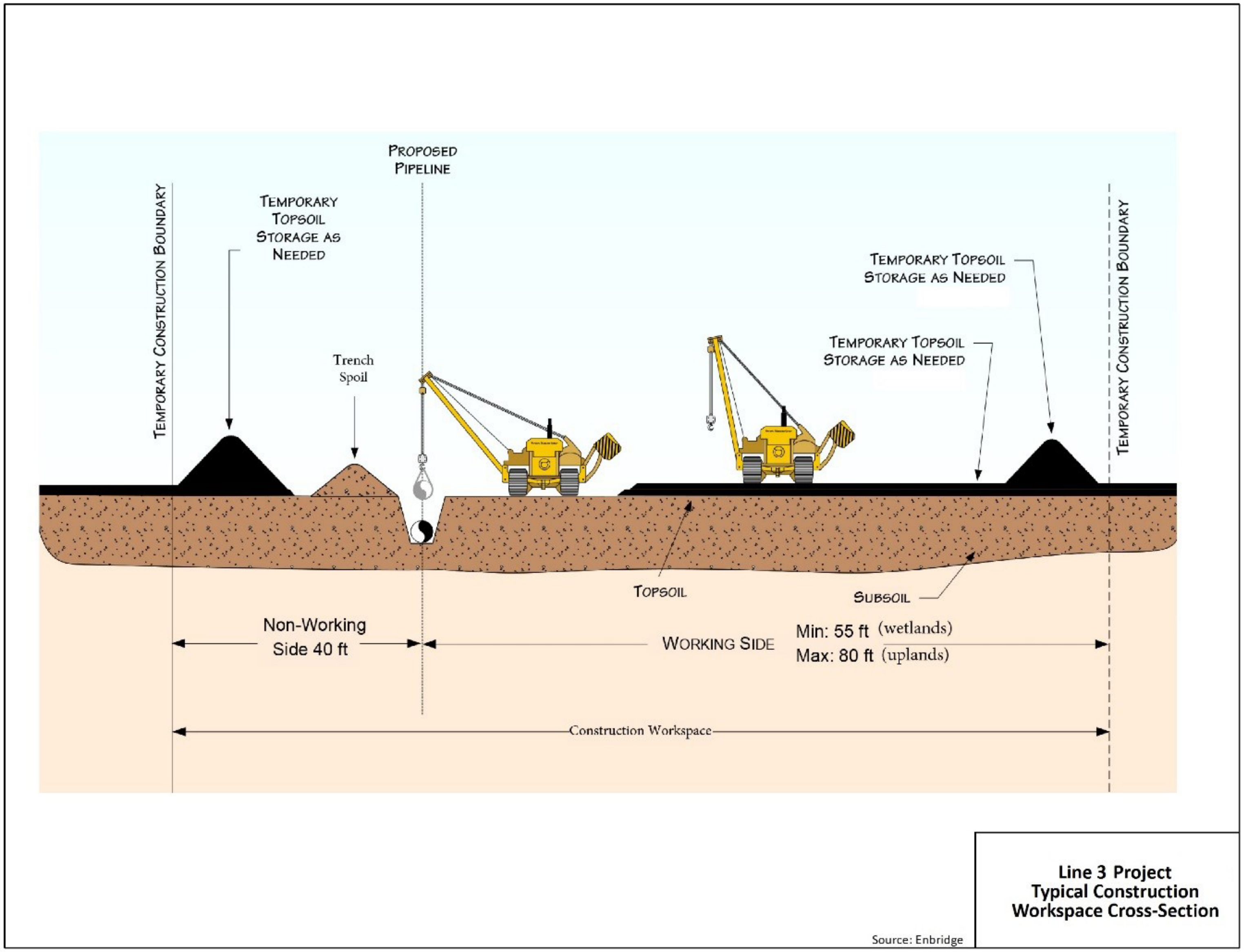


Figure 2.7-1. Typical Construction Cross-Section Adjacent to Line 67 or Where No Adjacent Facilities Occur

During construction, the topsoil and trench spoil would be segregated where required by permit conditions.[7] Trench spoil would be stored on the opposite side of the pipe trench from the construction work area, within the non-working portion of the construction work area. Segregated topsoil typically would be stored along the outer edge of the construction work area opposite of the pipe trench or within an ATWS. In some instances, topsoil may be stored on the trench spoil side of the construction works area (Figure 2.7-1). The sections below discuss clearing and grading of the construction work area and associated erosion control measures that would be implemented during this process.

2.7.1.3 Typical Pipeline Construction Procedures

Before Excavating, Work Area Would Be Surveyed and Safety Precautions Would Be Taken

First, the construction work area and ATWS would be surveyed and staked. The construction work area would then be cleared and graded as necessary. Silt fencing or other erosion and sediment control devices (ECDs) would be installed, and environmentally or culturally sensitive areas would be flagged by the EI as places construction personnel should avoid.

Second, before excavating, appropriate safety precautions would be taken, such as notifying the One-Call system to ensure that third-party utilities and pipelines are appropriately marked. Pipes, valves, and fittings would be placed along the construction work area in preparation for pipe stringing, bending, and welding and subsequent trenching, lowering of the pipeline, and backfilling of the trench. The pipeline then would be hydrostatically tested, and the right-of-way restoration process would begin. The following sections provide more detail for each of step of the typical construction process. The general construction sequence for the pipeline is depicted in Figure 2.7-2.

2.7.1.4 Surveying and Staking

2.7.1.4.1 Construction Survey

Before construction begins, Enbridge crews would survey and stake the centerline and construction limits and the exterior boundaries of the ATWS (Figure 2.7-2, panel 1). The exterior boundary stakes would mark the limit of approved disturbance areas that would be maintained throughout the construction period. Prior to any construction activity, Enbridge would contact the Minnesota Gopher State One-Call system to identify and mark the locations of underground utilities.

[7] Topsoil is segregated from trench spoil to maintain the integrity of the existing seed bed and facilitate natural restoration.

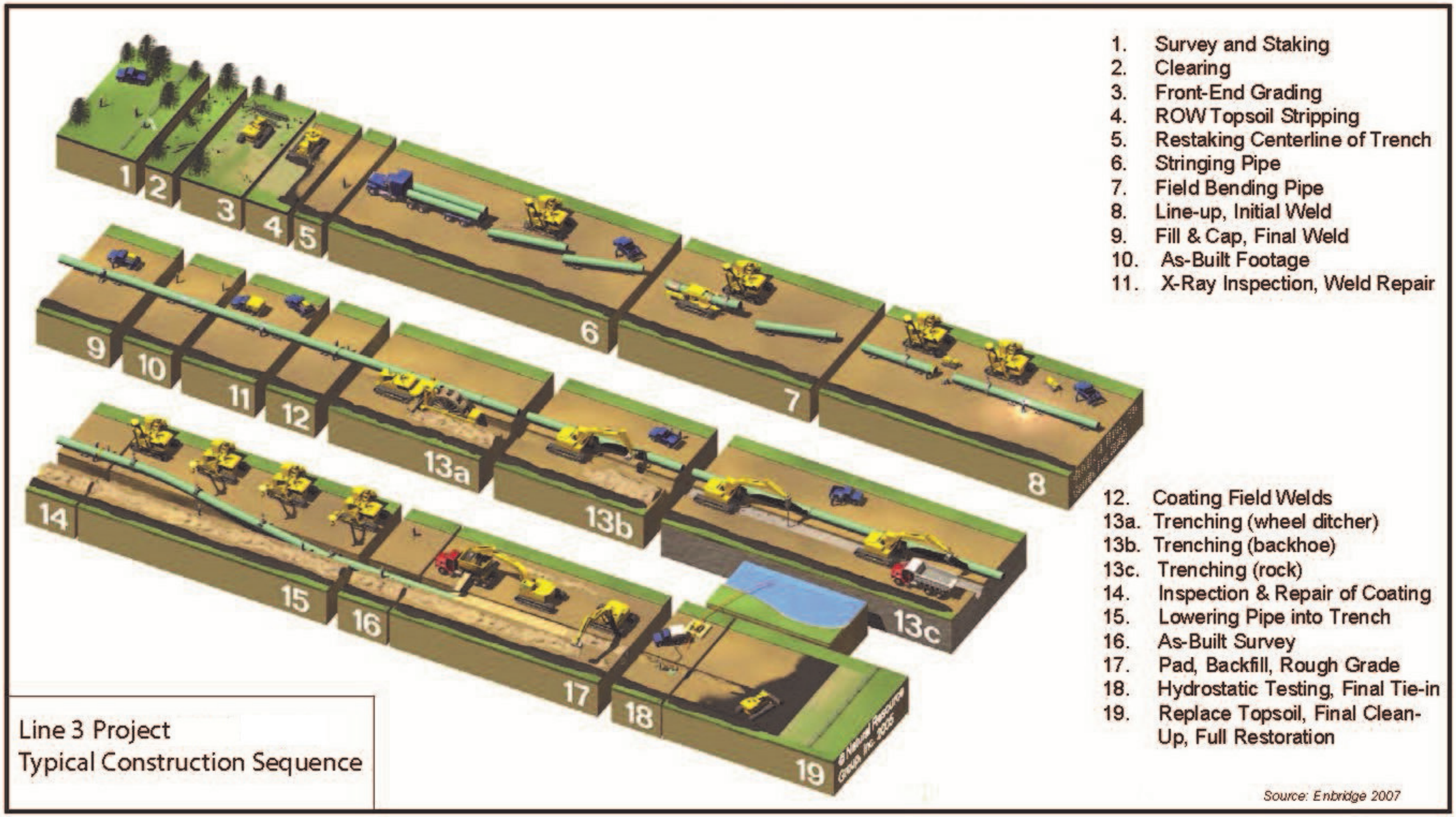


Figure 2.7-2. Planned Construction Sequence for the Proposed Line 3 Pipeline

2.7.1.4.2 Noxious Plant Survey and Treatment

Enbridge Would Take Measures to Prevent the Spread of Noxious Weeds or Invasive Species

During preconstruction surveys, Enbridge would also identify and mark the locations of noxious and invasive species as a part of its program to minimize or prevent the introduction and spread of those species along the right-of-way. Major infestation areas would be identified and treated with the recommended herbicides or their equivalents as agreed to by local agencies and landowners.

Construction equipment would be cleaned prior to arriving at the right-of-way. Equipment designated for construction within waterbodies would be washed and dried before use. In addition, construction equipment used in infested areas would be cleaned before departing from the infested areas. Methods could include mechanical means (scrape down; blow down) or washing with high-pressure water if mechanical means are not sufficient. Construction contractors would be required to document the cleaning history of all equipment planned for use. Equipment deemed not to be sufficiently cleaned would be denied access to the construction spreads until it could be cleaned in accordance with the measures identified in the Environmental Protection Plan to prevent the spread of noxious weeds and invasive species.

Methods for preventing and controlling noxious weeds and invasive species are detailed further in the Environmental Protection Plan (Appendix E).

2.7.1.5 Clearing and Grading

Shrubs, Trees, and Rocks Would Be Removed and Disposed of in Accordance with the Environmental Protection Plan

Enbridge proposes to clear the construction work area and ATWS of shrubs and trees (Figure 2.7-2, panels 2 and 3). The clearing crew would typically mow, chip, or mulch shrubs and ground cover vegetation. All non-merchantable timber would be chipped on site or removed from the construction work area. To facilitate cleanup and restoration in upland areas, tree stumps outside the trench line would be ground to below the normal ground surface or removed and hauled to an approved disposal facility. Stumps along the trench line would be completely removed and ground or hauled to an approved disposal facility.[8]

With landowner approval in non-agricultural upland areas, chipped or mulched woody debris may be uniformly broadcast across the construction work area or incorporated into the topsoil. Non-merchantable wood could be burned if Enbridge obtains the appropriate permits and approvals from the Minnesota Department of Natural Resources (Minnesota DNR). Enbridge would address handling of merchantable timber on private lands based on negotiations with the respective landowners. Enbridge would follow Minnesota DNR guidelines to address merchantable timber removed on State-managed forest lands.

Excess stones and rocks larger than 4 inches in diameter generally would be removed from the upper 8 inches of soil, or managed as otherwise specified in permit conditions or landowner agreements.

---

8 "Approved disposal facilities" are locations licensed or permitted to receive waste materials. These include municipal or construction debris landfills or other upland locations with documented landowner approval that are in compliance with federal, state, and county laws and local ordinances for such use.

Excess rock would be piled in upland areas where landowner permission has been obtained or would be hauled offsite to an approved disposal site.

Erosion and Sediment Control Devices Would Be Installed after Clearing but Before Grading

Temporary ECDs are proposed to be installed in accordance with the procedures given in the Environmental Protection Plan (Appendix E) and Minnesota PCA's NPDES CSW Permit. This would include but not be limited to installing devices that would slow surface runoff flows (such as slope breakers, trench breakers, and stormwater diversions) and sediment barriers to prevent sediment from leaving the construction area (such as silt fencing and straw bales).

Enbridge proposes that temporary ECDs would be installed after clearing but prior to grading activities. Damaged or non-functioning ECDs would be repaired, replaced, or supplemented with functional devices within 24 hours of discovery, or as specified in applicable permits. Temporary ECDs present within the travel lane of the construction work area could be removed during active construction periods but would be replaced upon passage of the construction equipment or once construction activities have concluded for the day. Erosion control mats, mulch, or temporary seeding also may be installed in the right-of-way, depending on site conditions or if delays at a construction spread last more than 14 days.

2.7.1.6 Topsoil Stripping

Topsoil Typically Would Be Stripped to a Depth of 12 Inches and Would Be Segregated According to the Environmental Protection Plan

Enbridge proposes that topsoil would be stripped and segregated to maintain the integrity of the existing seed bed in cropland, hayfields, pastures, government set-aside program areas, and other areas as requested by landowners along the construction work area and in accordance with the Environmental Protection Plan (Appendix E) and the Agricultural Protection Plan (Appendix F) (Figure 2.7-2, panel 4).

On active agricultural lands, Enbridge proposes use one of three topsoil segregation methods: the full right-of-way method, the modified ditch-plus-spoil side method, or the trench-line-only method. A full description of these methods is included in the Agricultural Protection Plan. The type of topsoil segregation method used would depend on specific landowner agreements, site conditions, applicable permit requirements, and other factors.

Topsoil would be stripped to a maximum depth of 12 inches, except in the Red River Valley region, where up to 18 inches of topsoil would be stripped. Topsoil would be replaced within 14 days of backfilling the pipeline trench. If seasonal or other conditions prevent replacement within 14 days, temporary ECDs would be installed and maintained until conditions allow the replacement.

2.7.1.7 Delivery of Pipe Sections to Construction Spreads

Pipe and Construction Materials and Equipment Would Be Positioned before the Start of Construction

As noted in Section 2.6, prepositioning of pipe, construction materials, and construction equipment would begin approximately 60 days before the commencement of construction and would be expected to be completed within 45 days. Construction activities would be conducted simultaneously across seven construction spreads.

Enbridge has reportedly begun storing pipe at locations along the proposed route. Coatings on the exterior of pipes are used in conjunction with cathodic protection in order to protect the pipe from its environment. The coatings have a high dielectric strength, which prevents the flow of electrons to the pipe's surroundings, thus interrupting the electro-chemical reaction of the metal with its environment. Additionally, prior to installation, pipe sections should be inspected to ensure that scratches and dents, if present, to the pipe and/or coating are properly repaired. If they cannot be repaired, or there is question as to the pipe's structural or coating integrity, the section of pipe should not be used.

2.7.1.8 Pipe Stringing and Bending

Pipe Would Be Placed and Bent in the Construction Work Area

Prior to trench excavation, pipe would be placed (strung) along the construction work area and arranged to be accessible to construction personnel (Figure 2.7-2, panels 6 and 7). Specially designed stringing trucks would be used to deliver pipe from the pipe yards to the construction work area. Small portable cranes or side-boom tractors would be used to offload pipe from the stringing trucks and place it along the right-of-way. A mechanical pipe bending machine would bend individual joints of pipe to the angle required to traverse natural ground contours or to follow the pipeline alignment. In some areas, prefabricated fittings would be used where field bending is not practical.

2.7.1.9 Welding, Inspection, and Coating

Pipe Would Be Pre-Coated with Anti-Corrosives and Would Be Welded and Inspected

After stringing and bending are completed, pipe sections would be aligned, welded together, and placed on temporary supports along the edge of the area to be trenched (Figure 2.7-2, panels 8–12). All welds joining pipe segments or pipe fittings would be inspected visually and X-rayed by Enbridge personnel to ensure the integrity of all weld joints. The pipe would be coated at the factory with bonded epoxy or a similar material to prevent corrosion. Enbridge would apply a similar coating to welded joints and electronically inspect the pipeline coating before the pipe is lowered into the trench.

2.7.1.10 Trenching

Trench Typically Would Be 7 Feet Deep, 5 Feet Wide at the Bottom and 7 Feet Wide at the Top

Trenching typically would begin after the pipe has been welded and placed near the trench line. Backhoes or ditching machines would be used to excavate the trenches and place the excavated materials in stockpiles adjacent to the trench (Figure 2.7-2, panels 13a–13c). Areas where agricultural drain tiles[9] would be cut during trenching would be flagged. If drain tiles are damaged during construction, they would be repaired to restore operating condition in compliance with the Agricultural Protection Plan (Appendix F). Enbridge is developing a Contaminated Sites Management Plan in consultation with Minnesota PCA. This plan will be completed prior to construction to be implemented in the event that potentially contaminated properties are discovered within the construction work area.

Trenching would be conducted to a depth of approximately 48 inches burial depth plus the 36-inch pipeline diameter, or approximately 7 feet, except where described below. Table 2.7-1 lists the current

9. Drain tiles are subsurface drainage systems—typically consisting of networks of pipes that can be an assortment of diameters, depending on the drainage capacity required and made from an assortment of materials (e.g., concrete, clay, polyethylene)—that facilitate removal of excess water from agricultural lands.

U.S. Department of Transportation (USDOT) regulations (49 CFR 195.248, July 1998)[10] for the required minimum burial depth (depth from soil surface to the top of the pipe) for the pipeline. Although Enbridge would be required to bury the pipeline to at least these depths, the pipeline would be buried to a depth of 48 inches where possible, except as described below.

Table 2.7-1. U.S. Department of Transportation Required Minimum Burial Depths (Cover) of Crude Oil Pipelines

Location Type	Cover (inches)	
	Normal Excavation	Rock Excavation[a]
Industrial, commercial, and residential areas	36	30
Crossing of inland waterbodies ≥ 100 feet wide	48	18
Drainage ditches at public roads and railroads	36	36
Any other area	30	18

[a] "Rock excavation" is defined by the U.S. Department of Transportation as any excavation that requires blasting or removal by equivalent (49 CFR 195.248, July 1998).

In agricultural areas, State law (Minnesota Statutes 2014, 216G.07, Subd. 1) requires 54 inches of cover over the installed pipeline, unless the landowner waives the minimum depth requirement. Enbridge would request landowners to waive this requirement so that Enbridge could maintain the target depth of 48 inches. If landowners do not waive this requirement, Enbridge would abide by the 54-inch requirement.

Trench at Any Given Location Would Be Left Open for a Maximum of 3 Days

To achieve the desired burial cover for the pipe, the trench would typically be about 5 feet wide at the base and up to about 7 feet wide at the top, with walls sloped to maintain stability according to soil types and other site-specific conditions. In unstable and saturated soils, the trench might be wider.

Enbridge plans to minimize the amount of time that a trench is left open to 3 days at any given construction spread. This duration could be shortened based on site conditions or as specified by site-specific permits.

If trench dewatering is necessary, the onsite EI would review and approve in advance the water discharge plan to ensure that BMPs are being used, including the use of a dewatering filter device to minimize scour and the potential for sediment-laden water from reaching nearby wetlands or waterbodies. BMPs that would be used are described in the Environmental Protection Plan (Appendix E).

2.7.1.11 Lowering-In and Backfilling

After welding, inspection, coating, and trench excavation have been completed, the pipe would be lowered into the trench by side-boom tractors (Figure 2.7-2, panels 15–17). In sloped areas, trench breakers would be installed to avoid subsurface water flow and erosion along the trench line.

10. The USDOT PHMSA has established regulations governing the safety of hazardous liquid pipeline facilities and the transportation of hazardous liquids associated with those facilities in or affecting interstate commerce.

Lowering-In and Backfilling Would Be Conducted so as to Minimize Effects on Sensitive Resources

To best protect sensitive resource areas such as wetlands or waterbodies, trench breakers would be installed based on site-specific conditions, including the degree and length of the slope; the presence of sensitive resource areas downslope, such as wetlands or waterbodies; and proximity to other features, such as roads or railroads.

Backfilling follows pipe installation and consists of replacing the material excavated from the trench. In areas where topsoil has been segregated, the subsoil will be replaced first, and the topsoil will be spread uniformly over the area from which it was removed. Prior to backfilling, the trench will be dewatered if water obscures the trench bottom. The trench would be backfilled to the approximate ground surface elevation no more than 6 inches above the level of the surrounding ground.

The backfilled trench may be compacted to minimize settlement, depending on ambient site conditions. A greater level of compaction would be required when backfilling trenches at railroad crossings, pipeline crossings, and stream and river crossings; in irrigated lands; and at valve sites. Trench compaction would not be required in rocky or swampy areas. Excess trench spoil would be feathered to the existing grade within the existing stripped area in a manner that does not impede drainage patterns or agricultural operations. Spoil that cannot be distributed in this way would be disposed of in accordance with the Environmental Protection Plan.

Cultivated fields and compacted or rutted areas will be tilled prior to topsoil replacement with a deep tillage device or chisel plowed to loosen compacted subsoils. If subsequent construction and cleanup activities result in further compaction, additional measures will be undertaken to alleviate the soil compaction.

For more detailed information on lowering-in and backfilling, see Applicant's Environmental Protection Plan (Appendix E).

2.7.1.12 Mainline Valve Installation

Installing MLVs Would Follow a Process Similar to That Used for Construction Generally

Installation of MLVs would require similar steps to the overall construction of the pipeline. The land on which the MLV would be located would be surveyed, staked, cleared, graded, and excavated following the same procedures as for the pipeline. Next, the Mainline pipe, MLV foundation, and valve would be installed (Figure 2.3-1) and the site would be backfilled. After backfilling, the MLV would undergo testing as described in Section 2.7.1.13, and electrical and controls equipment would be installed and tested. Once the tests are complete, the MLV would be operational. Cleanup, restoration, and revegetation of the site would occur as described in Section 2.7.1.14.

2.7.1.13 Pipeline Testing

Pipeline Would Be Cleaned and Tested to Ensure It Could Be Operated at Design Pressure

After backfilling, Enbridge would hydrostatically test the pipeline in accordance with PHMSA regulations to ensure that the system would be capable of operating at the design pressure (Figure 2.7-2, panel 18). Hydrostatic testing involves filling a segment of the pipeline with water, hydraulically pressurizing it to a prescribed pressure, and maintaining that pressure for a given amount of time. The pressure and testing duration are specified by federal (USDOT) testing specifications.

Prior to conducting hydrostatic tests, Enbridge would run a cleaning PIG through the pipe to remove any construction debris, mill scale, dirt, and dust. Rinse (or wash) water would be used in conjunction with the cleaning PIG. The pipe debris and rinse water would be disposed of offsite at an approved waste facility.

Generally, the hydrostatic test water volumes required for each construction spread would range from approximately 11 million gallons to 17 million gallons. These volumes do not account for transferring water between testing segments. Transferring or recycling test water between pipeline segments would reduce the total volume needed for hydrostatic testing. Disposal of test water would need to be performed under the NPDES and associated permit. Depending on the source of rinse and test water, a water withdrawal notification may be necessary from the originating facility.

2.7.1.14 Cleanup, Restoration, and Revegetation

Enbridge Would Restore the Site as Much as Possible to Its Original Condition

Following backfilling of the pipeline trench, the construction work area would be cleaned and re-graded. Temporary erosion control devices would be installed according to timelines specified by applicable permits (Figure 2.7-2, panel 19). The trench and construction work area would be re-graded and restored as nearly as practicable to the original contour of the land. Topsoil would be redistributed over areas from which it was originally removed. Fences that had been removed to install the pipeline would be reconstructed across the right-of-way.

During final grading, slopes in areas other than active agricultural lands would be stabilized using permanent erosion control devices, including permanent berms.

Prior to replacing topsoil, compacted or rutted soils in cultivated fields would be loosened with a deep-tillage device or a chisel plow. If subsequent cleanup and restoration activities result in further compaction, additional measures would be undertaken to alleviate the condition.

Disturbed areas would be revegetated in accordance with the Environmental Protection Plan, permit requirements, and site-specific easement agreements with landowners. Enbridge would coordinate with landowners on any perceived restoration problems.

2.7.2 Special Pipeline Construction Procedures

Where the pipeline route crosses wetlands, waterbodies, steep terrain, and other infrastructure, or is near residences, construction techniques other than those previously described would be used.

2.7.2.1 Conventional Construction in Wetlands

Wetland Construction Would Require Special Methods and Close Monitoring

All wetland construction would be in accordance with Clean Water Act (CWA) permits issued by the U.S. Army Corps of Engineers (USACE) and Minnesota PCA's NPDES CSW Permit. Wetland construction would require monitoring to ensure compliance during construction (see Section 2.7.1.1). Along most of the pipeline route, construction in wetlands would consist of the same sequence as construction in uplands, albeit within narrower construction limits (see Figures 2.4-2, 2.4-4, and 2.4-6).

Wetland construction would consist of clearing, grading, trenching, installation, backfilling, cleanup, and revegetation, as described below. Access to wetlands would be limited to the construction work area or by approved access roads. Construction equipment would be limited to low-ground-pressure equipment or conventional equipment working from timber construction mats. Final wetland crossing methods for each wetland would be determined in coordination with USACE and local government units.

2.7.2.1.1 Clearing and Grading

ATWS Typically Would Be Located 50 Feet from Wetlands, and Grading Would Be Minimized

Vegetation within wetlands would be cut at ground level, leaving root systems intact. Trees and shrubs would be removed, and stumps that are cleared from wetlands would be removed to proper disposal locations. Hydro-axe debris could be left in the cleared area but would be evenly spread throughout.

Enbridge would locate ATWS in upland areas at least 50 feet from wetlands, to the extent possible, and would limit the size of the ATWS to the minimum needed to conduct the wetland crossing. Where site conditions do not enable a 50-foot buffer, the ATWS would be located as far as practicable from the wetland. Vegetation would not be cleared nor construction activities undertaken between the ATWS and wetlands. In some cases, Enbridge might seek regulatory agency approval to locate ATWS in select wetlands. These instances would include when wetlands are adjacent to waterbodies, roads, railroads, non-Enbridge utility crossings, and pipeline crossovers.

At and adjacent to wetland crossings, grading would be minimized to the extent practicable. Enbridge would typically confine grading activities to the area of the trench, with grading allowed elsewhere only where required for safety reasons or to restore the construction work area after backfilling the trench.

Enbridge would install and maintain erosion control devices in construction work areas upslope from wetland boundaries to prevent sediment from entering wetlands from along the work area, and along the edge of the construction work area to contain spoil and sediment within the construction work area as it passes through or upslope of wetlands.

2.7.2.1.2 Trenching and Installation

Large Wetlands Require Different Modes of Trenching and Installation than Small Wetlands

While trenching in unsaturated wetlands, up to 1 foot of the topsoil (i.e., the organic layer) would be segregated from the remaining trench spoil. If the soils in the wetland area are stable and capable of supporting equipment, Enbridge would string, weld, and lower the pipe into the trench as described for upland areas.

The construction methods described above apply to smaller wetlands that provide some bearing capacity for the moving of equipment and materials. When crossing large wetlands with standing water and saturated soils that are incapable of supporting large equipment, the trench would be excavated using a backhoe supported on timber mats. With this method, it is often not feasible to separate topsoil from the underlying soil. However, as much of the organic layer as possible would be segregated, based on the level of saturation or site conditions.

For crossing large wetlands with standing water and saturated soils, the pipe string would be assembled in an ATWS and floated across the wetland into the excavated trench. Once the pipeline is in position, it would be sunk into position and welded to the adjacent, upland segments of the pipeline. After the pipe is installed, the trench would be backfilled and restored.

2.7.2.1.3 Cleanup and Revegetation

Enbridge Would Remove Debris, Seed Disturbed Wetlands and Enable Natural Regeneration

Enbridge proposes to begin rough grading and cleanup as soon as practical after the trench is backfilled. Rough grading includes restoring the construction work area and ATWS to their original conditions, installing or repairing temporary erosion control devices, and installing temporary slope breakers on sloped uplands adjacent to the wetlands.

Construction debris and timber mats would be removed, and any fences removed during construction would be replaced. Disturbed wetlands would be seeded with oats or a temporary seed mix (unless standing water is prevalent), or as otherwise directed by landowners or regulatory agencies. Enbridge would otherwise allow the wetlands to revegetate naturally from the seeds and rhizomes present in the topsoil and natural recruitment.

Fertilizer, lime, or mulch would not be used to restore wetlands. Enbridge would also implement any further restoration and long-term monitoring guidance required by USACE in the required CWA Section 404 permit or by the local government unit in relation to the Wetland Conservation Act permit.

2.7.2.1.4 Horizontal Directional Drilling or Guided Bore in Wetlands

HDD Would Be Used to Cross Especially Sensitive Areas and Would Be Closely Monitored

At certain locations along the pipeline route where trenching methods are not feasible, HDD or guided bore methods would be used to install the pipeline. HDD involves drilling under a wetland or waterbody and installing the pipeline without physical disturbance of the wetland or waterbody feature. These methods would be used to cross environmentally sensitive areas such as riparian forested wetlands, sensitive fishery resources, and impaired waters. The method is described in detail in Appendix G.

The Guided Bore Method Would Be Used for Waterbody Crossings near Roads or Railroads

The guided bore method would be used at crossings of narrow wetlands and ditches adjacent to roads or railroads. It is not suitable adjacent to steep slopes, where water tables are near the surface, or where substrates consist of loose sand and gravel. The guided bore method consists of boring an auger from an entrance hole on one side of the wetland to a corresponding hole on the other side of the wetland. The bore may or may not include a casing. An advantage of the guided bore is that there is no concern for a sediment release. The method is described in detail in Appendix G.

2.7.2.2 Winter Construction of Wetland Crossings

Winter Construction Can Be Useful in Large Saturated Wetlands, but Weather Is a Constraint

In large saturated wetlands with unconsolidated soils, construction of large-diameter pipelines is often difficult and has the potential for greater impacts than in other wetland areas because of the wider trench widths required and the greater amount of surface disturbances.

Overall, winter construction disturbs soil and vegetation less than does summer construction—when unstable soils would result in increased sloughing of trench walls and wider trenches, and would cause significantly more soil disturbance than excavation under frozen conditions. In addition, frost or ice roads during winter construction could allow heavy construction equipment to access the construction work area without damaging the underlying wetland vegetation and upper layers of the wetland surfaces.

Enbridge would attempt to construct the entire pipeline without using winter construction methods, which require long stretches of sustained cold weather, for instance, to construct and use ice roads to access the construction area. However, Enbridge could be required to use winter construction procedures at locations where the approach to saturated areas is lengthy or the length of the saturated areas themselves is long.

2.7.2.2.1 Clearing and Grading

After Construction of Ice Roads, Winter Construction Methods Are the Same as Regular Construction

At winter construction locations, construction vehicles compress frost within the ground until it reaches a depth that would safely support heavy construction equipment and ice roads can be built. At that point, the sequence for winter construction mostly includes the same components and methods as conventional, non-winter construction, including clearing and grading.

2.7.2.2.2 Trenching and Installation

After Segregating Topsoil, Installing the Pipe Follows the Conventional Pattern

Trenching during winter construction is conducted using a saw or ripper to cut the frost along the trench line to allow excavation of the trench spoil. If the soil is frozen to a depth that extends deeper than the depth of the topsoil, topsoil segregation might not be effective because the frozen soil could come out of the trench in chunks that contain both subsoil and topsoil. In such cases, the saw or ripper would cut just to the depth of the topsoil to remove and segregate the topsoil prior to resuming the trenching process.

Once the sawing or ripping is complete and the trench is excavated, installation of the pipe follows conventional, non-winter lowering-in and backfilling methods.

2.7.2.2.3 Cleanup and Revegetation

If Winter Weather Impedes Cleanup, Enbridge Could Install Erosion Control Devices

The size of the excavated trench would be reduced during winter construction to minimize the amount of frozen backfill removed from the trench and to facilitate restoration of the trench to its preconstruction contours. If winter conditions impede or prevent final grading and cleanup of the construction area, Enbridge would stabilize the area and maintain temporary ECDs in place until permanent ECDs could be installed. Based on the construction location and weather conditions, Enbridge could install dormant seeding and mulch to allow revegetation to occur once spring arrives.

2.7.2.3 Waterbody Crossings

Proposed Crossing of 242 Waterbodies Would Require Regulatory Approvals

Waterbody construction would require a Minnesota DNR License to Cross Public Waters for waterways classified as Minnesota Public Waters and would be subject to CWA permits issued by USACE for work that would fall under USACE jurisdiction. After consulting with appropriate regulatory agencies and doing an engineering review, Enbridge would cross waterbodies using the most environmentally appropriate and constructible method. The types of methods that could be used include wet trench, dam and pump, flume, and HDD or guided bore. The locations and initial method proposed for undertaking each crossing are shown in Appendix G.

Waterbodies Would Be Crossed Perpendicularly and in Short Timeframes

To minimize the length of the crossing, waterbody crossings would be designed to align as close to perpendicular to the axis of the waterbody as engineering and routing constraints allow. Unless specified otherwise in applicable permits or through consultation with regulatory agencies, Enbridge plans to cross minor waterbodies (less than 10 feet wide) within 24 hours, intermediate waterbodies (10 to 100 feet) within 48 hours, and large waterbodies as specified in applicable permits.

The construction techniques used would include appropriate clearing and grading; installing erosion control measures; possibly removing beavers and removing or altering beaver dams; constructing temporary equipment bridges; and installing the pipeline by either the wet trench, dam and pump, flume, HDD, or guided bore methods. Trenching and Installation methods are summarized below and detailed in Appendix G. All construction techniques would need to comply with regulations and the terms of various permits, which are discussed further in Sections 5.2.1 and 6.3.1.

2.7.2.3.1 Clearing and Grading

Enbridge would clear existing vegetation from the construction work area on the banks of the waterbodies as necessary to prepare for grading operations. A 20-foot-wide buffer of non-woody vegetation would be maintained on the banks of waterbodies until beginning trenching at the crossing. Woody vegetation (trees and shrubs) may be cut and removed within this buffer during initial clearing of the right-of-way and construction work area. The stumps of woody vegetation outside the trench line would be ground to below the normal ground surface or removed and hauled to an approved disposal facility. Stumps along the trench line would be completely removed and ground or hauled to an approved disposal facility. In addition, grading could be necessary on the banks of some waterbodies to install temporary bridges across the waterbodies. Grading also could be necessary for approaches to waterbodies in order to create safe working surfaces and allow for limitations on pipe bending.

Grading would be directed away from the waterbody to reduce the potential for material to enter the waterbody. Temporary erosion control measures and spoil containment devices (such as silt fences and straw bales) would be installed as necessary to minimize the potential for disturbed soils or trench spoil to enter the waterbody from the permanent right-of-way and construction work area. ATWS at waterbody crossings typically would be set back 50 feet from the water's edge where topographic and other site conditions allow.

Enbridge may be required to trap beavers or alter or remove beaver dams to lower water elevations within the Project corridor prior to construction. To alter a beaver dam, a perforated steel culvert, or equivalent device, would be inserted through the dam to facilitate water drainage. The culvert would be a minimum of 12 inches in diameter and 20 feet in length. The perforations would be a minimum of 1.5 inches in diameter and would encompass the entire circumference of the culvert and extend along its entire length. Enbridge would obtain landowner approval and all necessary environmental permits for all trapping of beavers and alteration or removal of beaver dams.

2.7.2.3.2 Temporary Equipment Bridges

Enbridge would install temporary equipment bridges across most waterbodies, including agricultural and intermittent drainage ditches that may connect to sensitive habitats downstream. The equipment bridges would allow vehicles and equipment to travel along the construction work area without transporting sediment or hazardous fluids into the waterbodies. Equipment required to install the equipment bridges would be permitted to ford a waterbody a single time prior to installing the bridge;

otherwise, construction equipment would not be permitted to ford waterbodies (except for trench excavators, which may be required to enter a waterbody during excavation; in such cases, the excavator would enter the waterbody on clean construction mats).

Typically, Enbridge would not install equipment bridges across waterbodies that would be directionally drilled unless an efficient and economical method to transport construction equipment beyond the waterbody (i.e., a nearby road or bridge) is not available.

Equipment bridges would include: (1) prefabricated timber mats that span the waterbody, with or without an instream support culvert; (2) clean rock placed over flume pipes; (3) railroad flat cars; (4) flexi-float or other temporary bridging; or (5) other methods as approved by appropriate regulatory agencies. Enbridge would design the equipment bridges to accommodate the maximum foreseeable stream flow and prevent flow restrictions while in place. Support structures would be placed above the ordinary high water mark of the waterbody. The bridges would be constructed with clean materials and would be maintained to prevent soil accumulation on the bridge from entering the waterbody. Enbridge would remove the temporary equipment bridges as soon as possible during final restoration.

2.7.2.3.3 Trenching and Installation

After initial clearing and grading is completed, Enbridge would install the pipeline across the waterbody using one of the four crossing methods: wet trench, dam and pump, flume, or HDD or guided bore. These methods are summarized below and are further described in the Environmental Protection Plan (Appendix E) and in Appendix G. Enbridge currently does not anticipate the need to conduct blasting activities to excavate trenches through any of the waterbodies. As such, Enbridge does not anticipate any complications with reaching the proper depth for installing the pipeline across the waterbodies.

- Wet trench method – The open-cut method (also known as the "wet open-cut" method) is typically used to cross waterbodies for which dam and pump, flume, and HDD are not permitted. This method involves digging an open trench across the waterbody, installing pipe, and backfilling the trench.
- Dam-and-pump method – The dam-and-pump method is a dry crossing method that is typically used for waterbodies with low gradients and flow or waterbodies with meandering channels. This method involves constructing temporary dams across the waterbody, both upstream and downstream of the crossing, prior to excavation. Dams generally would be installed using sandbags, plastic sheeting, sheet piling, or steel plates. Pumps and piping would be used to transport the stream flow around the construction area for the duration of the process.
- Wet flume method – The flume method is a dry crossing method used for relatively narrow waterbodies free of large rocks and bedrock at the trench line and with a relatively straight channel across the construction work area. The flume method generally is not appropriate for wide, deep, or heavily flowing waterbodies. Use of this method involves installing dams upstream and downstream of the construction area and installing one or more pipes (flumes) that would extend along the course of the waterbody and through both dams. Streamflow would be carried through the construction area by the flume pipe(s).

- HDD – HDD involves drilling under a waterbody and installing the pipeline without physical disturbance within the wetland or waterbody feature (impacts of HDD crossings, including risk of “frac-out,” are discussed in Sections 5.2.1 and 6.3.1.). This method could be used to cross environmentally sensitive areas identified by permitting agencies, including Minnesota DNR and USACE, such as riparian forested wetlands, sensitive fishery resources, and impaired waters.

- Guided bore – The guided bore method typically is used for crossings of narrow wetlands and ditches adjacent to roads or railroads. It is not suitable adjacent to steep slopes, where water tables are near the surface, or where substrates consist of loose sand and gravel. The guided bore method consists of boring an auger from an entrance hole on one side of the wetland to a corresponding hole on the other side of the wetland. The bore may or may not include a casing. An advantage of the guided bore is that there is no concern for a sediment release.

2.7.2.3.4 Restoration and Revegetation

Enbridge Would Restore and Revegetate Water Crossings and Would Stabilize Streambanks

Once a waterbody has been crossed using the wet trench, dam-and-pump, or flume method, the crossing site would be revegetated and restored. Such restoration and revegetation are generally not necessary when using the HDD method, which does not generally disturb surface features for those portions outside the entry and exit points.

Enbridge would stabilize streambanks and install temporary ECDs within 24 hours of completing the crossing (weather and soil conditions permitting) to minimize the potential for sedimentation. On unstable slopes, Enbridge would install temporary slope breakers on all sloped approaches to waterbodies. The greater the slope, the closer together the slope breakers would be placed.

Other stabilization methods Enbridge might use are berms, creating 50-foot buffers, seeding, mulch, or erosion control blankets. For banks potentially subject to significant erosion, Enbridge could also install riprap after getting the necessary permits. Enbridge would stabilize a 50-foot buffer on either side of the waterbody crossings using a temporary seed mix (consisting of vegetation such as annual oats or slender wheatgrass; per Appendix C, Seed Mixes of the Environmental Protection Plan [Appendix E of the EIS]), mulch, and/or erosion control blankets. As a BMP, annual rye would be avoided as a temporary cover crop due to its potential allelopathic effects on permanent revegetation species. Silt fences, or a functional equivalent, would be installed upslope of the temporarily seeded buffer area. Enbridge would not plant seed in cultivated land, standing water wetland, or other standing water areas.

If the soils of the streambank are considered unstable or there is a potential for significant bank erosion, Enbridge would use supplemental bank stabilization methods such as rock riprap. However, rock riprap would be used only where site-specific conditions require such use and after applicable agency permits or approvals have been acquired.

During final cleanup, Enbridge would install permanent slope breakers across the full width of the permanent right-of-way and construction work area to slow surface runoff flows that could cause erosion and carry sediments into the waterbodies. Once the streambanks have been reestablished, Enbridge would conduct final seeding of the streambanks using native seed varieties intended to supplement revegetation through recruitment from the existing seed stock within the replaced topsoil.

Where necessary for access, the travel lane portion of the construction work area and temporary bridges at water crossings would remain in place until Enbridge completes final cleanup activities. Temporary equipment bridges would be removed after final cleanup, seeding, mulching, and other right-of-way restoration activities have been completed. The temporary ECDs would be removed after vegetation is reestablished. Additional detail on restoration and revegetation methods is provided in the Environmental Protection Plan.

2.7.2.4 Infrastructure Crossings

Enbridge Would Cross Railroads, Roads, and Other Pipelines

To cross existing infrastructure, Enbridge proposes to bore under railroads and bore under or use an open-cut trench method at road crossings. At these locations, an ATWS might be required and would be determined on a site-specific basis. The ATWS would be adjacent to the crossings and would be limited to the size necessary to contain spoil from the crossing. Roadway crossings would be maintained to prevent tracking mud onto the roadways. A listing of railroad and road crossings and Enbridge's proposed crossing method for each is provided in Appendix H.

The Line 3 Project would cross existing Enbridge pipelines at two locations immediately west of the Clearbrook terminal. The proposed Line 3 pipeline would run below the existing Enbridge lines at a general separation distance of 2 feet.

2.7.2.5 Construction in Urban Areas

In Urban Areas, Enbridge Would Control Noise and Dust Emissions

Enbridge's proposed Line 3 Project is routed through predominately rural areas. Approximately 8 acres of the total area of the proposed Line 3 Project construction work area would include "developed land," defined as land consisting of more than 30 percent asphalt, concrete, and buildings. Approximately 124 residences would be within 300 feet of the Project's construction work area, and 19 residences would be within 50 feet, including seven within the construction workspace and one within the permanent right-of-way. Enbridge would conduct most construction activities during daylight hours, in part to reduce the duration of increased noise emissions associated with construction. Enbridge would also spray water on the construction work area and access roads near residences to reduce dust emissions during construction. Enbridge would obtain permits and approval from Minnesota DNR, as needed, for water appropriations used for dust suppression.

2.7.2.6 Blasting

To date, Enbridge has identified only one location where blasting would be necessary for installing the pipeline. The location is at Milepost D1128.4 within Carlton County. The area contains rock outcroppings near the ground surface that extend for an estimated 0.25 mile. Enbridge would develop a Blasting Plan prior to commencement of construction.

2.7.3 Construction of New and Modified Pump Stations and Terminal Modifications

Constructing aboveground facilities (MLVs and pump stations) would involve clearing and grading, as necessary, including some cut-and-fill activities, construction of foundations, and installation of equipment such as new pumps and pipe reconfigurations. Small amounts of fill that may be needed for the foundations would be obtained from existing commercial pits. Switchgear buildings and buildings used to house the variable frequency drive equipment would be prefabricated and installed onsite. Pumps would be installed on foundations in pump house buildings.

2.7.4 Preparation of Contractor/Materials and Pipe Storage Areas

In Building Storage Yards, Enbridge Would Avoid Environmentally Sensitive Areas

Enbridge proposes to select contractor/materials and pipe storage yards based on their proximity to the construction work area. Additionally, sites would be selected based on whether they can be accessed by sufficient load-rated haul roads, whether the soil and topography promote water drainage from the sites, whether Enbridge would be able to restore the sites to preconstruction conditions, and whether Enbridge could obtain landowner approval to use the sites.

If a site meets the above parameters, Enbridge would conduct environmental surveys to identify environmentally sensitive areas and other potential environmental impacts of the proposed yard. Enbridge would then design the layout of the contractor/material or pipe storage yard to minimize environmental impacts during use of the site.

The current pipe and rail yards permitted for use by Enbridge do not affect any identified sensitive environmental features. The yards are leased or fee-owned sites that would be restored upon completion of the Project.

2.7.5 Constructing New or Upgrading Existing Access Roads

Enbridge Would Use Existing Roads and Would Upgrade or Build New Roads as Needed

Enbridge would attempt to use existing roads to access the construction work area as much as possible. Roads that can currently accommodate construction vehicles and traffic would not require improvement or modification. However, roads that could not accommodate construction vehicles, such as certain dirt and gravel roads, would require widening or grading. Enbridge would widen roads by increasing the width of the road bed. Enbridge would grade only the existing road beds or newly widened road beds and would leave the land adjacent to the road beds in its existing state.

Enbridge would restore widened and graded roads to preconstruction conditions upon completion of construction, with the exception of roads providing access to the Two Inlets and Palisade pump stations, which would be retained after construction is complete to provide access for maintenance during operation. Enbridge would re-contour graded roads and areas beyond the original road bed of widened roads. Enbridge would also seed disturbed areas with a suitable seed mix for the area. Enbridge would leave any improved roads intact if requested by the respective landowner.

2.7.6 Environmental Compliance and Inspection

EIs would monitor compliance with the environmental restoration and mitigation measures included as permit conditions and in contract specifications with landowners along the construction work area.

2.8 OPERATION AND MAINTENANCE METHODS

The Enbridge operations and maintenance program complies with USDOT regulations included in 49 CFR Parts 194 and 195 and in other applicable federal and state regulations. The program is summarized in the sections that follow.

2.8.1 Project Operations

Enbridge Is Proposing to Transport Light and Heavy Crude Oils

The design, construction, maintenance, and operation of the proposed Line 3 pipeline are regulated by PHMSA under 49 CFR Part 195, which governs transportation of hazardous liquids by pipeline. Enbridge is responsible for abiding by all PHMSA regulations and working directly with regional, state, and local agencies, landowners, and other stakeholders to ensure that its programs meet the needs of the community in which it operates.

Crude oil from the Hardisty terminal in Alberta, Canada, would be transported in the proposed Line 3 pipeline to the Clearbrook and Superior terminals. From these locations, oil would be distributed into existing pipelines, for delivery from the Clearbrook terminal to Minnesota refineries and from the Superior terminal to refineries in the Midwest, on the Gulf of Mexico, and in eastern Canada.

The composition of the crude oil to be transported is set forth in Enbridge's tariff that is filed with the Federal Energy Regulatory Commission. Under this tariff, the proposed pipeline would be authorized to transport both light and heavy crude oils.

Information on Project operations is provided in the sections that follow.

2.8.1.1 Enbridge Control Center

Enbridge has an existing Control Center and a fully operational back-up Control Center that would monitor operation, maintenance, monitoring, and emergency response for the proposed Line 3 pipeline. The Control Center, which is staffed by pipeline operators 24 hours a day, includes computerized pipeline control and computational monitoring systems that allow operators to monitor and remotely control the pipelines and related facilities.

2.8.1.1.1 Pipeline Control System

Enbridge's Supervisory Control and Data Acquisition (SCADA) system is the central component of its existing pipeline control system. The proposed Line 3 pipeline would be incorporated into the existing SCADA system.

SCADA System Detects Anomalies and Allows Corrective Action

The Enbridge SCADA system, which is staffed by pipeline operators 24 hours a day, consists of pipeline sensing devices (including pressure, temperature, density, and flow sensors), a remote computer at each Enbridge pump station, a real-time communications network, a centralized data processing system, and a complete data display that is available to the pipeline control operator. The system includes automated alarms to warn operators when measurements depart from predetermined maximum and minimum limits.

The SCADA system reduces control errors and can automatically initiate pump station shut downs to maintain safe operating pressures. Pipeline control operators can also manually shut down the pipeline when they observe or suspect abnormal conditions. Enbridge enforces a "10-minute rule" that requires operators to shut down a pipeline within 10 minutes of observation of an abnormal condition that cannot be attributed to normal fluctuations in pressures and operating conditions.

2.8.1.1.2 Small Release Detection System

Small Release Detection System Compares Actual Behavior with Expected Behavior

To detect small releases, Enbridge operates a computational pipeline monitoring system and line balance calculations. The computational pipeline monitoring system uses computer models to determine oil flow rate and pressure values that would be expected under normal circumstances, and compares them to actual oil flow rate and pressure values recorded at the inlets and outlets of the pipeline.

Line balance calculations similarly compare the volume of oil injected into the pipeline at an inlet with the volume that is delivered at an outlet to confirm that the values match. Differences in the actual values compared to the expected values, or imbalances in the line calculations beyond a certain threshold, could indicate a release. In these circumstances, a leak alarm would be triggered, which could lead to shut down of the pipeline (see Chapter 10).

2.8.1.2 Unauthorized Use of the Right-of-Way

Enbridge Would Take Measures to Prevent Unauthorized Use of Rights-of-Way

Unauthorized use of the Line 3 Project right-of-way is considered trespassing and is not allowed by law. Although it is not feasible for Enbridge to patrol its entire right-of-way at all times to prevent unauthorized use, Enbridge has previously stated that it would consider site-specific measures, in cooperation with Minnesota DNR and landowners, to curtail unauthorized activities near sensitive resources on Enbridge's pipeline rights-of-way. Enbridge would also install access control measures at points of entry to the right-of-way as requested by landowners. Control measures could include fences and gates, or placement of other barriers such as boulders or timber barriers.

2.8.1.3 Training

Enbridge Provides Classroom and On-the-Job Training in Pipeline Operations and Maintenance

Enbridge has a comprehensive orientation, technical, safety, emergency, and on-the-job training program that complies with the Operator Qualification rules issued by PHMSA under 49 CFR Part 195. Enbridge personnel receive both formal and on-the-job training on pipeline operation and maintenance. Competence is demonstrated through job performance, periodic pipeline control system simulations, emergency exercises, welding certification tests, and other functions required to safely operate and maintain the pipeline.

Enbridge conducts semi-annual sessions for control operations staff that focus on lessons learned and communicate the importance of adhering to specific rules for control operations. Mandatory simulator sessions are included as part of training programs to provide operations staff with the opportunity to practice procedures while responding to abnormal and emergency operating conditions.

2.8.1.4 Public Awareness Program

Enbridge's existing public awareness program would be expanded to include the Line 3 pipeline corridor where it deviates from the existing Mainline corridor east of the Clearbrook terminal (see Figure 2.1-1).

Public Awareness Program Educates the Public, Local Government Officials, and First Responders

The public awareness program includes a comprehensive public education program for the affected public (those who work and live along the pipeline corridor), excavators, local public officials, and emergency response units of government. The program also entails providing emergency response personnel with information in key areas, such as pipeline operation and pipeline safety, how to recognize and respond to pipeline releases, and the locations of pipelines as a way to prevent damage from excavating equipment.

As part of keeping the public informed, all Enbridge lines are marked with signage and warnings, in accordance with federal regulations, at road and highway crossings, railroad crossings, navigable rivers, and other locations. This alerts the public to the presence of the pipelines and provides information, contact numbers, and emergency data. Further, Enbridge participates in the One-Call systems in the states along its pipeline alignments.

2.8.2 Maintenance

Enbridge would control vegetation along the pipeline rights-of-way to maintain the integrity of the pipeline and provide access for pipeline integrity surveys. The permanent right-of-way of the Line 3 Project would be added to the existing Enbridge right-of-way maintenance program. Enbridge would maintain vegetation along the permanent right-of-way by regularly removing trees and shrubs to inhibit woody vegetation growth over the pipelines, which can create safety and pipeline integrity issues.

2.8.2.1 Pipeline and Right-of-Way Inspections and Monitoring

Various routine operational and maintenance activities are required to maintain pipeline integrity, along with safe and reliable operations. In accordance with PHMSA requirements,[11] Enbridge maintains an Environmental Mitigation Plan (Pipeline Maintenance Projects) that outlines maintenance-related environmental policies, procedures, and mitigations for their pipeline maintenance projects (Enbridge 2013). The maintenance activities addressed in the plan are described further below.

Enbridge Regularly Inspects and Monitors Pipelines by Computer, in Person, and from the Air

Enbridge would integrate the Line 3 Project into the existing Enbridge pipeline inspection program, which would include regularly deploying computerized inspection tools that travel through the inside of the pipeline to test its integrity, inspecting the pump stations and terminals, testing the MLVs and pressure transmitters, inspecting the cathodic protection system, and conducting regular visual surveys of the pipeline right-of-way.

[11] 49 CFR Part 195 (Transportation of Hazardous Liquids by Pipeline) prescribes the design, construction, operational and maintenance safety standards, and reporting requirements for hazardous liquid pipelines and facilities—including requirements related to safety, integrity management, public awareness programs and environmental protection. Subpart F describes the operation and maintenance of steel pipeline systems. It also requires development and implementation of an integrity management program specifying supplemental integrity management requirements for pipelines that could affect high consequence areas, including populated areas, drinking water resources, and unusually sensitive ecological resources.

In accordance with USDOT requirements, Enbridge would periodically inspect the pipeline internally with electronic in-line inspection instruments or PIGs. As the PIG travels through the inside of the pipeline, its onboard computers mechanically, ultrasonically, or magnetically examine the condition of the pipe.

This technique identifies potential problems such as dents, gouges, corrosion, or cracks. If potential problems are identified, the pipe would be inspected to verify preliminary findings and repaired as needed. USDOT requires the inspections to occur at 5-year (and no more than 68-month) intervals. Since Enbridge, however, uses multiple types of in-line inspection technologies to detect various types of possible pipeline features, inspections are typically carried out more frequently than every 5 years.

Enbridge would physically inspect tanks, equipment, and piping at all pump stations and terminals, as well as Mainline valves, safety devices, cathodic protection systems and other components at regular intervals.

Enbridge also patrols the entire Mainline system by air every two weeks to observe the condition of the right-of-way, nearby construction, erosion and other circumstances that could affect the safety and operation of the pipelines or could indicate a potential crude oil release.

If irregular conditions are observed during the air surveys, Enbridge personnel would be deployed to investigate the irregularity on the ground. If a release is suspected, the survey pilot/ground personnel would immediately notify the Enbridge Control Center by radio so the affected pipeline could be shut down pending an onsite investigation.

For more detailed information on monitoring and inspection measures, see Applicant's Certificate of Need Application.

Maintenance of the Right-of-Way Includes Routine Mowing and Brush Removal

Maintenance of the right-of-way requires periodic clearing of vegetation to improve conditions for visual and aerial right-of-way inspection, maintain a safe and apparent corridor, and allow maintenance access. Clearing typically includes brushing equipment travelling down the right-of-way, which may consist of tracked or rubber-tired equipment and hand-held saws or other manual methods. Vegetation management may include application of herbicides.

Subsurface Investigations, Integrity Digs, and Inspection and Repair Require Ground Disturbance

Subsurface investigations occur on rare occasions and involve conducting soil borings on or near the right-of-way to investigate subsurface geotechnical and/or environmental conditions. The activity uses standard drilling rigs where access and soil conditions are adequate, and uses low-ground-pressure, all-terrain-vehicle-type rigs in or near a wetland area, soft soils, or other sensitive locations.

When integrity digs or visual inspection and repair are needed, ground clearing and excavation around the pipe is necessary. The typical workspace at a dig site is 80 by 250 feet, equating to a total disturbance area of approximately 20,000 square feet, and includes:

- 40- by 80-foot area for excavation,
- 50- by 50-foot workspace for dewatering, and

- 100- by 100-foot workspace for staging and vehicle parking.

The typical access area for a dig site may be smaller or larger, depending on site-specific factors and the nature of the dig.

If Enbridge identifies coating problems, maintenance crews remove the old coating via scraping and sandblasting and apply a new coating; if the pipe itself needs repair, sleeves may be welded onto the pipeline or defective sections removed and replaced. Coating consists of non-hazardous fusion-bonded epoxy. During removal, crews place a barrier (e.g., tarp) beneath the removal area and then collect the material for proper disposal at a licensed landfill. Enbridge's Environmental Protection Plan (Appendix E) describes waste and hazardous material handling and disposal.

2.8.3 Emergency Response

2.8.3.1 Emergency Response Plan

Enbridge's Emergency Response Plan Has Specific Details for Specific Regions

Enbridge's emergency response plan is referred to as its Integrated Contingency Plan (ICP). The ICP, which was formally implemented in 2013, would be updated to include the proposed Line 3 pipeline.

The ICP consists of two parts: the Core Plan, which is the overall response tool, and a series of zone-specific annexes based on geographic regions (North Dakota, Superior, Chicago, and Cushing). The proposed Line 3 pipeline would fall within the Superior Response Zone.

The ICP is structured in accord with the Incident Command System, which public and private sector emergency teams use to allow responders to work together without being hindered by jurisdictional boundaries. The ICP provides the following:

- Guidelines for responding to an emergency, including alert, notification, and response procedures and techniques to follow in response to and during an incident;
- Documentation of available equipment, personnel, and resources for responding to an incident; and
- Descriptions of the response teams and the roles and responsibilities of the team members within the structure of the Incident Command System.

Enbridge has also developed Emergency Response Action Plans (ERAPs) for the four response zones noted above. The ERAPs are condensed versions of the ICP specifically tailored for each response zone. The ERAPs include maps, line information, and equipment lists. Information specific to the proposed Line 3 pipeline would be included in the Superior Response Zone ERAP, once Enbridge finalizes the Project route and construction design.

The ERAP is publically available (www.emergencyresponderinfo.com) and is distributed to emergency response agencies in addition to Enbridge personnel. For further information about Enbridge's emergency response plan, see Applicant's Certificate of Need Application and Chapter 10 in this EIS.

2.8.3.2 *Pre-Positioned Response Equipment and Staff*

Enbridge Pre-Positions Emergency Equipment and Staff for Most Effective Response

The Enbridge facilities in Thief River Falls and Bemidji, Minnesota, and in Superior, Wisconsin, house emergency response equipment to respond to pipeline spill incidents. The fourth maintenance facility to be located east of the Clearbrook terminal would maintain similar emergency response equipment. Equipment housed at these facilities includes vacuum trucks, boats, containment booms, skimmers, pumps, and other related equipment and vehicles.

Pre-positioned containment and recovery equipment would also be maintained and available at each of the pipeline pump stations and at district Enbridge offices along the rights-of-way of the proposed Line 3 pipeline. Enbridge also maintains an Enterprise Emergency Response Team, which responds to large-scale incidents throughout the United States that require more resources than are available within a single response zone.

2.8.3.3 *Spill Response Training*

Enbridge's Spill Response Training Exceeds National Standards

Enbridge's ongoing spill response training programs meet the requirements of the National Preparedness for Response Exercise Program (PREP) standards. The PREP standards were developed by PHMSA, the U.S. Coast Guard, the U.S. Environmental Protection Agency, and the U.S. Department of Interior's Bureau of Safety and Environmental Enforcement to establish a training program that meets the intent of Section 4202(a) of the Oil Pollution Act of 1990. Completion of the PREP training allows federally regulated companies to maintain compliance with federal oil pollution response exercise requirements mandated by the Oil Pollution Act of 1990.

Enbridge personnel participate in both classroom and practical training in safety and emergency response procedures, including Incident Command System training, and are required to demonstrate knowledge and proficiency in these areas as appropriate to their responsibilities in accordance with the approved ERAP. PREP standards require at least one written/classroom spill response exercise and one equipment deployment exercise annually. Enbridge has indicated that their training programs exceed this standard.

2.9 ABANDONMENT OF THE EXISTING LINE 3 PIPELINE

In Abandoning the Existing Pipeline, Enbridge Would Comply with All Regulations

Once the proposed Line 3 pipeline is placed in service, Enbridge would abandon the existing Line 3 pipeline in accordance with federal, state, and tribal statutes, rules, and regulations. Abandoning the existing Line 3 pipeline would consist of disconnecting the pipeline from all sources of transported liquid, including other pipelines, pump stations, terminals, meter stations, control lines and other operating facilities; purging all crude oil or other combustibles (including vapor) from the line with an inert material;[12] and sealing the ends of the pipes and facilities left in place. Enbridge would subsequently file a report with PHMSA, documenting where the line crosses over, under, or through a

[12] Waste produced during purging is collected for proper disposal at a licensed landfill. Enbridge's Environmental Protection Plan describes waste and hazardous material handling and disposal.

commercially navigable waterway and would maintain permanent records so that the pipeline could be accurately located in the field according to Minnesota Department of Transportation regulations.

Enbridge would continue to maintain and monitor the Line 3 pipeline right-of-way after the pipeline is removed from service. Enbridge would maintain signage and continue to include the pipeline in the Minnesota Gopher State One-Call system. Enbridge would continue to regularly patrol the right-of-way to monitor surface conditions, mow brush within the right-of-way, and inspect and maintain the cathodic protection system. Finally, Enbridge would retain the abandoned Line 3 pipeline within the Enbridge emergency response protocols.

For further information on abandonment, see Appendix B and Chapter 8.

2.10 POTENTIAL CONNECTED ACTION – TRANSMISSION LINES

Connected actions to the proposed Project include transmission lines and associated infrastructure as described below. These actions are undergoing separate environmental reviews and permitting, and would be constructed by entities other than the Applicant.[13] The environmental review documents that have already been prepared for these proposed connected actions are incorporated by reference into this EIS.

Any future actions associated with additional increases in throughput on the proposed Line 3 pipeline would require a new application for a Certificate of Need from the Commission and a review of the need for the requested increase. Enbridge has not indicated any plans for future increases in throughput at this time and hypothetical future increases in throughput have not been evaluated as part of this EIS.

As discussed in Section 8.3.1, high-voltage power lines can accelerate corrosion of nearby pipelines. In these cases, corrosion protection should therefore be augmented with a polarization cell to help dissipate stray voltage away from the pipeline. It is unknown whether the existing or proposed Line 3 pipelines have been designed for such conditions.

Transmission Lines, for Which Enbridge Is Not Responsible, Also Must Be Considered

Electrical power to the new pump stations would be supplied by electrical transmission lines constructed by third-party utilities for the Line 3 Project. Each line would terminate at the electrical switching equipment within the pump station. Construction and operation of the transmission line and associated facilities would be the responsibility of the electrical utility.

2.10.1 Two Inlets Pump Station – Clover-Potato Lake Transmission Line

The Clover-Potato Lake transmission line would be a 7-mile-long, 115-kilovolt (kV) line connecting the Two Inlets pump station to the existing Great River IM-MPT Line within Arago and Clover townships in Hubbard County. The transmission line would be supported by 70- to 80-foot-tall single-pole structures with horizontal post insulators and 350- to 400-foot spans between them. It would follow the Line 3

[13] Connected actions are defined in Minnesota Rules 4410.4300 Subpart 9. Two projects are "connected actions" if a responsible governmental unit determines they are related in any of the following ways: (A) one project would directly induce the other; (B) one project is a prerequisite for the other and the prerequisite project is not justified by itself; or (C) neither project is justified by itself.

pipeline route for approximately 5 miles but would not be co-located with any other pipeline or utility corridor for the remaining 2 miles. The transmission line would be constructed within a 100-foot-wide right-of-way. This Project would be subject to environmental review under Minnesota Administrative Rules Chapter 7850 to address environmental impacts ranging from construction-related ground disturbance, stormwater, noise, and air emissions, to maintenance of a cleared right-of-way throughout the operational life of the transmission line.[14] The eDocket number for this project is ET2/TL-15-689.

2.10.2 Backus Pump Station – Bull Moose Transmission Line

The Bull Moose transmission line would be a 2.5-mile-long, 115 kV line connecting the Backus pump station to the existing Minnesota Power Badoura-to-Pine River 115 kV transmission line in Cass County. The transmission line would primarily be supported by 70- to 80-foot-tall single-pole structures with horizontal post insulators. In certain locations, H-frame, three-pole structures might be used in place of the single-pole structures. The spans between the structures would measure 350 to 400 feet. The transmission line would run parallel to Minnesota Power's DC line for about 2 miles before crossing about 0.3 mile of rural land to meet the Minnesota Power Badoura-to-Pine River line. It would be constructed within a 100-foot-wide right-of-way. Department of Commerce, Energy Environmental Review and Analysis prepared an environmental assessment for this Project in 2016.[15]

The eDocket number for this project is ET2/TL-15-628.

2.10.3 Palisade Pump Station – Palisade Transmission Line

The Palisade transmission line would be a 13-mile-long, 115 kV line connecting the Palisade pump station to a new Rice River breaker station constructed for the Project in Aitkin County. The transmission line would be supported by 70- to 80-foot-tall single-pole structures with horizontal post insulators. In certain locations, H-frame, three-pole structures might be used in place of the single-pole structures. The spans between the structures would measure 275 to 450 feet. The transmission line would parallel Highway 169 across primarily agricultural lands for the 13 miles between the Palisade pump station and the Rice River breaker station, and would be constructed within a 100-foot-wide right-of-way. Department of Commerce, Energy Environmental Review and Analysis prepared an environmental assessment for this transmission project in 2016.[16] The eDocket number for this project is ET2/TL-15-423.

2.10.4 Cromwell Pump Station – Cromwell Transmission Line

The Cromwell transmission line would be a 115 kV line spanning the less-than-1,500 feet between the Cromwell pump station and Great River Energy's 115 kV LC-CSX transmission line near the Great River Energy Cromwell substation in Carlton County. The line would be supported by 70- to 80-foot-tall single-pole structures with horizontal post insulators. The transmission line would cross rural land between the

---

[14] Department of Commerce, Energy Environmental Review and Analysis, March 2016. Environmental Assessment for the Clover-Potato Lake Transmission Line Project. https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup&documentId={D141BAB0-248C-40A6-9127-8FFC98EDB2B2}&documentTitle=20159-114207-01

[15] Department of Commerce, Energy Environmental Review and Analysis, March 2016. Environmental Assessment for the Bull Moose Transmission Line Project. http://mn.gov/commerce/energyfacilities//resource.html?Id=34428.

[16] Department of Commerce, Energy Environmental Review and Analysis, March 2016. Environmental Assessment for Palisade 115 kV Transmission Project http://mn.gov/commerce/energyfacilities//resource.html?Id=34467.

Cromwell pump station and Great River Energy's transmission line, and would likely be constructed within a 100-foot-wide right-of-way. The transmission line, however, is currently subject to final design. This Project would be subject to environmental review under Minnesota Administrative Rules Chapter 7850 to address environmental impacts ranging from construction-related ground disturbance, stormwater, noise, and air emissions, to maintenance of a cleared right-of-way throughout the operational life of the transmission line.

2.11 REFERENCES

Enbridge Energy, Limited Partnership (Enbridge). 2013. Environmental Mitigation Plan: Pipeline Maintenance Projects.

______. 2016a. Environmental Assessment Worksheet (EAW). November. Response to Data Request 01 to provide additional details for the EAW filed by Enbridge in April 2015.

Enbridge and North Dakota Pipeline Company, LLC. 2014. Certificate of Need Application, Section 1.0. (Docket No. PL-6668/CN13-473.)