Line 5 Wisconsin Segment Relocation Project

Wetland and Waterbody Post-Construction Monitoring Plan

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1 PROJECT INTRODUCTION

Enbridge Energy, Limited Partnership ("Enbridge") owns the U.S. portion of the world's longest liquid petroleum pipeline system. Combined with the Canadian portion, the operationally integrated pipeline system spans approximately 3,200 miles across North America and has been in operation since 1950.

Enbridge's existing Line 5 pipeline is a 645-mile interstate pipeline that originates in Superior, Wisconsin, traverses northern Wisconsin and the Upper and Lower Peninsulas of Michigan, and terminates near Sarnia, Ontario, Canada. The Wisconsin portion of the existing Line 5 pipeline crosses Douglas, Bayfield, Ashland, and Iron Counties. Within Ashland County, the existing Line 5 crosses through approximately 12 miles of the Bad River Reservation ("Reservation") of the Bad River Band of Lake Superior Chippewa Tribe ("Bad River Band").

Enbridge and the Bad River Band have been in discussions for several years regarding renewal of pipeline easements on 15 parcels of land through the Reservation. In January of 2017, the Bad River Tribal Council announced their decision to deny renewal of Enbridge's easements. Enbridge entered into mediation with the Bad River Band and in July 2019, the Bad River Band terminated mediation discussions and filed suit against Enbridge seeking removal of the pipeline from the Reservation. In response to the discussions with the Bad River Band and litigation filed in July 2019, Enbridge developed the Line 5 Wisconsin Segment Relocation Project ("Project").

The Project will relocate the existing Line 5 pipeline around the Reservation and replaces approximately 20 miles of the existing Line 5 pipeline, including the segment of the existing Line 5 pipeline that traverses through the Reservation, with approximately 41 miles of new, 30-inch outside diameter pipeline segment located entirely outside the Reservation.

Enbridge has prepared this Wetland and Waterbody Restoration and Post-Construction Monitoring Plan ("Monitoring Plan") to evaluate and determine the success of wetland and waterbody restoration within the affected workspace following construction of the Project.

Restoration activities that will occur immediately after construction to stabilize and seed the disturbed construction workspace are described in Enbridge's Environmental Protection Plan ("EPP"). Post-construction monitoring will begin during the first growing season after the restoration work is complete. Monitoring will not be considered complete until the performance standards described in this Plan have been met and reviewed, and approved by the applicable agencies. If the performance standards have not been met by the end of the planned monitoring period (e.g., five years for wetlands), Enbridge, as directed by the applicable agencies, will either extend monitoring at those sites, develop a site-specific restoration plans, or provide additional mitigation.

1.1 MONITORING PLAN OBJECTIVES

The purpose of this Monitoring Plan is to establish the monitoring procedures and performance standards that will be used to:

- determine the status of wetlands and waterbodies restoration relative to pre-construction baseline conditions;
- document where successful wetland and waterbody restoration has been achieved; and
- identify additional mitigation that may be warranted if successful restoration in specific wetlands and waterbodies has not been achieved.

This Monitoring Plan is based on pre-construction data already collected to document aquatic resources; including previous data, analyses, and procedures submitted in support of Enbridge's USACE and DNR

applications, and will incorporate future data that will be collected prior to construction to help establish baseline conditions. It also: describes the monitoring methodology to be followed during specified time periods following completion of the Project; identifies performance criteria to evaluate the success of wetland and waterbody restoration; and describes the contents of required monitoring reports, including, but not limited to conclusions regarding monitoring results and recommendations for appropriate next steps such as additional monitoring, adaptive management, and/or additional mitigation, to respond to any areas that are not successfully restored during the planned monitoring period.

2 QUALIFICATIONS

Post-construction monitoring of restored wetlands and waterbodies will be performed using personnel under contract with Enbridge who meet the following requirements:

- Personnel leading the monitoring activities for a given monitoring team will hold a bachelor's degree or higher in biological and or geological science, field research experience including project design sampling and analysis, experience/knowledge in wetland plant community ecology, and vegetation sampling/identification. Alternatively, personnel will have 10 years of field research, project design, and analytical experience; and experience/knowledge in wetland plant community ecology and vegetation sampling/identification.
- Personnel collecting the data shall demonstrate knowledge of local flora prior to fieldwork, including the identification of the range of native and non-native plant species expected to be encountered onsite. Personnel should be qualified to identify unknown plant species with a regional dichotomous key and/or herbarium work. Personnel must also demonstrate familiarity with soils and hydrology.

3 PRECONSTRUCTION BASELINE DATA

Enbridge completed wetland surveys along the Project route in 2019 and 2020 and submitted a 2019 Wetland and Waterbody Survey Report and an addendum report that included the information collected during the 2020 field season to both the U.S. Army Corps of Engineers ("USACE") and the Wisconsin Department of Natural Resources ("DNR"). As described in more detail in sections 3 and 4, Enbridge collected and compiled in its reports the following pre-construction baseline data for wetlands and waterbody within the proposed workspace of the Project:

- Field-delineated wetland community types according to Cowardin (1979), Circular 39 (U.S. Fish and Wildlife Service ["USFWS"], 1956), and Eggers and Reed (2014) classification systems;
- Publicly available data, such as aerial imagery U.S. Geological Survey topographic maps and U.S. Geological Survey gage data ;
- Field-delineated dominant plant species by stratum;
- Field characterization of hydric soil types and wetland hydrology (e.g., inundated, saturated soils);
- Field determined wetland functional assessments;
- Representative photos of wetlands and associated plant communities;
- Field-delineated waterbody locations;
- Waterbody characterizations, including top of bank width water depth, ordinary high water mark, substrate type, flow regime, and dominant riparian vegetation;

- Bank vegetation community type (i.e., Eggers and Reed, 2014);
- Representative photos of waterbody at the time of survey;
- Light Detection and Ranging ("LIDAR") of the Project route; and
- Ground elevation civil survey data collected at regular intervals along the centerline; and
- Quantified and qualitative assessments of wetland and waterbody impacts.

Enbridge will augment the existing baseline data, with the following additional information that will be collected prior to construction:

- civil survey elevation information along the proposed centerline of each non-HDD/Direct Pipe stream crossing starting and extending approximately 50 feet back from the top of each stream bank (where stream depth and velocity allows for safe access);
- additional photographs documenting upstream, downstream and of each bank crossing at the proposed centerline;
- visual assessments of streambed characteristics (observed streambed materials and characteristics such as gravel, cobble, riffles, pools);
- visual assessments of fish habitat such as undercut banks, instream structures (e.g., logs), potential spawning gravel; and
- visual evidence of bank erosion at or near the proposed centerline crossing.

4 WETLAND IDENTIFICATION, FUNCTIONAL ASSESSMENT, AND DISTURBANCE

4.1 WETLAND IDENTIFICATION

Table 4.1-1 summarizes the Cowardin wetland classification types and the corresponding Eggers & Reeds classifications of wetlands affected by the Project. Additional information regarding the specific wetland types identified during the field surveys is provided below. Enbridge also developed a Compensatory Wetland Mitigation Plan that addresses temporal wetland impacts, wetland conversion (e.g., conversion of forested wetland to emergent wetland), and permanent wetland fill. The Compensatory Wetland Mitigation Plan has been submitted to and reviewed by the respective agencies. Refer to the Wetland Mitigation Plan for further wetland definitions.

Table 4.1-1: Wetland Classification Types

Cowardin Classification	Eggers & Reed Classification
PEM	Bog; Deep Marsh; Farmed Wetland; Fresh Meadow; Open Bog; Seasonally Flooded Basin; Sedge Meadow; Shallow Marsh; Shallow Open Water; Wet Meadow
PSS	Alder Thicket; Bog; Coniferous Swamp; Shrub-Carr
PFO	Bog; Coniferous Swamp; Floodplain Forest; Hardwood Swamp

PEM = palustrine emergent; PFO = palustrine forested; PSS = palustrine scrub-shrub

As noted in the Wetland and Waterbody Survey Report, some of the wetlands included multiple Cowardin and/or Eggers and Reed classifications within the same wetland system. Where this occurred each community type within the wetland was recorded as a separate polygon.

4.2 WETLAND FUNCTIONAL ASSESSMENT

During preconstruction field delineations, each wetland was assessed based on the DNR Wetland Rapid Assessment Method ("WRAM") wetland functions, including: Floristic Integrity; Human Use Values; Wildlife Habitat; and Fish and Aquatic Life Habitat. The WRAM data sheets for these assessments were included in Enbridge's Wetland Delineation Report. Enbridge then used the WRAM data sheets to assign an overall functional value rating of: Low, Low-invasive, Medium, or High to each wetland. The assignment process was conservative and the highest potential overall general functional value was assigned to each wetland.

The wetland determination data forms specifically referenced the area being sampled. Because, this measure alone does not address the condition and functional value of the sample area or the entire feature, field crews also evaluated each wetland using the Wisconsin Wetland Rapid Assessment Methodology (RAM).[1] RAM was applied to determine the functional value, floristic integrity, and condition of each wetland assessment area and buffer, and assess potential impacts. The floristic integrity assessment was focused on primary questions pertaining to invasive species cover, strata, Natural Heritage Information plant community ranking, and relative frequency of the plant community within the watershed. Excluded from this assessment was the optional documentation of vascular plant species and cover/abundance.

Additional vegetation surveys were conducted during the 2022 field season on a subset of wetlands within the Project area to expand the assessment of floristic integrity. These additional surveys were restricted to wetland that were determined to be of moderate to high quality based on the data collected during the initial wetland delineation field efforts (2019-2020).

The 2022 evaluations used a modified timed-meander survey method that deviated from the traditional approach in three ways.

1. Traditional timed-meander surveys evaluate entire features, in this case, entire wetlands. The modified survey was restricted to a corridor, thus the survey effort only reflects the portion of the wetland area within the corridor.
2. Under the traditional method in Wisconsin[2], species are recorded in 5-minute increments, noting which increment a species was first observed (e.g., 0-5 minutes, 5-10 minutes, etc.). It is suggested that surveys occur for a minimum of 30 minutes. This process can continue beyond 30 minutes under different scenarios, but the process is also flexible and allows the practitioner to stop before reaching a full 30 minutes. The approach implemented for this Project was to evaluate the entire defined assessment area and record every vascular plant species encountered.
3. Another deviation specific to the Wisconsin method was that species abundance codes were not collected for this survey since they are non-numerical and cannot be used for analysis purposes.

In general, separate and independent timed-meander surveys were conducted for each wetland community type. As such, multiple surveys were often conducted within wetlands with multiple Eggers and Reed community types. However, in some cases, a community component of a specific wetland was reclassified and merged with the primary Eggers and Reed community. This was generally done where past forest management had resulted in a portion of the forested community being open. The original delineations

[1] https://dnr.wisconsin.gov/topic/wetlands/methods.html#:~:text=The%20Wisconsin%20Wetland%20Rapid%20Assessment,wetland%20performs%20a%20given%20function. Accessed December 2022.

[2] Timed-Meander Sampling Protocol for Wetland Floristic Quality Assessment, WDNR

classified these open areas as separate communities within the forest, but because it is anticipated that these open areas will revert to having canopy cover, the 2022 evaluations treated these areas as one community.

4.3 CONSTRUCTION IMPACTS

The primary impact of pipeline construction and right-of-way maintenance activities on wetlands is the temporary removal of wetland vegetation during active construction and the conversion of forested and shrub-scrub wetland vegetation to emergent wetland vegetation within the permanent right-of-way. Construction also temporarily diminishes the recreational and aesthetic value of the wetlands crossed; and temporarily removes or alters wetland wildlife habitat. There is also a potential for impacts on groundwater surface water hydrology particularly in the vicinity of blasting, or as a result of changes in topography. These effects would be greatest during and immediately following construction and most, with the exception of vegetation and habitat impacts, will cease after the trench is backfilled, contours are restored, and erosion controls are installed. In PEM wetlands, the impact of construction vegetation and habitat is relatively brief, since herbaceous vegetation will typically regenerate within one or two growing seasons. In PFO and PSS wetlands, the vegetation and habitat impacts lasts longer due to the longer recovery period of these vegetation types.

Project construction activities will result in approximately 101.1 acres of temporary wetland disturbance associated with clearing, pipeline installation activities, and establishment of temporary access roads. As indicated in Table 3-2, PEM wetlands and more than half of the affected PFO and PSS wetlands (totaling together approximately 67.1 acres of wetlands) will be allowed to revert to its original cover type after construction. The remaining approximately 33.9 acres of PFO and PSS wetland will be converted to PEM wetland within the permanent right-of-way as a result of vegetation maintenance during operation of the pipeline. A total of approximately 0.02 acre of PEM and PSS wetland will be filled for construction of aboveground facilities permanent access roads.

Table 4.3-1: Summary of Line 5 Wetland Impacts

Wetland Type [a]	Impact Areas - Allowed to Revert to Pre-construction Wetland Cover Type (Acres) [b]	Impact Areas - Converted From One to Another Wetland Type (Acres) [c]	Permanent Impact (Acres) [d]
Palustrine Emergent (PEM)	28.1	0	0.02
Palustrine Forested (PFO)	32.8	30.0	0
Palustrine Scrub/Shrub (PSS)	6.3	3.9	<0.01
TOTAL	**67.1**	**33.9**	**0.02**

[a] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends.
[b] Wetland type based on Cowardin, 1979.
[c] Based on temporary workspace disturbance due to construction activities.
[d] Based on permanent right-of-way ("ROW") with conversion from PSS and PFO to PEM.
[e] Based on permanent wetland impacts (fill).

4.4 WETLAND RESTORATION

To the maximum extent practicable, Enbridge will restore affected wetlands to preconstruction conditions, which is considered in-place compensation, but not in-kind and not in-advance compensation. Enbridge will also provide compensatory wetland mitigation for unavoidable Project-related impacts including temporary loss of wetland cover, permanent conversion of wetland type, and permanent wetland fill.

Non-standing water wetlands will be seeded using the mix provided in Appendix A to provide temporary cover and allow natural revegetation via the seeds and rhizomes in the topsoil spread back over the right-of-way (ROW) after pipe installation. No fertilizer, lime, or mulch will be applied in wetlands.

Enbridge does not intend to seed standing water wetlands because the reestablishment of vegetation in these types of wetlands occurs best through natural process without supplemental seeding. Enbridge plans to allow natural reforestation of the temporary workspace area within PFO wetlands via stump sprouting, root sprouting, and natural recruitment.

4.5 WETLAND MONITORING OBJECTIVES

The goal of the post-construction wetland monitoring program will be to assess quantitatively and/or qualitatively the success of post-construction wetland restoration through documentation of wetland elevations, hydrology and flow patterns, plant cover, plant distribution, and species composition of plant communities in the wetlands impacted by pipeline construction and operation. The following protocol was developed to establish a standardized monitoring procedure that will be used to evaluate the effectiveness of wetland restoration efforts, to document overall revegetation success, and to identify areas that may require additional remediation.

4.6 WETLAND MONITORING METHODOLOGY

Based on the functional value rating methods described in Section 4.2 above, it was determined that the Project will impact approximately:

- 26.1 acres of wetlands with a WRAM High assessed functional value
- 57.0 acres of wetlands with a WRAM Medium assessed functional value
- 18.1 acres of wetlands with a WRAM Low or Low-invasive assessed functional value.

Based on these functional value categories, Enbridge will implement two levels of monitoring. High functional value and medium value high floristic value wetlands, as well as select wetland adjacent to ASNRI waterbodies, will be assessed using one monitoring protocol and the other Medium, and Low or Low-invasive wetlands will be assessed using a second monitoring protocol, as described below. Additional data will also be collected for seeps and groundwater discharge wetlands where blasting was conducted.

Data will be collected to determine the success of revegetation within all wetlands, however high functional value and medium value high floristic value wetlands, as well as select wetland adjacent to ASNRI waterbodies and seeps and ground water discharge wetlands where blasting was conducted will be monitored more intensively than other medium, and low or low-invasive functional value wetlands, as described below.

Enbridge will generally maintain a 50-foot-wide operational corridor along the pipeline in an herbaceous state to facilitate aerial monitoring and pipeline access. As a result, portions of PFO and PSS wetlands will be permanently converted to PEM wetlands by routine clearing within the permanent easement. The status of revegetation in these permanently converted PFO/PSS areas will be described, inventoried and assessed similar to naturally occurring PEM wetlands during post-construction monitoring.

4.6.1 All Wetlands

Table 4.6-1 below describes the monitoring activities that will take place in wetlands within the Project workspace. Annual monitoring will begin the first growing season after construction and will be conducted for up to five growing seasons or until success criteria have been met[3].

Table 4.6-1: Summary of Proposed Monitoring Methods for Line 5

Monitoring Activities	Other Medium, and Low and Low Invasive Functional Value Wetlands	High Functional, Medium Functional High Floristic Quality Value Wetlands and Select wetlands Adjacent to ASNRI Waterbodies
Monitored first growing season post construction	X	X
Photos taken in each direction	X	X
Observations of Hydrologic Indicators	X	X
Status of erosion controls	X	X
Observations of off-road vehicle activity	X	X
Observations of elevation changes	X	X
Observations of third-party disturbances	X	X
Incidental wildlife observations	X	X
Dominant species list	X	X
Weed presence comparison against preconstruction condition	X	X
Plot sampling	50 percent	X
Timed-meander survey		X

4.6.2 Wetland Monitoring First Year Post Construction

Enbridge will visit each wetland affected by the Project during the first growing season after construction. This first year of monitoring will evaluate the topography and stabilization of wetland crossings. Any crowning left for anticipated settling will be evaluated to determine whether soils are returning to the native elevation within the expected timeframe. Areas where subsidence has occurred over the trench will also be noted for potential restoration. Enbridge will also utilize the baseline conditions documented during the pre-construction wetland surveys to identify any other potential deviations in site hydrology.

Enbridge will record general conditions in each wetland including: presence and distribution of hydrophytes and estimated cover; presence/absence of invasive species and estimated cover; natural indicators such as wildlife observations (incidental); visual evidence of rutting, compaction, or erosion; status of erosion controls; off-road vehicle activity; and other third-party disturbances[4]. Enbridge will take a representative photograph in each wetland to document first year post-construction conditions.

In addition to the collection of the base information described above, Enbridge will establish 1meter by 1-meter random plot locations (1-meter quadrat locations to be selected by field personnel during the first monitoring season) in 50 percent of the low and medium functional value wetlands, and in all of the high functional value wetlands. The exception would be in wetlands located between the HDD entry and exit points where Enbridge reduced the construction right-of-way to 30 feet and activities were restricted to only

[3] Monitoring will cease in a given wetland when revegetation is considered successful in that wetland.
[4] Other third-party disturbances could include excavations, filling, tree clearing, and livestock grazing.

vegetation clearing, which will be maintained as part of the permanent easement, Enbridge will conduct only a post construction walk-over inspection. No plots would be established in these wetlands.

The location of each plot will be recorded by global positioning system (GPS) and marked on aerial photographs in order to maintain consistent plot locations for the duration of the monitoring program. The same plots will be assessed each year, generally around the same time of year. At a minimum, one plot will be established for approximately every half-acre of affected wetland in the ROW. For example, a wetland that is between 0 and 1.0 acre in size will have at least two plots; a wetland that is at least 1.0 acre but less than 1.5 acres in size will have at least three plots; and a wetland that is at least 1.5 acres but less than 2.0 acres on the ROW will have at least four plots.

The species within each plot will be identified and recorded and the dominant species will be noted. Hydrologic indicators will be identified and the presence/absence of invasive species within the plot will be documented. Where forested wetlands are allowed to regenerate naturally, tree regrowth or natural recruitment will be documented on data sheets. The percent cover for each species, as well as the total percent cover by native hydrophytes, total percent cover for the entire plot, and relative percent of native hydrophytes will be estimated.

High Functional Value and Medium Functional Value with High Floristic Quality Wetlands, and Select Wetlands Adjacent to ASNRI Waterbodies

In addition to the data collection discussed above, timed-meander surveys will be conducted in high functional value and medium functional value with high floristic quality wetlands, as well as select wetlands adjacent to ASNRI waterbodies. The field surveyors will select an assessment area within each wetland that is representative of the wetland overall. Within this area, the surveyors will conduct the timed-meander survey. This will involve identifying within a specified amount of time the plant species within each assessment area and categorizing each species relative abundance (e.g., abundant, common, occasional, uncommon, rare) and percent areal cover within the assessment area.

Data will be recorded on data forms that will be used along with photographs to document the progress of restoration and compare previous seasons of monitoring. Sample data forms are provided in Appendix B.

Seeps and Groundwater Discharge Wetlands Where Blasting Occurred

Agencies have expressed concern that blasting could alter the hydrology of seeps and groundwater discharge wetlands. Prior to the start of construction, Enbridge will work with the respective agencies to identify select wetlands to install monitoring wells upslope and downslope of these types of wetlands where blasting is anticipated.

Monitoring wells will be installed in nests to allow for the determination of groundwater flow direction and to assess if there are changes in groundwater conditions upgradient and downgradient of the pipeline. Each nest will consists of at least 3 monitoring wells installed in a triangular pattern with at least one of the monitoring wells located on the opposite side of the pipeline. It is anticipated that the monitoring wells will be constructed of 2-inch, 10-slot, screened polyvinyl chloride ("PVC") or stainless-steel pipe with a point (for direct push of the well into the soil) equipped with a 2-inch solid riser. Either the riser pipe or the expandable plug is vented to allow atmospheric equilibrium to develop in the well.

Wells will be monitored using non-vented, pressure-based loggers (e.g. In-SiteTM, HOBO®, or similar), installed in the wells and programmed to record absolute pressure at 1-hour intervals. Barometric pressure data will be collected using pressure-based loggers programmed to record absolute pressure at 1-hour

intervals installed in an above-ground vented well riser. One barometric pressure logger will be installed. Water levels will be measured manually by a water level meter (e.g., Solinst®) at least bi-annually during installation and retrieval of the water level loggers from the monitoring wells. The wells will be resurveyed on an annual basis.

Data loggers will be installed following spring thaw and retrieved after the end of each growing season. Enbridge will continue to collect data on an annual basis during the frost-free period or until the performance standards have been met and reviewed by the applicable Agencies. Where performance standards at specific sites have not been met by year 5 of monitoring, Enbridge, in consultation with the Agencies, may extend monitoring at those sites.

4.6.3 Wetland Monitoring Years 2 through 5

Enbridge will continue to monitor the revegetation of affected wetlands annually for up to 5 years to assess wetland restoration as described in the Year 1 Post Construction Monitoring effort. Wetland monitoring during years 3 and 5 will also focus on both landscape level and on-the-ground assessments of whether hydrology on and the off-right-of-way are similar and consistent with the baseline conditions identified during pre-construction field surveys. Enbridge will also revisit any areas of crowning or subsidence, or other sites identified during years 1 and 3 monitoring where restoration did not meet the performance standards established in Section 3.8. If possible the subsequent monitoring will be performed during the same season/time of year as the Year 1 monitoring.

4.7 WETLAND SUCCESS CRITERIA

Wetland restoration shall be considered successful if all of the following criteria are satisfied:

- vegetation in the monitored wetland is at least 70 percent of either the baseline cover documented in the wetland prior to construction, or at least 70 percent of the cover in adjacent unaffected wetland areas;
- there is no evidence of adverse changes to baseline hydrology and drainage;
- wetland topography is restored to baseline conditions and similar to the topography of adjacent undisturbed wetland areas;
- the percent cover of invasive species within the construction workspace is similar to or less than the percent cover in adjacent undisturbed areas outside of the construction workspace and within the same community type.
- if natural rather than active revegetation was used, the plant species composition and distribution is consistent with early successional wetland plant communities in the affected ecoregion; and
- the presence, density, and distribution of invasive vegetation species is less than or similar to pre-construction baseline conditions.

5 WATERBODY IDENTIFICATION, ASSESSMENT, AND DISTURBANCE

5.1 WATERBODY IDENTIFICATION

Table 5.1-1 summarizes the number and types of waterbodies that are crossed by the pipeline centerline.

Table 5.1-1 Summary of Pipeline Centerline Waterbody Crossings

Waterbody Regime	Number
Delineated Waterbodies	
Perennial	29
Intermittent	40
Ephemeral	33
PROJECT TOTAL	102

Notes: Notes: Delineated waterbodies are based on 2019 and 2020 field surveys. Includes rivers, streams, swales, and ditches. Includes one WDNR 24K Hydrography Data waterway (WDH-18) where survey was not permitted in a highway median and 17 WDH waterbodies where a navigability determination by WDNR is requested.

As indicated on the table, the proposed pipeline centerline (including HDD crossings) will cross 102 delineated waterbodies. These include 29 perennial waterbodies, 40 intermittent waterbodies, and 33 ephemeral waterbodies.

5.2 WATERBODY IMPACTS AND MITIGATION

Enbridge will cross the majority of waterbodies using open cut construction methods, which will require trenching and backfilling of the bed and banks to install the pipeline. Enbridge will cross the remaining waterbodies using a trenchless method, which will avoid direct impacts on the water, bed and banks of these watercourses.

Potential waterbody impacts associated with pipeline construction include the clearing of bank vegetation and the disturbance of bed and banks; impacts on flow impacts and water quality including the suspension and downstream transport of sediments; and direct and indirect loss of aquatic organisms and habitat. These effects are typically minor and short-term; generally limited to the construction and near downstream area and the periods of active construction; and quickly dissipate once the bed and banks are restored, stabilized, and revegetated

Enbridge will mitigate waterbody impacts through use of its EPP. Enbridge will cross larger waterbody using a trenchless method. Enbridge will use a dry crossing method (either dam and pump or flume) at all other waterbodies if flowing water is present. Enbridge's use of a dry crossing method will maintain flows and use temporary dams upstream and downstream of the pipeline crossing to isolate the waterflow from the work area. Enbridge will only use the open cut (wet trench) method, which does not isolate the work area from the stream water, to cross waterbodies with no apparent flow. Enbridge has also reduced the width of the construction right-of-way at most waterbody crossings to 95 feet. The actual instream disturbance associated with excavation will typically be only 15-25 feet, depending on the cohesive nature of the substrate. For dry crossings, the isolated segment of the stream will be determined based on site-specific conditions, but typically is less than 50 feet wide. Enbridge's selective or application of these

methods and narrower right-of-way width will avoid or minimize instream work and the potential for sedimentation and other waterbody impacts.

5.3 WATERBODY RESTORATION

Waterbody restoration will be performed at open cut crossings. Following installation of the pipeline where open cut methods are used, Enbridge will backfill the pipeline using the native materials excavated from the trench. Enbridge will restore the bed and banks of each stream. The bed elevations will be matched to avoid impediments to normal water flow. The streambanks will be restored as near as practicable to preconstruction conditions, unless the original slope is determined to be unstable. If there is a potential for significant bank erosion, the Contractor may stabilize disturbed stream banks with rock riprap or other bank protection, with WDNR and USACE approval. Where dry crossing methods are used, the temporary dams, flumes/hoses and pumps will be removed after the bed and banks are restored.

Temporary slope breakers will be installed on all sloped approaches to streams in accordance with the spacing requirements outlined in the EPP. Trench breakers will also be installed at the stream banks, as necessary, where slopes are adjacent to the waterbodies to prevent subsurface water flow and erosion along the trench line. Trench breakers typically consist of burlap sandbags filled with rock-free subsoil or sand and placed from the bottom of the trench to near the top surrounding the pipe. Permanent stabilization will be initiated within 24 hours unless site and weather conditions delay permanent installation.

Once the banks are reshaped, the banks will be seeded and stabilized with erosion control BMPs as specified in the EPP. Stream bank vegetation will be reestablished using the seed mix in Appendix B of the EPP, unless applicable agencies specify otherwise. Where a waterbody is within a wetland, the banks will be reseeded with the applicable wetland seed mix.

The travel lane portion of the construction right-of-way and the temporary bridge will remain in place until pipeline construction activities (including final cleanup) are complete. Permanent slope breakers will be installed across the full width of the right-of-way during final cleanup. The Contractor will remove temporary bridges during the final cleanup and restoration phase of construction after installation of the new pipeline and right-of-way access is no longer required. Enbridge will remove temporary sediment control devices across the construction right-of-way only after achieving vegetative cover, in accordance with permit conditions.

No routine post-construction maintenance or work is anticipated to be conducted in waterbodies, however, Enbridge will generally maintain a 50-foot-wide operational corridor along the pipeline in an herbaceous state to facilitate aerial monitoring and pipeline access.

5.4 WATERBODY MONITORING OBJECTIVES

The goal of the post-construction waterbody monitoring program will be to assess quantitatively and/or qualitatively the success of post-construction waterbody restoration through documentation of physical waterbody parameters including bed and bank elevations and contours, bank and bed composition and stabilization, and water quality, depth, and flow. The following protocol was developed to establish a standardized monitoring procedure that will be used to evaluate the effectiveness of waterbody restoration efforts, to document overall success, and to identify areas that may require additional remediation.

5.5 WATERBODY MONITORING METHODOLOGY

Enbridge proposes to visually monitor each waterbody crossing during the first, second and fifth growing seasons following construction to confirm the successful stabilization of streambanks during high and low

flow regimes, and restoration of waterbody flow relative to the pre-construction baseline data. If possible the subsequent monitoring will be performed during the same season/time of year as the Year 1 monitoring. During each visit Enbridge will document:

- bank and near bank (within 50 feet of bank) stabilization and revegetation;
- any observed soil slumping or erosion
- bank height and width;
- waterbody depth, and flow;

  streambed characteristics and composition of the substrate; and presence of fish habitat such as undercut banks, instream structures (e.g., logs), potential spawning gravel.

Each of these physical parameters will be documented at the crossing location and recorded on a USACE wetland determination data along with the date, time, and location of the observation, the waterbody name, and additional notes on the condition of the surrounding right-of-way, any evidence of third-party activity (off-road-vehicles, grazing, recent construction, etc.), any evidence of erosion, flooding, or notable changes in bank or channel morphology.

In addition to recording physical attributes, during the first year of monitoring, Enbridge will collect grab samples approximately 50 to 100 meters upstream and downstream of the pipeline crossing locations of flowing streams. Samples will be analyzed for dissolved oxygen ("DO"), pH, conductivity, temperature, chemical oxygen demand ("COD"), turbidity (field measurement) and total suspended solids ("TSS"). For the three 303(d) impaired waterbodies (Bay City Creek, Trout Brook, Marengo River), the sampling will also include fecal coliform and total phosphorous. These last two and the COD and TSS analysis will be completed by a certified laboratory using standard analytical methodologies. DO, pH, conductivity, and temperature measurements will be collected in the field using standard analytical methodologies. Additional sampling will be conducted in subsequent monitoring years for any stream that exhibits substantial differences between the upstream and downstream samples for any of the measured attributes.

5.6 WATERBODY SUCCESS CRITERIA

Waterbody restoration shall be considered successful if all of the following criteria are satisfied:

- the waterbody bank is stable and successfully revegetated (based on the appropriate wetland/upland success criteria);
- the height and width of the stream bank approximate preconstruction baseline conditions and/or adjacent undisturbed bank areas;
- the depth and flow characteristics (i.e., free flow without construction related impediment) of the waterbody approximates the preconstruction baseline conditions and/or adjacent undisturbed areas;
- the composition of the bed substrate approximates the preconstruction baseline conditions and/or adjacent undisturbed beds areas; and
- the collected water quality parameters up and downstream of the crossing are similar.

6 WETLAND AND WATERBODY POST-CONSTRUCTION RESTORATION AND CORRECTIVE ACTIONS

Enbridge will work closely with the DNR and the USACE to determine success or additional steps if performance standards are not reached after the planned monitoring is completed. Post-construction restoration activities will be adaptive, based on the results of monitoring, changing site conditions (e.g., land use) and geared toward the final goal of restoring pre-construction characteristics of the resource (i.e., vegetation and hydrology). In determining whether corrective action is needed, Enbridge will evaluate the potential resource impacts from conducting the additional restoration compared to taking no action with continued monitoring.

Not every potential corrective action can be determined at this time but possible corrective measures that may need to be implemented include:

- Installation of additional erosion controls or sediment barriers to stabilize soils and capture or redirect runoff;
- Regrading or recontouring to address topography or hydrology issues;
- Implementation of integrated approaches to invasive or noxious weed infestations as outlined in Enbridge's Invasive and Noxious Species Management Plan and in accordance with Section 4.0 of Enbridge's EPP;
- Reseeding and/or the addition of soil amendments, or supplementing the original seed mix to meet success criteria;
- Supplemental plantings of tree and/or shrubs in selected areas to enhance stabilization or vegetation diversity.

Enbridge will address site stabilization issues that are identified during monitoring. Erosion and erosion and sediment control BMP deficiencies that have the potential to allow silt-laden water to enter wetlands or waterbodies will be prioritized and promptly addressed to prevent resource impacts. If the selected erosion and sediment control BMP is not effective at a particular location (e.g., continued failure), other solutions will be evaluated, such as re-contouring an area to alleviate a drainage flow pattern that is causing erosion or adding additional erosion and sediment control BMPs to divert drainage to a well-vegetated area.

Examples of topography or hydrology-related issues that may require additional restoration include: unexpected ponding, unexpected drainage, and/or disruptions to flow patterns causing changes in pre-construction wetland hydrology. Corrective actions, such as regrading or recontouring, will be implemented if crowning, subsidence, or the restored grade is determined to be interfering with the goal of re-establishing vegetative communities according to the local ecotype, or pre-construction wetland hydrology. Where such issues have been identified, Enbridge will reference pre-construction baseline data including available pre-construction ground elevation data.

Corrective actions for unexpected alterations to groundwater flow related to changes in topography may include regrading or recontouring Actions that may require additional temporary impacts on a wetland or waterbody will be conducted according to pertinent permit requirements and in consultation with applicable Agencies.

If the cover of invasive species within a particular community type is too high within the construction workspace compared to the percent cover of the same species in adjacent undisturbed areas outside of the

construction workspace, Enbridge will manage the issue in accordance with its Invasive Species Management Plan.

Monitoring may determine that some areas have not successfully revegetate after the first growing season. Causes for seeding failure include poor germination or insufficient seeding take as a result of weather conditions, soil conditions, disturbance from cattle or wildlife, competition from invasive species, or erosion. Enbridge will reseed areas that are not adequately revegetated during the monitoring period. Changes in hydrology can also prevent successful restoration. If impacts on hydrology are identified, Enbridge will take actions to restore the hydrology. Other actions may also be taken, such as regrading areas to correct topography, fertilizing low nutrient soils, decompacting soils, setting up exclusion areas to stop grazing or foraging, implementing Enbridge's Invasive Species Management Plan, and/or supplementing seed mixes.

7 REPORTING

The results of the wetland and waterbody monitoring efforts will be submitted to the DNR following each survey year, no later than December 31. The report will include data forms, photographs, location maps, comparisons of upstream and downstream water quality parameters, an analysis of the results and any notable issues, and a recommendation for any additional restoration activities.

If any of the applicable success criteria discussed in Sections 4.8 for wetlands and 5.6 for waterbodies are not met by the end of five years of monitoring, a remedial revegetation plan will be developed and submitted to the USACE and DNR.

8 REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* Washington, DC: U.S. Fish and Wildlife Service Pub., FWS/OBS-79/31. December.

Eggers, Steve D., and Reed, Donald M. 2014. *Wetland Plants and Plant Communities of Minnesota and Wisconsin.* Accessed May 2021. Available online at https://www.mvp.usace.army.mil/Portals/57/docs/regulatory/WetlandBook/Part%201%20-%20Introduction,%20Key%20to%20Plant%20Communities,%20Shallow%20Open%20Water%20Communities.pdf

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APPENDIX A

SEED MIXES FROM EPP

WISCONSIN SEED MIXES

Based on precipitation and general soil types the following seed mixes will be used in Wisconsin:

Table B-1
WI Seed Mix 1 – Standard Upland Seed Mix

Use: Wisconsin state-wide in upland areas
Seeding Rate: 15.0 pounds/acre PLS drilled or 30.0 pounds/acre PLS broadcast without the companion crop
Double the rate of the companion crop when broadcast seeding
Notes: *Enbridge Environment must approve s*ubstitutions *in advance*

Species: Preferred Varieties (if available)	**Pounds/Acre PLS**	**Percent of Mix**
Perennial Ryegrass	2	17.0
Canada Wild-rye	4	33.0
Switchgrass: unimproved native variety	4	33.0
Timothy	2	17.0
Subtotal	12	100.0[1]
Associated Companion Crop Mix		
Oats for summer seeding; or Winter Wheat for seeding in late fall (dormant) or spring	16	80.0
Annual Ryegrass or Slender Wheat Grass	4	20.0
Companion/Cover Crop Subtotal	20	100.0
GRAND TOTAL (pounds)	**32**	**100.0[1]**

[1] May not equal 100 percent due to rounding

Table B-2
WI Seed Mix 2 – Native Sedge/Wet Meadow Mixture

Use: Wisconsin state-wide in unsaturated Wet Meadow wetland areas
Seeding Rate: See below summary.
Notes: *Enbridge Environment must approve* substitutions *in advance*

Common Name	Botanical Name	Indicator Status	Seeds/oz.	Seeds/ft^2	% of Mix
Brome, fringed	*Bromus ciliata*	*FACW*	10,000	1.5	8.1
Blue-joint grass	*Calamagrostis canadensis*	*OBL*	280,000	8.2	1.6
Wild-rye, Virginia	*Elymus virginicus*	*FACW-*	4,200	3.2	42.3
Manna grass, reed	*Glyceria grandis*	*OBL*	80,000	4.7	3.2
Manna grass, fowl	*Glyceria striata*	*OBL*	160,000	4.7	1.6
Bluegrass, fowl	*Poa palustris*	*FACW+*	118,000	16.7	7.1
Sedge, bottlebrush	*Carex comosa*	*OBL*	30,000	2.2	4.3
Sedge, pointed- broom	*Carex scoparia*	*FACW*	84,000	1.5	1.0
Sedge, tussock	*Carex stricta*	*OBL*	53,000	0.8	0.8
Sedge, Common fox	*Carex stipata*	*OBL*	34,000	2.0	3.2
Sedge, fox	*Carex vulpinoidea*	*OBL*	100,000	5.9	3.2
Rush, slender	*Juncus tenuis*	*FAC*	1,000,000	11.0	0.2
Torry's Rush	*Juncus toryi*	*OBL*	1,600,000	5.9	0.6
Bulrush, green	*Scirpus atrovirens*	*OBL*	460,000	16.9	2.0
Wool grass	*Scirpus cyperinus*	*OBL*	1,700,000	6.2	0.2
Milkweed, marsh	*Asclepias incarnata*	*OBL*	4,800	0.4	5.0
Aster, swamp	*Aster puniceus*	*OBL*	80,000	5.9	4.0
Aster, flat-topped	*Aster umbellatus*	*FACW*	67,000	1.5	1.2
Joe-pye weed	*Eupatorium maculatum*	*OBL*	95,000	0.7	0.4
Boneset	*Eupatorium perfoliatum*	*FACW+*	160,000	1.2	0.4
Goldenrod, grass- leaved	*Euthamia graminifolia*	*FACW-*	350,000	1.0	0.2
Sneezeweed	*Helenium autumnale*	*FACW+*	130,000	0.8	0.3
Sunflower, serrated	*Helianthus grosseserratus*	*FACW-*	15,000	0.2	0.6
Lobelia, great-blue	*Lobelia siphilitica*	*FACW+*	500,000	2.9	0.3
Monkey flower	*Mimulus ringens*	*OBL*	2,300,000	6.8	0.2
Mint, mountain	*Pycnanthemum virginianum*	*FACW+*	220,000	1.3	0.3
Meadow-rue, purple	*Thalicturm dasycarpum*	*FACW*	11,000	0.1	0.4
Vervain, blue	*Verbena hastata*	*FACW+*	93,000	2.2	1.3
Alexanders, Golden	*Zizea aurea*	*FACW*	11,000	1.0	5.0

Recommended Rate: 5.0 (PLS lbs/acre)

SUMMARY

Mix Seeds Per Square Foot	Mix Seeds Per Square Yard	Mix Seeds Per Acre
121	1,093	5,290,320
% by wt. Grasses	**% by wt. Graminoids**	**% by wt. Forbs**
64.0	15.0	21.0
% by Seed Count Grasses	**% by Seed Count Graminoids**	**% by Seed Count Forbs**
32.1	43.2	24.7

Table B-3
WI Seed Mix 3 – Native Wet Prairie Mixture

Use: Wisconsin state-wide in unsaturated Wet Prairie wetland areas
Seeding Rate: See below summary.
Notes: *Enbridge Environment must approve* substitutions *in advance*

Common Name	Botanical Name	Indicator Status	Seeds/oz.	Seeds/ft^2	% of Mix
Bluestem, big	*Andropogon gerardi*	*FAC-*	10,000	3.7	15.3
Brome, fringed	*Bromus ciliata*	*FACW*	10,000	1.8	7.7
Blue-joint grass	*Calamagrostis canadensis*	*OBL*	280,000	6.2	0.9
Wild-rye, Virginia	*Elymus virginicus*	*FACW-*	4,200	2.0	19.9
Manna grass, reed	*Glyceria grandis*	*OBL*	80,000	2.9	1.5
Manna grass, fowl	*Glyceria striata*	*OBL*	160,000	3.5	0.9
Switchgrass	*Panicum virgatum*	*FAC+*	14,000	3.1	9.2
Bluegrass, fowl	*Poa palustris*	*FACW+*	118,000	9.6	3.0
Indian grass	*Sorghastrum nutans*	*FACU+*	12,000	2.0	6.7
Cord grass, prairie	*Spartina pecinata*	*FACW+*	6,600	1.1	6.9
Sedge, tussock	*Carex stricta*	*OBL*	53,000	0.7	0.5
Sedge, fox	*Carex vulpinoidea*	*OBL*	100,000	3.7	1.5
Bulrush, green	*Scirpus atrovirens*	*OBL*	460,000	7.7	0.7
Wool grass	*Scirpus cyperinus*	*OBL*	1,700,000	18.7	0.5
Anemone, Canada	*Anemone canadensis*	*FACW*	8,000	0.09	0.5
Milkweed, marsh	*Asclepias incarnata*	*OBL*	4,800	0.1	1.4
Aster, swamp	*Aster puniceus*	*OBL*	80,000	2.4	1.2
Aster, flat-topped	*Aster umbellatus*	*FACW*	67,000	1.5	0.9
Tic-trefoil, showy	*Desmodium canadense*	*FAC-*	5,500	0.8	6.1
Joe-pye weed	*Eupatorium maculatum*	*OBL*	95,000	1.7	0.8
Boneset	*Eupatorium perfoliatum*	*FACW+*	160,000	2.4	0.6
Goldenrod, grass- leaved	*Euthamia graminifolia*	*FACW-*	350,000	2.0	0.3
Sneezeweed	*Helenium autumnale*	*FACW+*	130,000	2.39	0.8
Sunflower, serrated	*Helianthus grosseserratus*	*FACW-*	15,000	0.3	0.7
Blazingstar, tall	*Liatris pycnostachya*	*FAC-*	11,000	0.1	0.5
Lobelia, great-blue	*Lobelia siphilitica*	*FACW+*	500,000	1.4	0.1
Monkey flower	*Mimulus ringens*	*OBL*	2,300,000	6.4	0.1
Mint, mountain	*Pycnanthemum virginianum*	*FACW+*	220,000	1.2	0.3
Vervain, blue	*Verbena hastate*	*FACW+*	93,000	1.0	0.5
Ironweed	*Veronia fasciculate*	*FACW*	24,000	0.1	0.3
Culver's root	*Veronicastrum virginicum*	*FAC*	800,000	8.8	0.5
Alexander's, golden	*Zizea aurea*	*FAC+*	11,000	2.4	9.2

Recommended Rate: 5.0 (PLS lbs/acre)

SUMMARY

Mix Seeds Per Square Foot	Mix Seeds Per Square Yard	Mix Seeds Per Acre
102	884	4,436,283
% by wt. Grasses	**% by wt. Graminoids**	**% by wt. Forbs**
72.0	3.0	24.0
% by Seed Count Grasses	**% by Seed Count Graminoids**	**% by Seed Count Forbs**
35.0	30.0	35.0

Table B-4
WI Seed Mix 4 - Waterbody Banks Seed Mix

Use: Wisconsin state-wide on waterbody banks
Seeding Rate: 8.255 pounds/acre PLS drilled or 16.510 pounds/acre PLS broadcast without the companion crop
Double the rate of the companion crop when broadcast seeding
Notes: *Enbridge Environment must approve s*ubstitutions *in advance*

Species: Preferred Varieties (if available)	Pounds/Acre PLS	Percent of Mix
American slough grass: Common	1.500	18.2
Blue-joint grass: Common	0.100	1.2
Reed manna grass: Common	0.200	2.4
Fowl manna grass: Common	0.100	1.2
Fowl bluegrass: Common	1.800	21.8
Rice cut-grass: Common	0.250	3.0
Annual ryegrass: Common	0.900	10.9
Tussock sedge: Common	0.100	1.2
Fox sedge: Common	0.300	3.6
Green bulrush: Common	0.100	1.2
Wool grass: Common	0.005	0.1
River bulrush: Common	0.250	3.0
Soft-stem bulrush: Common	0.100	1.2
March milkweed: Common	0.100	1.2
Flat-topped aster: Common	0.300	3.6
Joe-pye weed: Common	0.300	3.6
Boneset: Common	0.250	3.0
Sneezeweed: Common	0.250	3.0
Spotted touch-me-not: Common	0.100	1.2
Great blue lobelia: Common	0.100	1.2
Monkey flower: Common	0.100	1.2
Mountain mint: Common	0.100	1.2
Giant goldenrod: Common	0.250	3.0
Blue vervain: Common	0.350	4.2
Ironweed: Common	0.350	4.2
Total	**8.255**	**100.0**[1]
Companion Crop		
Slender wheatgrass: Adanac, Pryor, Revenue, Primar, First Strike	3.000	100.0
Total Seed	**11.255**	**100.0**[1]

[1] May not equal 100 percent due to rounding

APPENDIX B

SAMPLE MONITORING DATA FORMS

PLOT SAMPLING DATA FORM – EMERGENT WETLANDS Surveyors: _____

Line 5 Project Post-Construction Wetland Monitoring

Plot ID: _____ Date:_____ Monitoring Year: _____

Species	**Wetland Status**	**Native Species (Y/N)**	**Percent Cover**
Total Percent of Native Hydrophytes (FAC or wetter):			
Total Percent Cover:			
Relative Percent of Native Hydrophytes:			
Notes:			

Photo Number(s):

MEANDER SURVEY DATA FORM

Page _____ of _____

Line 5 Project Post-Construction Wetland Monitoring

Surveyors: _____

Wetland ID: _____ Date:_____

Monitoring Year: _____

Species	Abundance Code:

Symbol	Abundance Code	Description
A	Abundant	The dominant plants throughout the site
C	Common	Locally abundant or frequently encountered
O	Occasional	Occasionally encountered, or locally common but absent or infrequent across much of the site
U	Uncommon	Infrequently encountered
R	Rare	Very few plants seen

Primary Hydrology Indicators (circle all that apply):				Secondary Hydrology Indicators	
[A1] Surface Water	[B3] Drift Deposits	[B9] Stained Leaves	[C4] Reduced Fe+	[B6] Soil Cracks	[D1] Stunt/Stress
[A2] Water Table	[B4] Algal Mat/Crust	[B13] Aquatic Fauna	[C6] Fe+ Tilled Soil	[B10] Drainage Patterns	[D2] Geomorphic Position
[A3] Saturation	[B5] Iron Deposits	[B14] True Aquatic Plants	[C7] Thin Muck	[C2] Dry Season H_2OTable	[D5] FAC-Neutral
[B1] Water Marks	[B7] Aerial Inundation	[C1] H_2S Odor	[D9] Gauge/Well	[C8] Crayfish Burrows	
[B2] Sediment Deposits	[B8] Bare Concave Surface	[C3] Rhizospheres	Other:	[C9] Aerial Saturation	

Original Wetland Delineation Indicators:

Notes:
Photo Number(s):